

## **NOTICE**

This print edition of the 2020-2021 Undergraduate Calendar was produced on July 17, 2020 and is an abridged version produced for the convenience of academic advisors, faculty and staff.

Please visit <http://academiccalendars.romcmaster.ca> for the most complete version of this calendar.



# McMaster University Undergraduate Calendar 2020-2021

For the online version of this calendar, visit <http://academiccalendars.romcmaster.ca>

This calendar covers the period from **September 2020 to August 2021**.

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## University Policies and Release from Liability

### University Policies

Acceptance of the University's policies (University Policies, Procedures & Guidelines), and changes that may be approved from time to time by the Board of Governors and the Senate, is a condition of being accepted in any capacity in any University-controlled laboratory or program. This includes but is not limited to the McMaster University Intellectual Property Policy <http://ip.mcmaster.ca/>.

### Release from Liability

McMaster University reserves the right to change or revise information contained in this Calendar, including the alteration of fee structures, schedules and/or courses. The University reserves the right to limit enrolment in, or admission to, any course or program at any level.

The University will not be liable for any interruption in, or cancellation of, any academic activities as set forth in this Calendar and related information where such interruption is caused by fire, strike, lock-out, inability to procure materials or trades, restrictive laws or governmental regulations, actions taken by the faculty, staff or students of the University or by others, civil unrest or disobedience, or any other cause of any kind beyond the reasonable control of the University.

# Glossary

## Academic Probation

Academic Probation may be assigned to students whose Grade Point Average (GPA) is at least 3.0 but less than 3.5, will allow a student to continue at the University for one reviewing period.

## Academic Standing

Academic standing is the statement of the academic performance of a student at the end of Winter or Spring/Summer terms. *Good Standing, May Continue in Program - Academic Probation, May Continue in Program - Program Probation, May Not Continue in Program, May Not Continue in Faculty, May Not Continue at University, Required to Withdraw from University*, are examples of academic standings. See *Academic Standing Review* and *Academic Standings* in the General Academic Regulations for more information.

## Advanced Standing/Credit

Advanced Standing/Credit may be granted to an applicant who has completed work at another university or college or who has completed a Certificate/Diploma program at McMaster University, subject to the applicant having met the minimum requirements prescribed by the University.

## Antirequisite

An antirequisite is a course which cannot be taken for credit before, after, or at the same time as the course with which it is listed.

## Bursaries

Bursaries are granted based upon demonstrated financial need, a minimum expectation of academic accomplishment and, in some cases, other forms of earned merit. They may vary in monetary value, based upon the level of financial need demonstrated.

## Continuing Student

A continuing student is a university graduate who is not proceeding to an advanced degree, but wishes to take one or more undergraduate courses after graduation.

## Co-requisite

A co-requisite is a course which must be taken together with another course in the same term.

## Course Numbers

Course numbers (e.g. 1A03) can be interpreted as follows: the initial digit indicates the Level of the course; the letter(s) in the middle identifies the specific courses within the Level; and the final digit(s) defines the number of units of credit associated with the course.

## Credentials

A credential is a body of academic work or collection of course work that stands on its own and for which a parchment is issued. McMaster credentials include certificates, diplomas and degrees. A single course is permitted to be counted toward a maximum of two credentials.

## Cross-listed Course

A cross-listed course is a course which is listed under two or more subjects.

## Cumulative Grade Point Average (Cumulative GPA)

The Cumulative GPA is the weighted average based on the Graded Units taken throughout the undergraduate career. The Repeating Courses regulation, effective September 1, 2018, will affect the calculation of subsequent Cumulative GPA.

## Deferred (DEF)

### Notation

Courses with the notation DEF have been approved for a deferred examination.

## Degree

A degree is conferred when a student completes a program of study (e.g. Bachelor of Arts, Bachelor of Science Kinesiology, Master of Science, Doctor of Philosophy).

## Department

A department is a subdivision of a Faculty, responsible for a particular subject or group of subjects (e.g. Department of Chemistry, Department of Health, Aging and Society).

## Elective Courses

Elective courses are those courses taken by a student which are not specifically designated in a student's program, but which form part of the total number of units required to complete the program.

## Extra

### Notation

Courses designated as "Extra" at the time of registration by the Faculty Office are not included as units toward completion of a student's program. The grades obtained in such courses will not be included in the computation of the Cumulative GPA. However, they will be included in the computation of the Fall-Winter Average and the Spring-Summer Average.

## Faculty

A Faculty is a major administrative and teaching unit of the University responsible for programs and courses relating to common fields of study or academic disciplines (e.g. Faculty of Humanities, Faculty of Engineering).

## Full Load

A full load is the number of units specified in the Calendar for an individual level of a program in a given year. If the Calendar does not specify the program requirements by individual levels, divide the total units for all levels by the number of levels, discarding the remainder.

## Full-time Student

A full-time student, for academic purposes, is an undergraduate student who is registered in at least 9 units in a term, including Extra Courses. Full-time status for students in the Faculty of Science and Engineering Co-op programs is granted to those students registered in at least 9 units in a term.

## Fall-Winter Average

The Fall-Winter Average is a weighted average based on the grades attained in the Fall and Winter Terms. Overload courses and Extra courses are included in the Fall-Winter Average.

## Grade Point Average (GPA)

The Grade Point Average is the weighted average based on the grades obtained in all courses taken. Failed courses are included in the GPA calculation.

## Graded Units

Graded units refer to the number of units taken at McMaster for which a letter or Numeric Grade is earned. Graded units do not include courses assessed with a Non-Numeric Grade.

## Honour Lists

Students are reviewed for Deans' Honour Lists (DHL) and Provost's Honour List (PHL) each time a minimum of 30 units (may not exceed 6 units assessed with a non-numeric grade) have been completed. Subsequent assessments are based on all units completed since the previous review. Students will be named to the Deans' Honour List when a minimum average of 9.5 is achieved. Students will be named to the Provost's Honour List when an average of 12.0 is achieved.

## Intersession

The Intersession is a time period in which students may explore novel interdisciplinary and experiential opportunities that may not be available during the Fall or Winter terms. The Intersession begins in the first week of May (concurrent with the Spring Session) and lasts for a four-week period. See the *Sessional Dates* and INSPIRE course listings for more information.

## Letter of Permission (LOP)

A Letter of Permission is a formal document which allows a McMaster student to take one or more courses at another university for credit towards a McMaster degree.

## Level

Level is used to describe a student's progression through a program.

## Loans

Loans are monetary advances granted to students currently registered, based upon a demonstrated means and promise of repayment.

## Mature Student

A mature student has not attended secondary school or college on a full-time basis for at least two years; and has not previously attended university.

## Minors

Students enrolled in a four- or five-level program (with the exception of the Medical Radiation Sciences programs) are eligible to obtain a Minor in another subject area, provided that the subject area is not integral to the requirements of their degree program. At least 18 units must be completed at McMaster. Students who wish to receive a Minor must consult the appropriate department section of the calendar. McMaster also offers Interdisciplinary Minors and Thematic Areas. To apply for a Minor, students must complete the Minor/Certificate Application in addition to their online Graduation Information Centre (GIC) application. The student's Faculty will verify that the requirements have been met and, if successful, the transcript will indicate that a Minor has been obtained. Minors cannot be revoked once approved.

## Multi-Term Fall/Winter Courses

Codes for multi-term Fall/Winter courses have an A/B suffix. Part A must always be taken in the Fall Term immediately preceding Part B. Neither Part A nor B of a multi-term course has academic credit independent of both parts being successfully completed. Students who drop or withdraw from Part A must also withdraw from B.

Upon completion of the Fall Term, a grade of MT indicating multi-term will be assigned to Part A and the final grade will be assigned to Part B.

## Multi-Session Course

A multi-session course is one taught over the Spring and Summer sessions of the Spring/Summer Term. Students enroll in both the 'A' and the 'B' parts of the same course. Part 'A' is taken in the Spring session. Part 'B' is taken in the Summer session. Academic Load and Billing units are assigned to both parts. Units for GPA calculation are assigned to part 'B' of the course only.

## OSAP Eligible Course Load

OSAP Eligible Course Load or equivalent refers to the 60% minimum course load per term (40% minimum course load per term for students with permanent disabilities) required to be eligible for full-time OSAP government student aid funding.

## Part-time Student

A part-time student, for academic purposes, is an undergraduate student who is registered in fewer than 9 units in a term, including Extra Courses.

## Pass/Fail Courses

Courses evaluated on a Pass/Fail basis are not included in the calculation of averages. The earned units are counted towards degree requirements.

## Post-Degree Student

A post-degree student is a university graduate or a person with professional qualifications who is not proceeding to an advanced degree, but wishes to take one or more graduate courses.

## Prerequisite

A prerequisite is a requirement to be fulfilled before registration in a course is permitted. This is usually the successful completion of another course.

## Program

A program is a specific combination of courses that fulfils the requirements for a degree.

## Readmission

See *Readmission* in the Admission Requirements section of this calendar.

## Reinstatement

See *Reinstatement* in the General Academic Regulations section of this calendar.

## Required Courses

Required courses are those courses which are specifically designated for inclusion in a program.

## Requisite

A requisite is an academic requirement that must be met to register in a course. A course requisite may comprise Prerequisites, Corequisites and/or Antirequisites.

## Review

A academic review is an assessment of a student's performance to determine eligibility to continue in a program or to graduate.

## Reviewing Period

The reviewing period is the time between two reviews for a student. Reviews will take place in May and August, provided the student has attempted 18 units of work since the last review or is a potential graduand.

## Session

A period of study within a Term. Each term may have multiple sessions. For example, the Summer session runs from June to August within the Spring/Summer term.

## Spring-Summer Average

The Spring-Summer Average is a weighted average based on the grades attained in the Spring and Summer Term. Overload courses and Extra courses are included in the Spring-Summer Average.

## Term

A period within the Academic Year. The Academic Year will have three Terms that may have multiple Sessions within them. For example: Fall Term (September-December), Winter Term (January-April), and Spring/Summer Term (May-August).

## Term Grade Point Average (Term GPA)

The Term GPA is a weighted average based on the Graded Units taken in the term.

## Transcripts

A transcript summarizes a student's academic career at McMaster University and is available by electronic request through Mosaic. Transcript requests will not be processed for students with outstanding financial accounts at the University or those under investigation for an academic integrity violation.

## Tuition

Tuition is fees paid in consideration for enrolment in a program of study and selected courses.

## Undergraduate Student

An undergraduate student is one who is enrolled in a program of study leading to a bachelor's degree or to the degree Doctor of Medicine.

## Units

Units define the number of credits associated with a course. A unit is roughly equivalent to one lecture-hour per week for one term or two hours of laboratories or seminars per week for one term. Three-unit courses are usually one term in length. Six-unit courses are usually two terms in length.

## Unused

### *Notation*

Courses designated as "Unused" cannot be used to fulfil the requirements for the student's current degree program. The grades obtained in such courses will be included in the computation of all averages.

## Weighted Average

Weighted average is calculated by multiplying the grade points achieved in each course by the number of units in each course, totaling these results, and then dividing this result by the total number of course units.

## With Distinction

### *Notation*

Graduation *With Distinction* standing is awarded when a minimum Cumulative GPA of 9.5 is achieved in a degree program. In this case, the Latin phrase *summa cum laude* ("with highest honour") will appear on the graduate's diploma.

## Withdrawal With Academic Penalty

Withdrawal With Academic Penalty is the formal process of discontinuing studies in a particular course or program **after** the last day to withdraw without failure by default in the term.

## Withdrawal Without Academic Penalty

Withdrawal Without Academic Penalty is the formal process of discontinuing studies in a particular course or program **before** the last day to withdraw without failure by default in the term.

## Withdrawn (W)

### *Notation*

After the last day for enrolment and course changes, students may withdraw from courses until the last day to withdraw without failure by default.

Withdrawn courses will be shown on the student's transcript with a grade of W. After the last day to withdraw without failure by default, the student will remain enrolled, whether or not they fulfil any further academic obligations, and a final grade will be assigned.

# Sessional Dates 2020-2021

(Revised November 2020)

The academic year is divided into terms, as shown below. Most undergraduate students register for the **Fall** and **Winter** terms, which run from September to December and January to April respectively. The **Spring/Summer** term starts at the beginning of May and ends in early August.

## 2020 Fall Term (62 days)

Item	Date(s)
<b>Enrolment begins</b>	<i>To be announced</i>
<b>Classes begin</b>	Tuesday, September 8
<b>Last day for enrolment and course changes (drop/add)</b>	Wednesday, September 16
<b>Mid-term recess</b>	Monday, October 12 to Sunday, October 18
<b>Last day for withdrawing from courses without failure by default</b>	Friday, November 13
<b>Test and Examination Restriction</b>	Thursday, December 3 to Wednesday, December 9
<b>Classes end</b>	Wednesday, December 9
<b>Final Examinations</b>	Thursday, December 10 to Wednesday, December 23
<b>Deferred examinations</b>	Tuesday, February 16 to Friday, February 19

## 2021 Winter Term (62 days)

Item	Date(s)
<b>Enrolment begins</b>	<i>To be announced</i>
<b>Classes begin</b>	Monday, January 11*
<b>Last day for enrolment and course changes (drop/add)</b>	Tuesday, January 19
<b>Mid-term recess</b>	Monday, February 15 to Sunday, February 21
<b>Last day for withdrawing from courses without failure by default</b>	Friday, March 19
<b>Good Friday: No classes or examinations</b>	Friday, April 2
<b>Test and Examination Restriction</b>	Thursday, April 8 to Wednesday, April 14
<b>Classes End</b>	Wednesday, April 14
<b>Final Examinations</b>	Thursday, April 15 to Friday, April 30
<b>Deferred examinations</b>	Monday, June 21 to Thursday, June 24

\*Faculty of Health Sciences programs, except for the Bachelor of Health Sciences (Honours), Integrated Biomedical Engineering and Health Sciences (IBEHS), and the Honours Biology and Pharmacology Co-op program will begin classes the week of January 4th as originally planned.

## 2020-2021 Multi-Term Courses (124 days)

Item	Date(s)
<b>Enrolment begins</b>	<i>To be announced</i>
<b>Classes begin</b>	Tuesday, September 8
<b>Last day for enrolment and course changes (drop/add)</b>	Wednesday, September 16
<b>Mid-term recesses</b>	Monday, October 12 to Sunday, October 18; and Monday, February 15 to Sunday, February 21
<b>Last day for cancelling courses without failure by default</b>	Friday, March 19
<b>Good Friday: No classes or examinations</b>	Friday, April 2
<b>Test and Examination Restriction</b>	Thursday, April 8 to Wednesday, April 14
<b>Classes end</b>	Wednesday, April 14
<b>Mid-Term Tests Level (1)</b>	Thursday, December 10 to Wednesday, December 23
<b>Final Examinations</b>	Thursday, April 15 to Friday, April 30
<b>Deferred examinations</b>	Monday June 21 to Thursday June 24

## 2021 Spring/Summer Term

	Spring Session (34 days)	Summer Session (33 days)	Full-Term Courses (67 days)	Intersession
<b>Classes begin</b>	Monday, May 3	Monday, June 21	Monday, May 3	Monday, May 3
<b>Last day for enrolment and course changes (drop/add)</b>	Monday, May 10	Monday, June 28	Monday, May 10	Monday, May 10
<b>Victoria Day: No classes</b>	Monday, May 24	-	Monday, May 24	Monday, May 24
<b>Canada Day: No classes</b>	-	Thursday, July 1	Thursday, July 1	-
<b>Last day withdrawing from courses without failure by default</b>	Wednesday, June 2	Wednesday, July 21	Wednesday, July 21	Wednesday, May 19
<b>Civic Holiday: No classes</b>	-	Monday, August 2	Monday, August 2	-
<b>Classes end</b>	Friday, June 18	Friday, August 6	Friday, August 6	Friday, May 28
<b>Final Examinations</b>	<i>As arranged by instructor in class time</i>			
<b>Deferred Examinations</b>	Tuesday October 12 to Friday, October 15, 2021			

# Degrees and Programs: Duration in Years

McMaster University offers the following undergraduate degrees:

FACULTY AND DEGREE	DURATION IN YEARS
<b>Arts &amp; Science Program</b>	
B.Arts Sc.	3
B.Arts Sc. (Honours)	4

## DeGroot School of Business

B.Com.	4
B.Com. (Honours)	4
B.Com. (Honours)	5**

## Faculty of Engineering

B.A.Sc.	4
B.Eng.	4
B.Eng.BME	5
B.Eng.Mgt.	5
B.Eng. Society	5
B.Eng. Biosciences	5
B.Tech.	2 or 4

## Faculty of Health Sciences

B.H.Sc. (Midwifery)	4*
B.H.Sc. (Physician Assistant)	2
B.H.Sc. (Honours)	4
B.H.Sc. (Honours) (HESE Specialization)	5
B.Sc.N.	4
B.Sc.N. (Post Diploma RN Stream)	2*
B.Sc.N. (Basic-Accelerated)	2*
M.D. (Doctor of Medicine)	3*

## Faculty of Humanities

B.A.	3
B.A. (Honours)	4
B.F.A. (Honours)	4
B.Mus. (Honours)	4
B.A./B.S.W.	4

## Faculty of Science

B.A.Sc. (Honours)	4
B.M.R.Sc.	4*
B.Sc.	3
B.Sc. (Honours)	4
B.Sc. (Honours)	5**
B.Sc.Kin. (Honours)	4

## Faculty of Social Sciences

B.A.	3
B.A. (Honours)	4
B.A./B.S.W.	4
B.S.W.	2‡

\* In these programs, an academic year extends beyond the regular Fall and Winter terms.

\*\* These are co-op or internship programs.

‡ Follows completion of prior undergraduate degree.

## Second Undergraduate Degree

Provision exists for a university graduate to take a second bachelor's degree. This program is normally shortened (except for the B.H.Sc. Midwifery program). An application for admission is necessary for entry to a second degree program, and it should be submitted by the application deadlines. (See *Application Procedures* and *General Academic Regulations* sections of this Calendar.)

## Combined Programs

There is the opportunity to combine two subjects of study within one Faculty, or between two Faculties. Further information can be obtained by referring to the Faculty sections of this Calendar, or contacting the appropriate Office of the Associate Dean.

# Elective Courses Available To Level I Students

## ELECTIVE COURSES AVAILABLE TO LEVEL I STUDENTS

The following is a list of courses available as electives to Level I students, provided that prerequisites have been satisfied, and subject to enrolment limitations.

### COURSES AVAILABLE

- ANTHROP 1AA3 - Introduction to Anthropology: Sex, Food and Death
- ANTHROP 1AB3 - Introduction to Anthropology: Race, Religion, and Conflict
- ART 1T13 - Making Art and Understanding Technology & Images §
- ART 1UI3 - Making Art and Understanding Images §
- ARTHIST 1A03 - World Art and Cultural Heritage I
- ARTHIST 1AA3 - World Art and Cultural Heritage II
- ARTHIST 1PA3 - Arts in Society: Social Constructions of Race and Gender
- ASTRON 1F03 - Introduction to Astronomy and Astrophysics §
- BIOLOGY 1A03 - Cellular and Molecular Biology §
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity §
- BIOLOGY 1P03 - Introductory Biology §
- BIOPHYS 1S03 - Biophysics of Movement and the Senses: From Microbes to Moose §
- CAYUGA 1Z03 - Introduction to Cayuga Language and Culture
- CHEM 1A03 - Introductory Chemistry I §
- CHEM 1AA3 - Introductory Chemistry II §
- CHEM 1R03 - General Chemistry §
- CHINESE 1Z06 A/B - Mandarin Chinese for Beginners
- CLASSICS 1A03 - Introduction to Classical Archaeology
- CLASSICS 1B03 - An Introduction to Ancient Myth and Literature
- CLASSICS 1M03 - History of Greece and Rome
- CMST 1A03 - Introduction to Communication



- COMMERCE 1AA3 - Introductory Financial Accounting §
- COMMERCE 1B03 - Business Environment & Organization §
- COMMERCE 1BA3 - Organizational Behaviour §
- COMMERCE 1DA3 - Business Data Analytics §
- COMMERCE 1MA3 - Introduction to Marketing §
- COMMERCE 4AK3 - Accounting Information for Decision Making §
- COMMERCE 4FP3 - Personal Finance §
- COMPSCI 1JC3 - Introduction to Computational Thinking §
- COMPSCI 1MD3 - Introduction to Programming §
- COMPSCI 1TA3 - Elementary Computing and Computer Use §
- EARTHSC 1G03 - Earth and the Environment §
- ECON 1B03 - Introductory Microeconomics ∞
- ECON 1BB3 - Introductory Macroeconomics
- ENGLISH 1CS3 - Studying Culture: A Critical Introduction
- ENGLISH 1F03 - The Written World
- ENGLISH 1G03 - Making and Unmaking Literary Traditions
- ENGLISH 1H03 - Words in Place
- ENVIRSC 1C03 - Climate, Water And Environment §
- ENVSOCTY 1HA3 - Society, Culture and Environment
- ENVSOCTY 1HB3 - Population, Cities and Development
- FARSI 1Z03 - Introductory Farsi I
- FARSI 1ZZ3 - Introductory Farsi II
- FRENCH 1A06 A/B - Introduction to French Studies: Advanced Level
- FRENCH 1Z06 A/B - Beginner's Intensive French I
- GERMAN 1B03 - Intermediate German I
- GERMAN 1BB3 - Intermediate German II
- GERMAN 1Z06 A/B S - Beginner's Intensive German
- GLOBALZN 1A03 - Global Citizenship
- GREEK 1Z03 - Beginner's Intensive Ancient Greek I
- GREEK 1ZZ3 - Beginner's Intensive Ancient Greek II
- HLTHAGE 1AA3 - Introduction to Health and Society
- HLTHAGE 1BB3 - Introduction to Aging and Society
- HLTHAGE 1CC3 - Introduction to Mental Health and Illness
- HTHSCI 1DT3 - Discover Immunology Today §
- HTHSCI 1M03 - Foundations of Data Science §
- HTHSCI 1K03 - Health Sciences in the Media §
- HISTORY 1CC3 - The Rise of Empires, 500-1950
- HISTORY 1DD3 - The Making of the Modern World, 1750-1945
- HISTORY 1EE3 - The Historical Roots of Contemporary Issues
- HISTORY 1FF3 - Exploring History in a Small Group Setting
- HISTORY 1M03 - History of Greece and Rome
- HISTORY 1P03 - A History of Magic
- INDIGST 1A03 - Introduction to Indigenous Studies
- INDIGST 1B03 - Reconciling What? Indigenous Relations in Canada
- INDIGST 1AA3 - Introduction to Contemporary Indigenous Studies
- ITALIAN 1A03 - Intermediate Italian I
- ITALIAN 1AA3 - Intermediate Italian II
- ITALIAN 1Z06 A/B S - Beginner's Intensive Italian
- JAPANESE 1Z06 A/B S - Beginner's Intensive Japanese
- KOREAN 1Z03 - Introductory Korean I
- KOREAN 1ZZ3 - Introductory Korean II
- LATIN 1Z03 - Beginner's Intensive Latin I
- LATIN 1ZZ3 - Beginner's Intensive Latin II
- LIFESCI 1D03 - Medical Imaging Physics
- LINGUIST 1A03 - Introduction to Linguistics: Sounds, Speech and Hearing
- LINGUIST 1AA3 - Introduction to Linguistics: Words, Sentences and Meaning
- LINGUIST 1Z03 - Structure of Modern English I
- LINGUIST 1ZZ3 - Structure of Modern English II
- MATH 1A03 - Calculus For Science I §
- MATH 1AA3 - Calculus For Science II §
- MATH 1B03 - Linear Algebra I §
- MATH 1C03 - Introduction to Mathematical Reasoning §
- MATH 1F03 - Introduction to Calculus and Analytic Geometry §
- MATH 1K03 - Advanced Functions & Introductory Calculus for Humanities and the Social Sciences §
- MATH 1LS3 - Calculus for the Life Sciences I §
- MATH 1LT3 - Calculus for the Life Sciences II §
- MATH 1M03 - Calculus for Business, Humanities and the Social Sciences §
- MATH 1MP3 - Introduction to Mathematical Scientific Computation §
- MATLS 1M03 - Structure and Properties of Materials §
- MMEDIA 1A03 - Multimedia and Digital Society §
- MOHAWK 1Z03 - Introduction to Mohawk Language and Culture
- MUSIC 1A03 - Introduction to the History of Music I
- MUSIC 1AA3 - Introduction to the History of Music II
- MUSIC 1CR3 - Rudiments of Music §
- OJIBWE 1Z03 - Introduction to Ojibwe Language and Culture
- PEACEST 1A03 - Introduction to Peace Studies
- PHILOS 1A03 - Philosophical Texts
- PHILOS 1B03 - Philosophy, Law and Society
- PHILOS 1E03 - Philosophical Questions
- PHILOS 1F03 - Meaning in Life
- PHYSICS 1A03 - Introductory Physics §
- PHYSICS 1AA3 - Introduction To Modern Physics §
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences §
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences §
- POLISH 1Z03 - Beginner's Polish I
- POLISH 1ZZ3 - Beginner's Polish II
- POLSCI 1AA3 - Government, Politics, and Power
- POLSCI 1AB3 - Politics and Power in a Globalizing World
- PSYCH 1F03 - Survey of Psychology
- PSYCH 1FF3 - Survey of Biological Basis of Psychology §
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour
- RUSSIAN 1Z03 - Intensive Beginner's Russian I
- RUSSIAN 1ZZ3 - Intensive Beginner's Russian II
- SCAR 1B03 - What on Earth is Religion?
- SCAR 1R03 - Introduction to Anthropology: Race, Religion and Conflict
- SCAR 1SC3 - The Big Questions: Introduction to Society, Culture & Religion
- SCIENCE 1A03 - Investigating Science: Opportunities & Experiences \*\* §
- SOCPSY 1Z03 - An Introduction to Social Psychology ◊
- SOCSCI 1SS3 - Inquiry in the Social Sciences ◊ §
- SOCSCI 1T03 - Life, the University, and Everything ◊ §
- SOCIOL 1C03 - Canadian Society: Social Problems, Social Policy, and the Law
- SOCIOL 1Z03 - An Introduction to Sociology
- SOCWORK 1AA3 - So You Think You Can Help? Introduction to Social Work I
- SOCWORK 1BB3 - Re-Imagining Help: Introduction to Social Work II
- SPANISH 1A03 - Intermediate Spanish I
- SPANISH 1AA3 - Intermediate Spanish II
- SPANISH 1Z06 A/B - Beginner's Intensive Spanish
- STATS 1L03 - Probability and Linear Algebra §
- THTRFLM 1H03 - Acting Skills for Life and Work
- THTRFLM 1T03 - Introduction to Theatre, Cinema and Society
- WOMENST 1A03 - Women, Culture, Power
- WOMENST 1AA3 - Women Transforming the World

**NOTES**

*§ Not acceptable for the six-unit complementary studies elective required in Engineering I or the three-unit complementary studies elective required in Integrated Biomedical Engineering and Health Sciences I.*

*\*\* SCIENCE 1A03 is only available to students enrolled in a Level I program in the Faculty of Science.*

*◇ SOCSCI 1T03 and SOCSCI 1SS3 are only available to students registered in the Social Sciences I program.*

*∞ Engineering I students interested in entering the Engineering and Management program must take ECON 1B03 as one of their complementary studies electives.*

## Availability of Upper-Level Courses

### COURSE AVAILABILITY

The following are lists of upper-level courses available to students subject to enrolment limitations and the prerequisites as specified for each list.

(Engineering students should refer to the website at <http://www.eng.mcmaster.ca/documents/electives.pdf>).

#### UPPER-LEVEL COURSES AVAILABLE TO ALL STUDENTS

- ANTHROP 2EE3 - Sport and/as Religion
- CLASSICS 2MT3 - Ancient Roots of Medical Terminology
- HEBREW 2A03 - Introduction to Biblical Hebrew I
- JAPANESE 2X03 - Japanese Anime (Taught in English)
- KOREAN 2X03 - Korean Pop-Culture (Taught in English)
- LINGUIST 2SL3 - Introduction to American Sign Language
- MATH 2UU3 - Numbers for Life
- PHYSICS 2NM3 - Media Numeracy: Telling Stories With Numbers
- POLSCI 2C03 - Force and Fear, Crime and Punishment
- POLSCI 2D03 - Canadian Democracy
- POLSCI 2F03 - Politics, Power and Influence in Canada
- POLSCI 2H03 - Globalization and the State
- POLSCI 2I03 - Global Politics
- POLSCI 2J03 - Global Political Economy
- POLSCI 2M03 - Governance, Representation, and Participation in Democracies
- POLSCI 2O06 A/B - Political Theory
- POLSCI 2U03 - Public Policy and Administration
- POLSCI 2XX3 - Politics of the Developing World
- SANSKRIT 3A06 A/B - Introduction to Sanskrit Grammar
- SCAR 2AA3 - Introduction to Modern Standard Arabic
- SCAR 2AB3 - Archaeology and the Bible
- SCAR 2AM3 - Abraham in Judaism, Christianity, and Islam
- SCAR 2AP3 - Apocalypse, Then and Now
- SCAR 2BA3 - The Bible Then and Now
- SCAR 2BB3 - Images of the Divine Feminine
- SCAR 2BN3 - Sex and the City in Buddhism: The Urban Life of Buddhist Nuns in North India
- SCAR 2CA3 - Religion and the Arts
- SCAR 2CH3 - Introduction to Christianity
- SCAR 2EE3 - Prophets of the Bible
- SCAR 2ER3 - Religion, the Body, and the Machine
- SCAR 2F03 - Storytelling in Asian Religions
- SCAR 2G03 - Religious Themes in Modern Culture
- SCAR 2GB3 - Great Books in Asian Religions
- SCAR 2GG3 - Who was Jesus?
- SCAR 2GR3 - Evil

- SCAR 2HB3 - From Creation to Exile
- SCAR 2HC3 - Introduction to Biblical Hebrew I
- SCAR 2HR3 - Humour and Religion
- SCAR 2IR3 - Hollywood/Bollywood and Indian Religions
- SCAR 2J03 - Introduction To Judaism
- SCAR 2K03 - Introduction to Buddhism
- SCAR 2LL3 - God and Philosophy
- SCAR 2M03 - Death and Dying: Comparative Views
- SCAR 2MT3 - Asian Meditation Traditions
- SCAR 2N03 - Death and Dying: The Western Experience
- SCAR 2NT3 - The New Testament
- SCAR 2O03 - Introduction to Islam
- SCAR 2OQ3 - Cults, Conspiracies and Close Encounters
- SCAR 2RD3 - Religion and Diversity
- SCAR 2RN3 - Religion in the News
- SCAR 2SA3 - Encountering the Sacred
- SCAR 2SG3 - Spirits, Ghosts and Demons
- SCAR 2SP3 - Sport and/as Religion
- SCAR 2TA3 - Islam in North America
- SCAR 2TT3 - Religion and Popular Culture in Contemporary Japan
- SCAR 2UD3 - Utopias, Dystopias
- SCAR 2VR3 - Violence and Religion
- SCAR 2VV3 - The Bible as Literature
- SCAR 2WW3 - Health, Healing and Religion: Western Perspectives
- SCAR 2WX3 - Health, Healing and Religion: Comparative Views
- SCAR 2YY3 - The Bible and Film
- SOCIOL 2TA3 - Islam In North America

#### UPPER-LEVEL COURSES AVAILABLE TO STUDENTS REGISTERED IN LEVEL II OR ABOVE IN ANY PROGRAM

- ANTHROP 2G03 - Readings in Indo-European Myth
- ANTHROP 2U03 - Plagues and People
- ANTHROP 3SS3 - Sacred Journeys
- ANTHROP 3Y03 - Indigenous Community Health and Wellbeing
- ASTRON 2B03 - The Big Questions
- ART 2AT3 - Art Today
- ART 2DP3 - Digital Practices
- ART 2ER3 - Environmentally Responsible Art
- ART 3FW3 - Field Work: On-Site Explorations
- ARTHIST 2A03 - Visual Literacy
- ARTHIST 2AA3 - Introduction to the Practice of Art Therapy
- ARTHIST 2B03 - Greek Art
- ARTHIST 2C03 - Roman Art
- ARTHIST 2DF3 - Art and Revolutions in France, 1789-1914
- ARTHIST 2FA3 - Film Analysis
- ARTHIST 2H03 - Aesthetics
- ARTHIST 2I03 - Renaissance Art
- ARTHIST 2J03 - Architecture from the Pre-Romanesque to Palladio
- ARTHIST 2R03 - The History of Fashion and Identity
- ARTHIST 2S03 - The History of Printing and Printmaking
- ARTHIST 2T03 - Art, Theatre and Music in the Enlightenment
- ARTHIST 2Y03 - Early Islamic Art to the Middle Ages
- ARTHIST 2Z03 - Art and Visual Culture in East and South Asia
- ARTHIST 3D03 - Seventeenth-Century Art
- ARTHIST 3DF3 - Art and Politics in Second Empire France
- ARTHIST 3FL3 - Early Cinema History
- ARTHIST 3I03 - Italian Painting and Sculpture 1400-1580
- ARTHIST 3JA3 - The History of Art 1970 to the Present
- ARTHIST 3Q03 - Colours of the World
- ARTHIST 3QQ3 - Greek Sanctuaries
- ARTHIST 3Z03 - The Silk Road in the First Millennium
- CLASSICS 2B03 - Greek Art

- CLASSICS 2C03 - Roman Art
- CLASSICS 2D03 - Greek and Roman Mythology
- CLASSICS 2E03 - The Ancient World in Film
- CLASSICS 2HA3 - Athens and Sparta: Democracy, Oligarchy, and War
- CLASSICS 2HB3 - From Alexander to Cleopatra: Cosmopolis and Empire
- CLASSICS 2HC3 - Caesar and the Rise of Autocracy
- CLASSICS 2HD3 - Nero, Decadence, and the End of a Dynasty
- CLASSICS 2K03 - The Society of Greece and Rome
- CLASSICS 2LW3 - Ancient Law
- CLASSICS 2YY3 - Greek Tragedy
- CLASSICS 3EE3 - The Greek Historians
- CLASSICS 3Q03 - Greek Sanctuaries
- CLASSICS 3X03 - Roman Religion
- CMST 2HM3 - Human Communication
- CMTYENGA 2A03 - Foundations of Community Engagement
- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 2FA3 - Introduction to Finance
- COMMERCE 2KA3 - Information Systems in Business
- COMMERCE 2MA3 - Introduction to Marketing
- COMMERCE 2OC3 - Operations Management
- COMMERCE 2QA3 - Applied Statistics for Business
- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management
- COMMERCE 3MD3 - Introduction to Contemporary Applied Marketing
- COMMERCE 4AK3 - Accounting Information for Decision Making
- COMMERCE 4FP3 - Personal Finance
- COMMERCE 4FW3 - Finance for Entrepreneurs
- COMMERCE 4MG3 - Strategic Philanthropy and Leadership
- COMMERCE 4SG3 - Sustainability: Corporations and Society
- EARTHSC 2GG3 - Natural Disasters
- ECON 2CC3 - Health Economics and its Application to Health Policy
- ENGLISH 2AA3 - American Literature Before 1900
- ENGLISH 2BB3 - Topics in 20th and 21st-century American Literature and Culture
- ENGLISH 2BL3 - Twentieth- and Twenty-First Century British Literature and Film
- ENGLISH 2C03 - Contemporary Canadian Fiction
- ENGLISH 2CC3 - Settler Colonialism and Writing in Canada
- ENGLISH 2CL3 - Canadian Literature of Dissent and Social Justice
- ENGLISH 2CR3 - Shakespeare: Comedies, Problem Plays, and Romances
- ENGLISH 2HT3 - Shakespeare: Histories and Tragedies
- ENGLISH 2KK3 - Studies in Women Writers
- ENGLISH 2M03 - Concepts of Culture
- ENGLISH 2NH3 - Narratives of Health
- ENGLISH 2P03 - Modernity, Postmodernity, Visuality
- ENGLISH 2PC3 - Popular Culture
- ENGLISH 2S03 - Spectacular Bodies
- ENGLISH 2Z03 - Nature, Literature, Culture: Introduction to the Environmental Humanities
- ENGLISH 3CC3 - Reading Film
- ENGLISH 3D03 - Science Fiction
- ENGLISH 3EC3 - Eighteenth-Century Literature and Culture: Enlightenment and its Shadows
- ENGLISH 3EE3 - African American Literature
- ENGLISH 3F03 - The Fairy Tale
- ENGLISH 3GF3 - Studies in Popular Genres
- ENGLISH 3GG3 - Theories of Decolonization and Resistance
- ENGLISH 3H03 - Jane Austen
- ENGLISH 3L03 - Old English Literature in Translation
- ENGLISH 3NN3 - Medieval Literature and Culture: An Overview
- ENGLISH 3PT3 - Perspective and Time in Fiction
- ENGLISH 3Q03 - The History of Critical Theory
- ENGLISH 3Q03 - Contemporary Critical Theory
- ENGLISH 3SS3 - Topics in Medieval Literature and Culture
- ENGLISH 3TT3 - The Age of Elizabeth I
- ENGLISH 3UU3 - Renaissance and Revolution: Studies in 17th-Century Literature
- ENGLISH 3V03 - Global Anglophone Literature and Film
- ENGLISH 3VC3 - 'We Other Victorians': Victorian Literature and Culture and Its Afterlives
- ENGLISH 3WE3 - British Romantic Literature and Culture: Revolution, War, Empire
- ENGLISH 3Y03 - Children's Literature
- ENVIRSC 2WW3 - Water and the Environment
- ENVSOCTY 2RC3 - Regional Geography of Canada
- ENVSOCTY 2RU3 - Regional Geography of the United States
- ENVSOCTY 3RW3 - Regional Geography of a Selected World Region
- GERMAN 2CC3 - Germany Through the Ages: Culture and Society (Taught in English)
- GERMAN 2FT3 - The Fairy Tale (Taught in English)
- GERMAN 2N03 - The Holocaust in Film and Fiction (Taught in English)
- GERMAN 2P03 - Modern Germany Through Film: Symphonies of Magic & Horror (Taught in English)
- GERMAN 3H03 - The New Europe: A New Germany (Taught in English)
- HLTHAGE 2C03 - Health Economics and its Application to Health Policy
- HLTHAGE 2GG3 - Mental Health and Society
- HLTHAGE 2J03 - Selected Topics in Aging and Society
- HLTHAGE 2K03 - Selected Topics in Health and Society
- HLTHAGE 2L03 - Drugs, Sex and Alcohol: Society and its Addictions
- HLTHAGE 3YY3 - Indigenous Community Health and Wellbeing
- HISTORY 2A03 - Modern Middle Eastern Societies
- HISTORY 2CC3 - The Medieval World 400-1050
- HISTORY 2CS3 - Caribbean Slavery in the Atlantic World
- HISTORY 2DD3 - The Medieval World 1050-1400
- HISTORY 2DF3 - Art and Revolutions in France, 1789-1914
- HISTORY 2EE3 - Science and Technology in World History
- HISTORY 2EN3 - Caribbean History
- HISTORY 2G03 - Modern Latin America Since 1820
- HISTORY 2GR3 - A History of Monsters
- HISTORY 2GW3 - A History of Global War
- HISTORY 2H03 - Tudor and Stuart Britain, 1485-1714
- HISTORY 2HH3 - Pirates, Pilgrims and Slaves in the Mediterranean, 1450-1750
- HISTORY 2II3 - Modern Germany
- HISTORY 2IS3 - Impeached! Scandal and Intrigue in American Political and Social History
- HISTORY 2J03 - Africa up to 1800
- HISTORY 2JJ3 - Africa since 1800
- HISTORY 2KK3 - History of Capitalism
- HISTORY 2MC3 - Modern China
- HISTORY 2Q03 - Imperial Russia
- HISTORY 2QQ3 - The Soviet Union
- HISTORY 2R03 - U.S. History to the Civil War
- HISTORY 2RR3 - U.S. History Since the Civil War
- HISTORY 2SH3 - Canadian Sport History
- HISTORY 2SS3 - Liberty, Empire and Industry: Britain, 1688-1867
- HISTORY 2T03 - Survey of Canadian History, Beginnings to 1885
- HISTORY 2TT3 - Survey of Canadian History, 1885 to the Present
- HISTORY 2UV3 - American Foreign Relations since 1898
- HISTORY 2V03 - Re-Making History
- HISTORY 3CG3 - Canadians in a Global Age, 1914 to the Present

- HISTORY 3CH3 - Catastrophic History: Natural & Technological Disasters
  - HISTORY 3CW3 - Canada in a World of Empires, 1492-1919
  - HISTORY 3DD3 - Jews and Jesus
  - HISTORY 3DF3 - Art and Politics in Second Empire France
  - HISTORY 3EC3 - Chinese Intellectual Traditions
  - HISTORY 3FF3 - Nazi Germany
  - HISTORY 3GN3 - Moments in Twentieth Century History Through the Graphic Novel
  - HISTORY 3H03 - Italian Renaissance, 1300-1600
  - HISTORY 3I03 - The International Relations of the European Powers, 1870-1945
  - HISTORY 3J03 - The United States in the 1960s
  - HISTORY 3KK3 - The Vietnam War
  - HISTORY 3N03 - Poverty, Privilege and Protest in Canadian History
  - HISTORY 3RU3 - Early Modern Russia
  - HISTORY 3UA3 - The History of the Future
  - HISTORY 3WW3 - Women in Canada and the U.S. from 1920
  - HISTORY 3W03 - Women in Canada and the U.S. to 1920
  - HISTORY 3XX3 - Human Rights in History
  - HISTORY 3YY3 - Britain and the First World War
  - HISTORY 3ZZ3 - Judaism in the Modern World
  - HUMAN 2DH3 - Introduction to Digital Humanities
  - HUMAN 3CL3 - Community Leadership at McMaster
  - HTHSCI 2DS3 - Global Health and the Complexities of Disease
  - HTHSCI 2T03 - Sex, Gender, & Health
  - HTHSCI 3I03 - Introductory Immunology
  - INDIGST 2BB3 - Contemporary Indigenous Knowledge and Societies
  - INDIGST 2F03 - Residential Schools in Canada: History and Impact
  - ITALIAN 3X03 - Italy Today Through Film (Taught in English)
  - LABRST 2H03 - Sports, Work And Labour
  - LABRST 2J03 - Work and Racism
  - LABRST 2M03 - Pop Culture, Media and Work
  - LINGUIST 2E03 - The Nature of Texts: From Slang to Formal Discourse
  - LINGUIST 2FL3 - Introduction to Forensic Linguistics
  - LINGUIST 2S03 - Language and Society
  - LINGUIST 3TT3 - Perspectives on Translation
  - MUSIC 2A03 - Music of the World's Cultures
  - MUSIC 2F03 - Music for Film and Television
  - MUSIC 2I13 - Popular Music in North America and the United Kingdom: Post-World War II
  - MUSIC 2MT3 - Introduction to the Practice of Music Therapy
  - MUSIC 2MU3 - Introduction to Music Therapy Research
  - MUSIC 2TT3 - Broadway and the Popular Song
  - MUSIC 2U03 - Jazz
  - PEACEST 2A03 - Conflict Transformation: Theory and Practice
  - PEACEST 2C03 - Peace and Popular Culture
  - PEACEST 2GW3 - A History of Global War
  - PEACEST 2LS3 - Language and Society
  - PEACEST 3B03 - Peace-Building and Health Initiatives
  - PHILOS 2B03 - Introductory Logic
  - PHILOS 2CT3 - Critical Thinking
  - PHILOS 2D03 - Bioethics
  - PHILOS 2E03 - Classical Chinese Philosophy
  - PHILOS 2F03 - Philosophical Psychology
  - PHILOS 2G03 - Social and Political Issues
  - PHILOS 2H03 - Aesthetics
  - PHILOS 2N03 - Business Ethics
  - PHILOS 2P03 - Ancient Greek Philosophy
  - PHILOS 2S03 - History of Political Philosophy
  - PHILOS 2TT3 - Ethical Issues in Communication
  - PHILOS 2X03 - Early Modern Philosophy I
  - PHILOS 2XX3 - Early Modern Philosophy II
  - PHILOS 2YY3 - Ethics
  - POLSCI 3LA3 - Religion and Politics
  - RUSSIAN 2G03 - Masterpieces of Russian Literature in Film and TV Series (Taught in English)
  - RUSSIAN 2H03 - Soviet Propaganda in Films and Other Mass Media (Taught in English)
  - SCAR 2FF3 - Mediterranean Encounters 1500-1800
  - SCAR 3AR3 - Culture and Religion
  - SCAR 3BE3 - Buddhist Ethics
  - SCAR 3BW3 - Women in the Biblical Tradition
  - SCAR 3C03 - Islam in the Modern World
  - SCAR 3CC3 - Religion and Politics
  - SCAR 3DD3 - Jews and Jesus
  - SCAR 3E03 - Japanese Film and Religion
  - SCAR 3EE3 - Sacred Journeys
  - SCAR 3EP3 - Jewish Ethics and Politics
  - SCAR 3FF3 - Gender and Religion
  - SCAR 3JJ3 - Jesus, Justice and Contemporary Culture
  - SCAR 3LL3 - Religion and Human Nature
  - SCAR 3PA3 - The Birth of Christianity
  - SCAR 3R03 - Death and the Afterlife in Early Judaism and Christianity
  - SCAR 3RB3 - Ethnicity, Race, and the Bible
  - SCAR 3RL3 - Religion and Law
  - SCAR 3SA6 A/B - Introduction to Sanskrit Grammar
  - SCAR 3U03 - The Buddhist Tradition in India
  - SCAR 3X03 - Mysticism
  - SCAR 3Y03 - Love
  - SCAR 3ZZ3 - Judaism in the Modern World
  - SOCSCI 2CC3 - Children and Family in Canada
  - SOCSCI 2O03 - Canadian Children
  - SOCSCI 2P03 - Canadian Adolescents
  - THTRFLM 2CP3 - Culture and Performance
  - THTRFLM 2FA3 - Film Analysis
  - THTRFLM 2MM3 - Movies and Me
  - THTRFLM 3AA3 - Modernist Drama and Theatre in Europe
  - THTRFLM 3DD3 - Contemporary Canadian Drama and Theatre
  - THTRFLM 3FF3 - Early Cinema History
  - THTRFLM 3L03 - Cinema History from WWII
  - THTRFLM 3VS3 - Visual Storytelling
  - WOMENST 2AA3 - Introduction to Feminist Thought
  - WOMENST 2B03 - Women in the Biblical Tradition
  - WOMENST 2BB3 - Images of the Divine Feminine
  - WOMENST 3FF3 - Gender and Religion
- UPPER-LEVEL COURSES AVAILABLE TO STUDENTS REGISTERED IN LEVEL III OR ABOVE IN ANY PROGRAM**
- ANTHROP 3HI3 - Medical Anthropology
  - ART 3J03 - Concentrated Study - Collaborative Community Projects
  - ARTHIST 3B03 - Aspects of Canadian Art
  - ARTSSCI 3GJ3 - Global Justice Inquiry
  - BIOLOGY 3HD3 - Human Disasters
  - HLTHAGE 3E03 - Ethical Issues in Health and Aging
  - HLTHAGE 3R03 - Health Inequalities
  - HTHSCI 3AH3 - Indigenous Health
  - HTHSCI 3DD6 A/B - Engaging the City: An Introduction to Community-Based Research in Hamilton
  - HTHSCI 3FC3 - Science of Fictional Characters
  - HTHSCI 3HL3 - Health Law: Current and Emerging Issues
  - HTHSCI 3K03 - Introductory Virology
  - HTHSCI 3L03 - Introduction to Bioethics
  - HTHSCI 3QA3 - Qualitative Research Methods in Health



- HTHSCI 3RS3 - Exploring the Foundations of Rehabilitation Sciences
- HTHSCI 3S03 - Communication Skills
- HTHSCI 3T03 - Inquiry into Work, Self and Purpose
- HTHSCI 3U03 - Medical Genetics
- HTHSCI 4AC3 - Advanced Communication Skills
- HTHSCI 4BB3 - Neuroimmunology
- HTHSCI 4DM3 - Demystifying Medicine
- HTHSCI 4II3 - Advanced Concepts in Immunology
- HTHSCI 4J03 - Immunological Principles In Practice
- HTHSCI 4LD3 - Global Health Governance, Law and Politics
- HTHSCI 4M03 - Advanced Concepts in Health Psychology
- HTHSCI 4O03 - Principles of Virus Pathogenesis
- HTHSCI 4MS3 - The Social Lives of Molecules
- HTHSCI 4PA3 - Global Health Innovation
- HTHSCI 4TE3 - The Teaching Hospital
- HTHSCI 4Y03 - Science, Culture and Identity
- HTHSCI 4XX3 - Professional Transitions
- HTHSCI 4YY3 - Health Forum Practicum
- HTHSCI 4ZZ3 - Global Health Advocacy
- HUMAN 3LM3 - Foundations of Leadership
- POLSCI 3CL3 - Constitutional and Public Law in Canada
- POLSCI 3EE3 - International Relations: North-South
- POLSCI 3GC3 - Global Climate Change
- POLSCI 3GG3 - Federalism
- POLSCI 3I03 - Topics in American Politics
- POLSCI 3JJ3 - Provincial Politics in Canada
- POLSCI 3K03 - Migration and Citizenship: Canadian, Comparative and Global Perspectives
- POLSCI 3KK3 - Genocide: Sociological and Political Perspectives
- POLSCI 3LL3 - Development and Public Policy
- POLSCI 3Q03 - The Causes of War
- POLSCI 3RF3 - The Charter of Rights and Freedoms
- POLSCI 3V03 - Gender and Politics
- POLSCI 3Y03 - Democratization and Human Rights
- POLSCI 3Z03 - Canadian Public Sector Management
- SCAR 3S03 - The East Asian Religious Tradition
- THTRFLM 3PC3 - Performance and Community Engagement

# Admission Requirements

## 1. Admission from Secondary Schools

All Level I programs have enrollment limits and admission is by selection.

### A. Ontario

#### GENERAL REQUIREMENTS (FOR ALL LEVEL I PROGRAMS)

To be considered for admission, you must satisfy the general requirements of the university and the specific subject requirements for the program to which you applied plus any specified supplementary application/on-line assessment/audition/portfolio required by some programs at the university.

If you are an applicant from an Ontario secondary school you must meet the following minimum requirements:

1. An Ontario Secondary School Diploma (OSSD) with acceptable standing;  
AND
2. An overall average in completed Grade 12 U and/or M courses which meets or exceeds the minimum set by the specific program to which you applied;  
AND
3. Satisfactory completion of six Grade 12 U and/or M courses including the subject requirements for your chosen program.

**Note:** Co-op courses are not included in any admission or final admission

average calculations. Music External (Conservatory) 4M is acceptable as a credit and the mark obtained can be included in the calculation of your admission average. Alternatively, you may submit certificates from a recognized conservatory of music in Grade 8 practical and Grade 2 theory to your secondary school for one Grade 12M credit.

#### ADMISSION AVERAGE RANGE

The Admission Average Range used to determine eligibility for consideration is calculated using the best six Grade 12 U and/or M grades, including those for all of the required subjects. **McMaster calculates averages to two decimal points and we do not round up averages. Please Note:** Grade 12 Co-op courses are not eligible to be used as one or more of the required prerequisite courses used to calculate admissibility and/or the admission average. See *Early Conditional Admission* and *Final Admission* below for specific details. Estimated admission average ranges for our Level I Programs can be found at: <http://future.mcmaster.ca> and click on *Admission Requirements*.

#### EARLY CONDITIONAL ADMISSION

Early **conditional** admission may be granted annually to qualified applicants with strong academic standing. Early **conditional** admission is based on:

1. six appropriate midterm/interim Grade 12 U and/or M grades, OR
2. at least three final Grade 12 U and/or M grades PLUS enrollment in the appropriate additional three Grade 12 U and/or M courses.
3. In some cases, Grade 11 marks may be considered in extending early conditional offers of admission.

If you do not receive an offer of admission in March, you will automatically be reassessed for admission until May 15 after additional Grade 12 U and/or M grades are received from your secondary school. Due to enrollment limits, McMaster may not be able to consider additional grade data for admission purposes received after May 15.

**The University reserves the right to withdraw a conditional offer of admission** due to any of the following:

1. You do not meet the minimum final average prescribed for your chosen program; OR
2. You do not receive an OSSD; OR
3. You do not complete six Grade 12 U and/or M courses including all required subjects; OR
4. You do not successfully accept your offer of admission at the Ontario Universities' Application Centre (OUAC) by the response deadline indicated on your offer letter; OR
5. You do not meet any other condition stipulated on your conditional offer of admission; OR
6. You attend a post-secondary institution prior to beginning your studies at McMaster; OR
7. Your offer of admission to the university was secured through fraudulent means. **Please note the University's statements regarding application fraud at the end of the Admission section of this calendar.**

#### MINIMUM FINAL AVERAGE

If you are a secondary school applicant who receives a conditional offer of admission, you will be required to achieve an overall average calculated to two decimal points (on six (6) final grades including all required courses for your desired program) as indicated on your offer of conditional admission.

If your final average falls below this level (or its equivalent), your offer of admission will be rescinded/revoked and your registration will be cancelled.

**The required minimum final average will vary from year to year and by program. This average will be stated clearly on the offer of conditional admission.**

### SUPPLEMENTARY APPLICATION FORMS AND EXTENUATING CIRCUMSTANCES SITUATIONS

Certain Level I programs including Arts & Science, Bachelor of Health Sciences (Honours), Integrated Business and Humanities (IBH), Integrated Biomedical Engineering & Health Sciences (iBioMed) (regular and co-op), Engineering 1 (regular and co-op), Honours Integrated Science, and Nursing have **mandatory online supplementary application forms or online assessments** which must be completed by specific deadline dates. Applicants to Nursing must complete a **mandatory on-line assessment (CASPer™)** on the dates specified each year. See *Application and Documentation Deadlines*, for specific deadline dates. Applicants to Engineering 1 (regular and co-op) and Integrated Biomedical Engineering and Health Sciences (regular and co-op) must complete a **mandatory on-line assessment (2016 © Kira Talent)** by February 1 each year. See *Application and Documentation Deadlines*, for specific deadline dates. Applicants to Integrated Business and Humanities must complete a **mandatory on-line assessment (2016 © Kira Talent) and submit a personal resume** by February 1 each year. Applicants to Business 1 may elect to complete an optional supplemental form prior to February 1 to let the program know more about themselves.

McMaster does not normally use **optional** supplementary application forms. Applicants will be notified if the program they applied to decides to use an optional supplementary application form.

Applicants with special circumstances whose average falls slightly below the required admission average range may forward a letter to the Office of the Registrar, **Admissions** explaining the nature of their extenuating circumstances.

In some cases, the university may request letters of recommendation, personal history or other additional information to aid in the admission process.

#### OFFERS OF ADMISSION FOR SECONDARY SCHOOL GRADUATES

Applicants may be eligible for final admission if they have fulfilled the requirements for their OSSD and have final grades in six Grade 12 U and/or M courses. If you fulfill the requirements for your chosen program by the end of February, you may be granted an offer of **final admission**.

**The University reserves the right to withdraw an offer of final admission** due to any of the following:

1. You do not successfully accept your offer of admission at the Ontario Universities' Application Centre (OUAC) by the response deadline indicated on your offer letter; OR
2. You attend a post-secondary institution prior to beginning your studies at McMaster.
3. Your offer of admission to the university was secured through fraudulent means. **Please note the University's statements regarding application fraud at the end of the Admission section of this calendar.**

#### DEFERRAL OF ADMISSION

McMaster does not normally grant a deferral of an offer of admission unless special extenuating circumstances exist. Each case is evaluated on its own merits.

All requests for deferral of both admission and scholarship should be made in writing to:

##### Office of the Registrar, Admissions

McMaster University  
Gilmour Hall 109, 1280 Main St. W.  
Hamilton, Ontario L8S 4L8

by September 1 of the application year, outlining the reasons for the request. If a deferral is granted, it is conditional upon the student not attending a secondary or post-secondary institution during the deferral period.

#### SUBJECT REQUIREMENTS FOR SPECIFIC LEVEL I PROGRAMS

McMaster University offers the following Level I programs:

Arts & Science I, Automation Engineering Technology 1 (B.Tech.), Automotive and Vehicle Engineering Technology I (B.Tech.), Biotechnology I (B.Tech.),

Business I, Chemical & Physical Sciences Gateway, Computer Science I (regular and co-op), Economics I, Engineering I (regular and co-op), Environmental and Earth Sciences Gateway, Honours Health and Society I, Health Sciences I, Humanities I, Honours Integrated Science (Level I), Honours Kinesiology (Level I), Integrated Biomedical Engineering & Health Sciences I (regular and co-op), Integrated Business & Humanities I, Life Sciences Gateway, Mathematics and Statistics Gateway, Medical Radiation Sciences (Level I), Midwifery I, Music I, Nursing I, Social Sciences I, and Studio Art I.

#### ARTS & SCIENCE I

You are required to complete a **mandatory Supplementary Application Form** which must be submitted electronically via the web at <https://artsci.mcmaster.ca/prospective-students/supplementary-application/>. The information provided enters into the selection process. A minimum overall average of 88% or higher is required for application consideration.

The following are the minimum Grade 12 U and M requirements:

1. English U
2. One of Advanced Functions U or Calculus and Vectors U (Calculus and Vectors U is strongly recommended)
3. Completion of four additional U or M courses, to total six courses, of which two must be at the U level

#### AUTOMATION ENGINEERING TECHNOLOGY I CO-OP (B.TECH.)

#### AUTOMOTIVE AND VEHICLE ENGINEERING TECHNOLOGY I CO-OP (B.TECH.)

#### BIOTECHNOLOGY I CO-OP (B.TECH.)

The following are the minimum Grade 12 U and M requirements:

1. English U
2. Calculus and Vectors U
3. Chemistry U
4. Physics U
5. Completion of two additional U or M courses to total six courses

**Note:** Applicants are also expected to have completed Advanced Functions U.

#### BUSINESS I

The following are the minimum Grade 12 U and M requirements:

1. English U
2. Advanced Functions U
3. Calculus and Vectors U
4. Completion of three additional U or M courses to total six courses

**Note:** Applicants to Business I may elect to complete an optional supplemental form prior to February 1 to let the program know more about themselves.

#### COMPUTER SCIENCE I, COMPUTER SCIENCE I CO-OP

The following are the minimum Grade 12 U and M requirements:

1. English U
2. Calculus and Vectors U
3. Two of: Biology U, Chemistry U, Physics U, Earth and Space U, Computer and Information Science M (or Computer Science U), or Computer Engineering M (or Computer Engineering Technology M)
4. Completion of two additional U or M courses to total six courses

**Note:** Applicants are also expected to have completed Advanced Functions U.

#### ECONOMICS I (Effective September 2019)

The following are the minimum Grade 12 U and M requirements:

1. English U
2. Two of Advanced Functions U, Calculus and Vectors U, and Mathematics of Data Management U
3. Completion of three additional U or M courses to total six courses

**Note:** Applicants without Calculus and Vectors 4U will be required to take an equivalent Calculus course in Level I. Applicants without Data Management U will be required to take an equivalent Stats course in Level I.

#### ENGINEERING I, ENGINEERING I CO-OP

Admission to Engineering 1 (regular and co-op) is by selection. A minimum average range in the high 80s is required for application consideration.

Applicants must complete a **mandatory on-line assessment (2016 © Kira Talent)** by the February 1 deadline as specified each year. See *Application and*

*Documentation Deadlines*, for specific deadline dates.

The following are the minimum Grade 12 U and M requirements:

1. English U
2. Calculus and Vectors U
3. Chemistry U
4. Physics U
5. Completion of two additional U or M courses to total six courses

**Note:** Applicants are also expected to have completed *Advanced Functions U*.

#### ENVIRONMENTAL AND EARTH SCIENCES GATEWAY

The following are the minimum Grade 12 U and M requirements:

1. English U
2. One of Advanced Functions U or Calculus and Vectors U
3. One of Biology U, Chemistry U
4. One of Advanced Functions U, Biology U, Calculus and Vectors U, Chemistry U, Physics U
5. Completion of two additional U or M courses to total six courses

#### HONOURS HEALTH AND SOCIETY I (Effective September 2019)

The following are the minimum Grade 12 U and M requirements:

1. English U
2. Completion of five additional U or M courses to total six courses

#### HONOURS HEALTH SCIENCES I

The selection method is by consideration of academic and a **mandatory on-line Supplementary Application Form (due mid-February) submitted electronically via the web; details at <https://bhsc.mcmaster.ca/>**. A minimum overall average of 90% or higher is required for application consideration. The Supplementary Application must be completed and submitted on-line by the specified deadline date. A review of the mandatory Supplementary Application is a very important component of the admission process. Applicants who do not complete the Supplementary Application will not be considered for admission.

The following are the minimum Grade 12 U and M requirements:

1. English U
2. One of Advanced Functions U, Calculus and Vectors U, or Mathematics of Data Management U
3. Biology U
4. Chemistry U
5. One U or M non-math/non-science course (**Note:** courses in technological education, science or mathematics are not acceptable)
6. Completion of one additional U or M course in any subject area to total six courses

#### HUMANITIES I

The following are the minimum Grade 12 U and M requirements:

1. English U
2. Completion of additional U or M courses to total six courses

The Faculty of Humanities strongly recommends that you select at least one Grade 12 U or M course from Humanities subjects (Art, Drama, English, French, Français, other languages, History and Music). **Note:** In addition to Requirement 1 above, Biology U is strongly recommended for students planning to enter a Cognitive Science of Language program.

#### HONOURS INTEGRATED SCIENCE (Level I)

Candidates are required to complete a mandatory **Supplementary Application Form** which must be submitted electronically via the web at <http://www.science.mcmaster.ca/isci/prospective-students>. The information provided in the supplementary application enters into the selection process. Only applicants with high academic standing will be selected. Successful candidates must present a minimum average in the high 80's.

The following are the minimum Grade 12 U and M requirements:

1. English U
2. Advanced Functions U
3. Calculus and Vectors U
4. Two of Biology U, Chemistry U, Physics U

5. Completion of one additional U or M course to total six courses

#### HONOURS KINESIOLOGY (Level I)

The following are the minimum Grade 12 U and M requirements:

1. English U
2. Calculus and Vectors U
3. Biology U
4. Completion of three additional Grade 12 U or M courses to total six courses. Introductory Kinesiology U is strongly recommended.

#### INTEGRATED BIOMEDICAL ENGINEERING AND HEALTH SCIENCES (IBEHS) I / INTEGRATED BIOMEDICAL ENGINEERING AND HEALTH SCIENCES (IBEHS) I CO-OP

Admission to Integrated Biomedical Engineering and Health Sciences 1 (regular and co-op) is by selection. A minimum overall average of 90% or higher is required for application consideration. Applicants must complete a **mandatory on-line assessment (2016 © Kira Talent)** by February 1 as specified each year. See *Application and Documentation Deadlines*, for specific deadline dates. The following are the minimum Grade 12 U and M requirements:

1. English U
2. Calculus and Vectors U
3. Biology U
4. Chemistry U
5. Physics U
6. Completion of one additional U or M course to total six courses

#### INTEGRATED BUSINESS AND HUMANITIES I

Admission to Integrated Business and Humanities 1 is by selection. A minimum overall average of 88% or higher is required for application consideration. Applicants must complete a **mandatory on-line assessment (2016 © Kira Talent)** by February 1 each year. The following are the Minimum Grade 12 U and M requirements:

1. English U
2. Calculus and Vectors U
3. Data Management U
4. Completion of three additional U and M courses to total six courses.

*Note:* Applicants are also expected to have completed *Advanced Functions U*.

#### LIFE SCIENCES GATEWAY

The following are the minimum Grade 12 U and M requirements:

1. English U
2. Advanced Functions U or Calculus and Vectors U
3. Biology U
4. One of Advanced Functions U, Calculus and Vectors U, Chemistry U or Physics U
5. Completion of two additional U or M courses to total six courses

#### MATHEMATICS AND STATISTICS GATEWAY

The following are the minimum Grade 12 U and M requirements:

1. English U
2. Advanced Functions U
3. Calculus and Vectors U
4. Completion of three additional U or M courses to total six courses

#### MEDICAL RADIATION SCIENCES (Level I)

Students considering the Medical Radiation Sciences I program should refer to the *Regulations for License to Practice and Functional Demands* in the Medical Radiation Sciences program in the *Faculty of Science* section of this calendar.

The following are the minimum Grade 12 U and M requirements:

1. English U
2. Advanced Functions U
3. Calculus and Vectors U
4. Biology U
5. Chemistry U
6. Completion of one additional U or M course to total six courses

#### MIDWIFERY I

Places in the Midwifery program are very limited and the admission process

is highly competitive. Admission to the Midwifery Education Program is by selection. **Application to the Midwifery program must be completed by February 1.** In recent years an average range in the mid to high 80's has been required to move forward to the admissions interview stage. Interviews are by-invitation only.

The following are the minimum Grade 12 U and M requirements:

1. English U
2. Biology U
3. Chemistry U
4. Completion of additional U or M courses to total six courses
5. To be eligible to apply students must obtain a minimum grade of 75% in each of the three required courses listed in points 1, 2, and 3 above AND an overall average, including the required courses, that is acceptable to the Program.
6. Current (Ontario) secondary students may apply if one or more of the three (3) mandatory prerequisite courses are in progress at the time of application; however, the grade 11 prerequisite(s) in the same subjects must be completed at the time of application so that a preliminary assessment of the subject area(s) can be made. Admission is based on in-progress secondary school subjects for current secondary students only if the grade 11 prerequisite in that subject area has been completed with a minimum grade of at least 75%.

#### MUSIC I

The academic requirements are the same as for Humanities I. In addition, applicants to Music I or to the B.A. in Music must successfully complete a **music audition/examination** consisting of:

1. Demonstration of technique (a level equivalent to at least honours standing in Grade 8 of the Royal Conservatory of Music)
2. Performance (approximately 20 minutes' duration) of two or three varied pieces of your choice (approximately Grade 8 honours level), including at least one from the 20th century
3. Ear test appropriate to the Grade 8 performance level
4. Written examination on rudiments of theory (Grade 2 level)
5. Interview

For comprehensive details, visit <https://sota.humanities.mcmaster.ca/undergraduate-programs/music/>

Auditions take place between February and April. You must make arrangements with the School of the Arts for your audition at [sota@mcmaster.ca](mailto:sota@mcmaster.ca).

#### NURSING I

##### **NURSING CONSORTIUM (CONESTOGA)**

##### **NURSING CONSORTIUM (MOHAWK)**

Students interested in a McMaster (B.Sc.N.) Nursing degree have **three location options: McMaster University, Mohawk College or Conestoga College.** Each of the three sites offers the four-year program which uses the problem-based learning and small group tutorial educational model. For more information about the Mohawk and Conestoga College sites refer to the B.Sc.N. (A) Stream the School of Nursing, *Faculty of Health Sciences* portion of the Calendar. For full application instructions see [http://fhs.mcmaster.ca/nursing/education\\_undergrad\\_bscn.html](http://fhs.mcmaster.ca/nursing/education_undergrad_bscn.html) as well as the *Application Procedures* section of this Calendar.

Admission to Nursing 1 at all sites is by selection. A minimum overall average of 85% or higher is normally required for application consideration. Additionally, applicants to Nursing must complete a **mandatory on-line assessment (CASPer™)** on the dates in February as specified each year.

The following are the minimum Grade 12 U and M requirements:

1. English U
2. One of Advanced Functions U, Calculus and Vectors U, Mathematics of Data Management U
3. Biology U
4. Chemistry U
5. Completion of two additional U or M courses to total six courses

The selection method is by academic qualifications (minimum overall average range of 85% or higher is required for consideration) and a **mandatory, online, 90-minute computer-based assessment of personal characteristics called CASPer™.** Applicants who do not complete the CASPer™ test will not be considered for admission.

**Health requirements for admission to Nursing 1:** During the registration process, you must file with the University information pertaining to your state of health and immunization. Detailed instructions will be provided after acceptance into the program.

Students considering the Nursing 1 program should refer to the document Requisite Skills and Abilities for nursing practice in Ontario at the College of Nurses of Ontario [www.cno.org](http://www.cno.org).

#### CHEMICAL & PHYSICAL SCIENCES GATEWAY

The following are the minimum Grade 12 U and M requirements:

1. English U
2. Advanced Functions U
3. Calculus and Vectors U
4. Chemistry U
5. Physics U
6. Completion of one additional U or M courses to total six courses

#### SOCIAL SCIENCES I

The following are the minimum Grade 12 U and M requirements:

1. English U
  2. Completion of additional U or M courses to total six courses
- Advanced Functions U or Calculus and Vectors U is strongly recommended for students planning to enter programs in Economics or Psychology, Neuroscience and Behaviour. Biology U is recommended for students planning to enter a program in Psychology, Neuroscience and Behaviour.

#### STUDIO ART I

The following are the minimum Grade 12 U and M requirements:

1. English U
  2. Completion of additional U or M courses to total six courses
- McMaster offers Studio Art as a direct-entry Level I program leading to a Bachelor of Fine Arts (BFA) degree. Admission to this program is by selection and requires a **mandatory portfolio interview** with the School of the Arts [http://sota.mcmaster.ca/undergraduate/studio\\_art.html](http://sota.mcmaster.ca/undergraduate/studio_art.html).

You must make arrangements for your portfolio interview with the School of the Arts at [sota@mcmaster.ca](mailto:sota@mcmaster.ca).

## **B. Other Canadian Provinces and Territories**

### **SUBJECT REQUIREMENTS FOR LEVEL I PROGRAMS**

In addition to the minimum requirements below, satisfactory completion of the specified subject requirements for the program to which you applied is also required. Please refer to our website <http://future.mcmaster.ca> for more details.

Averages used to determine eligibility for admission and residence are calculated to two decimal points based on the minimum provincial requirements, including the prerequisite courses for the program to which you have applied.

### **EARLY CONDITIONAL ADMISSION**

Applications are reviewed for conditional admission as soon as all required documents, with sufficient course and grade data, are received by the Office of the Registrar, Admissions. All Canadian applicants should ensure that their **schools** (vs. the Provincial Ministry for those provinces where transcripts are issued by the Ministry), **forward interim/midyear school grade reports showing marks for all courses taken during the Grade 11 and 12 years as well as all course registrations for the current academic year,** as soon as they are available. The terms and conditions of the offer of admission are stated clearly on the offer letter. The Provincial Ministry final transcript confirming final grades and graduation status will be required at the end of the school year. **Students from all other provinces where transcripts**



are issued by their high schools should have their schools forward the appropriate interim mid-year transcripts and final transcripts confirming graduation.

Applicants are required to meet the following minimum requirements including the specified subject requirements (not listed below) for their chosen program. For a complete listing of our specific course requirements by province and Level I program you may refer to our web site: <http://future.mcmaster.ca/admissions/admission-requirements/>.

#### **ALBERTA, NORTHWEST TERRITORIES AND NUNAVUT**

Grade 12 high school diploma with five acceptable academic courses numbered 30 or 31, including English Language Arts 30-1.

#### **BRITISH COLUMBIA AND YUKON**

Grade 12 high school diploma with four acceptable Grade 12 academic courses (or equivalent), including English 12 or English 12 First Peoples.

#### **MANITOBA**

Grade 12 high school diploma with five acceptable Grade 12 academic courses numbered 40A or 40S, including one of English 40S or Anglais 40S.

#### **NEW BRUNSWICK**

Grade 12 high school diploma with five acceptable Grade 12 academic courses numbered 120, 121, or 122, including English 121 or 122.

#### **NEWFOUNDLAND AND LABRADOR**

Grade 12 high school diploma with eleven acceptable Grade 12 academic credits at the 3000 level, including English 3201.

#### **NOVA SCOTIA**

Grade 12 high school diploma with five acceptable Grade 12 academic courses (university preparatory Academic or Advanced), including English 12.

#### **PRINCE EDWARD ISLAND**

Grade 12 high school diploma with five acceptable Grade 12 academic courses numbered 611 or 621, including English 621.

#### **QUÉBEC**

Grade 12 Diploma with six acceptable Grade 12 academic courses in the 600 series including English

OR

Year I CEGEP with twelve appropriate academic courses, including two English/Anglais 603 or two English 604 courses. Students completing Year II or III CEGEP who will or have achieved the DEC may be considered for advanced credit in their chosen program. The *côte de rendement* (R Score) is used for admission consideration.

#### **SASKATCHEWAN**

Grade 12 high school diploma with five acceptable Grade 12 academic courses numbered 30, including both English A30 and B30.

## **C. International Baccalaureate Diploma**

Applicants who have completed or will be completing the International Baccalaureate Diploma will be considered for admission to Level I, provided the completed diploma program includes the subject requirements of the program desired. Advanced credit of up to 18 units of study will be considered for Higher Level (HL) courses based on the achievement of final IB Diploma grades of 5 or greater.

For more information please refer to <http://future.mcmaster.ca/admission/admission-requirements/>.

## **D. Advanced Placement (A.P.) Courses/Examinations**

Applicants who have completed AP courses will be considered for admission to a Level I program. Applicants who have completed A.P. exams through the College Board in acceptable courses and achieve a minimum grade of 4 will be considered for up to 18 units of advanced credit. For all students who have completed AP examinations through the College Board, an official copy of the final *Advanced Placement Examination Results*

*Report* from the College Board is required as part of the admission and advanced credit evaluation process. For more information please refer to <https://future.mcmaster.ca/admission/requirements/>.

## **E. Other International Secondary School Qualifications**

See the admission requirements for applicants from the more common international educational systems below. For all other education systems from around the world, please visit our website for the specific minimum requirements for your country's educational system. Required subjects would be the same as required for Ontario and other Canadian students: <https://future.mcmaster.ca/admission/requirements/>.

**Applicants must arrange for official high school transcripts to be sent to McMaster University directly from their high school well in advance of the session to which they are applying.** The equivalent of first-class standing will be required for admission consideration. Documents in a language other than English should be accompanied by notarized English translations. You will be considered for admission on an individual basis and you will not be allowed to attend the University until we have received official evidence that all conditions attached to your Offer of Admission have been fulfilled.

McMaster University may require students presenting documents that will form the basis of their admission to the university, from schools outside of North America, to have those documents authenticated via WES Canada <http://www.wes.org/ca/index.asp>. Students will be supplied with specific information in their official Offer of Admission letter.

#### **AMERICAN HIGH SCHOOL CURRICULUM**

American Curriculum High School applications are reviewed for admission based on McMaster's own calculation of the admission average. McMaster's calculations of the admission averages may vary from those used at other institutions.

Applicants from an American high school curriculum must satisfactorily complete a secondary school diploma with a minimum overall average of at least 80% in a Grade 12 academic program from an accredited American high school/International American Curriculum high school AND must present all prerequisite courses for their chosen program(s).

Admission is competitive and many programs will require grades/averages well above the minimum 80% for admission consideration. For complete requirements for American Curriculum applicants, please visit our website: <https://future.mcmaster.ca/admission/requirements/>.

#### **GENERAL REQUIREMENTS**

High school Diploma from an accredited school with prerequisite subjects including English completed at the AP or Senior Grade 12 academic level. Students may be required to satisfy our English language proficiency requirements: <https://future.mcmaster.ca/admission/language/> McMaster will consider a minimum of five Senior Grade 12 academic courses including all prerequisite subjects for the applicant's selected program(s).

**Students applying to programs in Engineering, Science, Health Sciences, Economics and Business programming that have mandatory Science and/or Mathematics prerequisites should note the following requirements for each subject:**

- **Biology** - 2 years/ 2 full credits (Junior and Senior) or AP Biology (or equivalent)
- **Physics** - 2 years/2 full credits (Junior and Senior) or AP Physics (or equivalent)
- **Chemistry** - 2 years/ 2 full credits (Junior and Senior) or AP Chemistry (or equivalent)
- **Calculus** - 4 years of high school Mathematics including Pre-Calculus and AP Calculus or equivalent.

McMaster University will accept the results of an equivalent **AP challenge examination** in lieu of ONE of the science/math prerequisites for your chosen

subject if your school does not offer the subject. A minimum score of 4 or 5 will be required for AP challenge exams.

Students who are presenting AP courses that are prerequisite to their selected program(s) will be required to complete and submit the AP Examination(s) via the College Board and minimum grades of at least 3 will be required from the examinations to meet admission conditions.

**SAT II Subject Test** with a score of at least 670 or higher may be considered on a case-by-case basis in lieu of ONE of the science/math prerequisites for your chosen program.

**For claimed equivalencies**, detailed syllabi including all topics covered, total hours and textbooks used are required for our evaluation and should be submitted alongside official high school transcripts/reports.

Students in continental US high schools must supply results from either the **SAT** or **ACT** testing. The SAT Essay and the ACT Writing Test are optional for McMaster. All other applicants in American Style Curriculum schools outside of the US are also encouraged to submit the results of SAT/ACT tests as admission to all of McMaster's undergraduate programs is highly competitive and preference may be given to applicants presenting excellent scores. Students in **China** and who are completing an International hybrid curriculum (National curriculum concurrent with an AP/American style curriculum are required to supply results from either SAT or ACT testing:

- **SAT** - minimum overall score of 1200 or greater (Reading/Math sections only) with minimum scores of 600 in each section. (Institutional Code for SAT/AP 0936)
- **ACT** - minimum composite score of 27 or greater (Institutional Code 5326)

High scores in external tests such as SAT, SATII Subject Tests, ACT and AP may help your applications to be more competitive for your selected program.

#### **GENERAL CERTIFICATE OF EDUCATION (G.C.E.)**

Applicants from the General Certificate of Education system require a minimum of five G.C.E. subjects **at least** two of which must be at the Advanced A2 Level with the balance of the subjects at the IGCSE/GSCE (Ordinary Level). Advanced Level subjects must be appropriate to your chosen program.

**Note:** Many programs may require a minimum of **three** Advanced A2 Level courses.

For program specific requirements please refer to <https://future.mcmaster.ca/admission/requirements/>.

#### **OTHER COUNTRIES OR EDUCATIONAL SYSTEMS**

For admission requirements from other education systems, please visit <https://future.mcmaster.ca/admission/requirements/> to view our country-specific Admissions Requirements.

## **F. Home Schooled Applicants**

Home schooled applicants who in addition to their home schooling experience have completed six Grade 12 U and M courses at an Ontario Ministry of Education inspected and approved school, or equivalent courses from another recognized academic jurisdiction may be considered for their program of choice providing they present the appropriate prerequisite courses on official transcripts from accredited schools and meet the required admission average. McMaster University is the sole arbiter of what is considered as equivalent level education and equivalent courses.

All other home schooled applicants may apply for admission consideration to Humanities I or Social Sciences I by presenting the following:

1. List of home school credentials including but not limited to structured curriculum completed through ACE (Accelerated Christian Education Program) or other such programs.
2. Portfolio of written work; normally, evidence of appropriate intellectual maturity is expected.
3. Results of standardized tests such as SAT, ACT. Applicants must also present results from the Critical Reading and Mathematics components of **SAT I** with a minimum combined score of 1200 (minimum 580 Critical

Reading, 520 Mathematics) OR a minimum combined score for the **Redesigned SAT** result of at least 1200 as a combined score with a minimum of 600 in each section OR from **ACT** with a minimum composite score of 27.

Interested applicants should contact the Office of the Registrar for further information regarding admission criteria.

## **G. Prior-Year Secondary School Graduates**

Applicants who have previously completed a secondary school diploma and have not attended a post-secondary institution since graduation, may be considered for admission by presenting satisfactory standing in six required Grade 12 U and M courses (or equivalent) as identified in the *Subject Requirements For Specific Level I Programs* section in this calendar. If you have attended a post-secondary institution after high school graduation, you would not be considered as an applicant from secondary school. See *Admission/Transfer From Post-Secondary Institutions* section in this calendar.

## **2. Admission/Transfer from Post-Secondary Institutions**

### **A. From Universities**

Most McMaster programs have enrollment limits and admission is by selection. Possession of the minimum admission requirements does not guarantee admission. Admission will be considered on a case by case basis and is not guaranteed.

When you transfer to McMaster University, you will normally receive credit for courses in which you have obtained at least a C- standing (as per the McMaster grading scale). Assessment of courses for transfer credit is subject to the guidelines of the individual Faculties.

As a transfer student, you must also satisfy the Residence Requirements set out in the General Academic Regulations section of this Calendar. **The University will not accord to you privileges which would not be granted by your own university.**

Grades obtained in courses taken at another university will not be included in McMaster's Grade Point Average, and, therefore, cannot be used to raise your standing.

If you have been required to withdraw from another university and have fulfilled your period of suspension, you may apply for admission. However, you must present a letter of explanation and clarification concerning your past academic performance. You may also be asked to provide academic documentation for proof of further academic achievement which is both current and relevant. For full transfer information see our website: <https://future.mcmaster.ca/admission/transfer-student-information/>.

### **B. From Colleges of Applied Arts and Technology**

Most McMaster programs have enrollment limits and admission is by selection. Possession of the minimum admission requirements does not guarantee admission. Admission will be considered on a case by case basis and is not guaranteed.

See the minimum admission requirements for Level I programs as listed below. You are considered for admission on an individual basis.

For information regarding the amount of available transfer credits when transferring from a College of Applied Arts and Technology please visit <https://future.mcmaster.ca/admission/college-transfer-student-information/>.

### **C. University Graduates Applying for a Second**

## Bachelor's Degree

All programs have enrollment limits and admission is by selection. If you have a first non-Honours degree, you may apply to take an Honours second degree in the same subject area or a second degree in another discipline. Please note the following exceptions: B.Arts Sc.(Arts & Science), B.Com. (Bachelor of Commerce), B.Com. (Honours), B.H.Sc. (Bachelor of Health Sciences (Honours)), B.Sc. (Honours) in Integrated Science (ISCI), Honours B.Sc. Kinesiology, Integrated Biomedical Engineering and Health Sciences, Integrated Business and Humanities cannot be done as second degree programs. Honours Music is only available as a second degree to students whose first degree is not a BA in Music. The requirements are set out in the *General Academic Regulations* section of this Calendar.

**If you wish to enter a Second Bachelor's Degree in a subject area from the Faculty of Science, please note that admission to all limited enrollment programs, with the exception of Medical Radiation Sciences I, may not be possible.** Second Degree applicants to all Science programs, except Medical Radiation Sciences I, are not eligible to apply to or be admitted to any of the other first year Science programs. Second Degree applicants must have already completed all first year requirements for the second year program they wish to apply to, with the exception of Medical Radiation Sciences I. See *Limited enrollment Programs* in the *Faculty of Science* section of this Calendar for a list of programs. Please contact the Office of the Associate Dean of Science (Academic) for further information (see the *Application Procedures* section).

If you are a McMaster graduate or potential graduate, you may be able to use the *McMaster University Returning Student Application* (see the *Application Procedures* section).

## D. Continuing Students

At McMaster, a *Continuing Student* is defined as a graduate from an undergraduate program, who wishes to take more undergraduate courses, either out of general interest or to upgrade or obtain courses required for future applications to graduate studies or other professional programs. To be eligible to take courses as a Continuing Student you will be expected to have an undergraduate university degree and at least a C average, with no failures, in your final year's work (or the equivalent, in the case of a degree taken through part-time studies), and academic records which are satisfactory to the Department and the Office of the Associate Dean of the appropriate Faculty.

\*Please Note: not all courses are available to Continuing students and course prerequisites for selected courses must be met. Also note that admission as a Continuing student does not guarantee registration in courses of interest to the student.

### MCMASTER GRADUATES

If you are a graduate of a McMaster undergraduate degree program and wish to become a Continuing Student, you do not need to apply for admission. Graduates who have not attended courses for more than two years will need to contact the Office of the Registrar prior to attempting to enrol for courses.

### GRADUATES FROM OTHER UNIVERSITIES

As a Continuing Student with a non-McMaster degree, you must apply formally for admission in the first instance. In subsequent sessions, you will only be required to enrol.

Acceptance as a Continuing Student carries no implications with respect to acceptance in the School of Graduate Studies. If you plan to proceed to a graduate degree you should apply directly to the specific department of your program of interest.

## E. From Six Nations Polytechnic

McMaster University, along with four other universities, partnered with Six Nations Polytechnic to offer university courses in the community of Six Nations. The courses offered are eligible for transfer credit at any of the

universities within the consortium. For more information please contact the Indigenous Student Services at 905-525-9140, ext. 27459 or [indigservices@mcmaster.ca](mailto:indigservices@mcmaster.ca).

## F. From Post-Secondary Institutions with Religious Affiliation

Undergraduate general academic studies taken at colleges with religious affiliation that are member institutions of specific accredited associations will be considered for admission and transfer credit on a case by case basis. Applicants from a non-accredited postsecondary institution with religious affiliation will be considered for admission based on completion of a Grade 12 high school diploma.

## 3. Other Categories of Admission

### A. Part-time Admission

Students interested in beginning studies on a part-time basis should review the requirements and information found in the following sections of this Calendar:

- Admission Requirements
- Application Procedures
- General Academic Regulations
- Sessional Dates
- Program descriptions found in the specific Faculty sections

Applicants who wish to pursue undergraduate studies on a part time basis at McMaster must meet one of the admissions criteria outlined in the sections above. If applicants do not meet any of these criteria, they may qualify for *Mature Student Admission* as outlined under the heading *Mature Student Admission* below.

Detailed information can be found on our website: <http://future.mcmaster.ca/admission/process/105pt>.

### B. Mature Students (Admission)

If you do not qualify for admission consideration under one of the above categories, McMaster will assess your eligibility as a mature student. You may be considered for limited admission, provided both of the following conditions are satisfied:

1. You have not attended secondary school or college on a full-time basis for at least two years.
2. You have never attended university.

Applicants admitted as mature students will not be granted transfer credit. Programs in the Faculties of Humanities and Social Sciences have no specific course requirements for mature student admission. The following Level I programs have specific course requirements that mature applicants must present from secondary school, as outlined:

- **Business I:** requires one Grade 12 U Mathematics course (or equivalent).
- **Chemical and Physical Sciences Gateway:** requires satisfactory standing in four Grade 12 U mathematics and science courses (or equivalent) as specified under the heading *Subject Requirements For Specific Level I Programs*.
- **Environmental and Earth Sciences Gateway:** requires satisfactory standing in three Grade 12 U mathematics and science courses (or equivalent) as specified under the heading *Subject Requirements For Specific Level I Programs*.
- **Life Sciences Gateway:** requires satisfactory standing in three Grade 12 U mathematics and science courses (or equivalent) as specified under the heading *Subject Requirements For Specific Level I Programs*.
- **Mathematics and Statistics Gateway:** requires satisfactory standing in two Grade 12 U mathematics courses -- Advanced Functions U and Calculus and Vectors U as specified under the heading *Subject*

### *Requirements For Specific Level I Programs.*

- **Midwifery I: does not offer mature admission directly to the program.** However, students interested in Midwifery may be admitted as a mature student to another program in order to complete a minimum of six university courses (18 units) in their program of admission before applying to the Midwifery Education Program.
- **Nursing I does not offer mature admission directly to the program.** However, students interested in Nursing may be admitted as a mature student to another program in order to complete university prerequisite courses for later consideration for admission to Nursing I. Possession of the minimum admission requirements does not guarantee an offer of admission. Contact the School of Nursing for more details.

**The following programs do not admit under the category of Mature Students: Arts & Science I, Automotive and Vehicle Technology I (B.Tech.), Biotechnology I (B.Tech.), Computer Science I, Engineering I, Health Sciences I, Honours Integrated Science (Level I), Honours Kinesiology (Level I), Integrated Biomedical Engineering and Health Sciences I, Integrated Business and Humanities I, Medical Radiation Sciences (Level I), Midwifery I, Nursing I, and Process Automation Technology I (B.Tech.).**

If admitted to a program as a mature student, you may register to take up to 18 units of course work (normally Level I courses) during the Fall/Winter session with no more than nine units in each term (three courses). Within the first 18 units, mature students will be limited to taking three units in each term of the Spring/Summer session.

Upon completion of 18 units, your performance will be reviewed according to the general academic regulations of the university. (See Level I *Registration and Academic Standing Requirements under General Academic Regulations*).

## C. Visiting Students (Letter of Permission - For Credit at Another University)

If you are a student currently attending another university, you may apply to take McMaster courses for credit at your own/home institution. Please note, not all courses are available for credit outside McMaster and all are subject to enrollment limits, so it is important that all applicants adhere to McMaster application deadlines.

You must initially apply through the Ontario Universities' Application Centre (OUAC) and **send your Letter of Permission and an official transcript from your home institution directly to the Office of the Registrar, Admissions.** Upon receipt, your transcript will be reviewed to ensure you have met the prerequisites for courses you plan to take at McMaster. **Approval of your application as a Visiting Student does not guarantee your enrollment in a course.**

Subsequent requests to take courses on a Letter of Permission do not require another application; however you must send an updated Letter of Permission and a current official transcript from your home institution to the Office of the Associate Dean of the Faculty offering the course at McMaster. If you are attempting to register in courses offered by more than one Faculty, you must obtain approval from each Office of the Associate Dean.

## D. Graduates of McMaster Certificate/Diploma Programs

If you have completed certificate or diploma programs from McMaster, you may be granted advanced credit up to maximum specified by Undergraduate Council upon successful completion of the certificate/diploma program. Faculties will take into account the subject matter of both the certificate and degree programs. The credit will normally be applied against your elective courses. For more information concerning the amount of advanced credit granted, please refer to the *Certificate and Diploma Programs* section of this Calendar.

## E. Post-Degree Students

If you are a university graduate or a person with professional qualifications who wishes to take one or more graduate courses but not proceed to an advanced degree, you may apply to McMaster as a post-degree student. To enroll as a post-degree student, you must apply to the appropriate departments and have your admission and registration approved by the School of Graduate Studies for each session in which you wish to take courses. You will register and pay fees as a graduate student.

Acceptance as a post-degree student carries no implications with respect to admission to advanced degrees, and even if such admission is granted subsequently, credit toward the advanced degree will not normally be granted for the work previously taken.

## F. Listeners

If you are uncertain about degree courses, you may register as a listener in a degree course, but not for credit. You attend all classes, but do not complete any of the essays, tests and other formal requirements. You do not receive a grade for courses that you attend. Some students have eased their way into degree study with this option, subsequently applying for admission and enrolling in further courses for credit. Please note not all courses are available to Listeners. Please see <http://www.mcmaster.ca/bms/student/index.htm> for any applicable fees. For more information please contact the Office of the Registrar.

Written permission to attend must be obtained from the instructor delivering the course. An I.D. card cannot be issued until permission has been obtained.

## G. Enrichment Program for Secondary School Students

If you are an outstanding Grade 12 student and wish to enroll in a university-level course while completing Grade 12 U and M courses in your final year of study, you may apply for the Enrichment Program. For more information contact the Office of the Registrar at (905) 525-4600.

## H. Former McMaster Degree Students (Returning Students)

### READMISSION

If you are a former McMaster student who voluntarily withdrew from an undergraduate program **more than five years ago** (and have not attended another university or completed a college diploma elsewhere) and you wish to return to your studies, then you must apply for Readmission. Students from the School of Nursing must apply for Readmission regardless of time elapsed following voluntary withdrawal.

If you were enrolled (have a record of course enrolment) within the last five years and you left the university in good academic standing (and have not attended another university or completed a college diploma elsewhere), then it is not necessary for you to apply for Readmission. Normally, you will be permitted to enrol in your previous program or another program for which you qualify. You must contact the Office of the Registrar directly in order to have your status reactivated prior to enrollment: (905) 525-4600.

### REINSTATEMENT

See the *General Academic Regulations* section in this Calendar.

### SECOND MCMASTER DEGREE

See *University Graduates Applying for a Second Bachelor's Degree* in this section of the Calendar.

### CONTINUING STUDIES

See *Continuing Students* in this section of the Calendar.



## 4. Transfer Credits

### A. General Policy on the Transfer of University Course Credits

To facilitate program completion by undergraduate students seeking to transfer course credit from an accredited university to McMaster, the University has implemented the following principles:

1. Acceptance of transfer credits from accredited universities shall be based on the recognition that, while learning experiences may differ in a variety of ways, their substance may be essentially equivalent in terms of their content and rigour. Insofar as possible, acceptance of transfer credit shall allow for the maximum recognition of previous learning experience in university-level courses;
2. Subject to degree, grade and program requirements, any course offered for credit by an accredited university shall be accepted for credit by McMaster when there is an essential equivalency in course content. However, no course for which a grade of less than C- (60%) has been achieved will be considered.
3. Evaluation of all possible transfer credits available at the time of admission must be completed within one year of the date of admission to the University.

### B. From Colleges of Applied Arts and Technology

Normally, if you are a well-qualified graduate of a three-year program and the college work is appropriate to your chosen university program, you could receive up to 30 units of transfer credit. If you have completed a two-year program and performed well, transfer credit will be reviewed on a case-by-case basis.

Credit beyond this may be given on an individual basis where the college and university programs are in similar areas, and where your academic record warrants special consideration.

In the granting of credit, attention will be given to:

1. your performance in the college program;
2. the duration of the college program;
3. the program taken at the college and the program to which entry is sought;
4. your secondary school record.

Each case will be considered individually on its own merits for the program desired.

### C. Advanced Credit

Subject to the discretion of the Faculty, advanced credit may be granted if you have completed the International Baccalaureate (I.B.) Diploma, the Advanced Placement (A.P.) Program and the College Board examinations or the General Certificate of Education (G.C.E.) and you have met the minimum requirements prescribed. Advanced credit may shorten your degree program at McMaster.

### D. Credit in Courses by Special Assessment (Challenge Examinations)

Students who have acquired knowledge at a different type of institution or in a manner that makes assessment of their qualifications difficult are permitted to seek degree credit through special assessment (Challenge for Credit).

Challenge for credit is not intended to give credit for skills or knowledge gained through high school, college or previous university instruction. The special assessment may include one or more of the following: written examinations, papers, essays, submissions of a substantial body of work, or portfolios, or laboratory tests. Credit can be granted only for those courses listed in the current McMaster calendar. Not all courses in all disciplines are available for challenge. Faculties and departments are free to determine which, if any, of their courses are open for special assessment. Challenges are assessed on a

pass/fail basis. The passing grade for a challenge appears on the transcript as COM (Complete) and is not used in computing averages or evaluating honours or scholarship standing, but is counted as a course attempt. Unsuccessful attempts will be noted on the transcript as a grade of F. Special Assessment is not available for a course taken previously and a course may be attempted only once by special assessment. Once you have registered for a course by such means (known as challenge exams) the registration may not be cancelled and you may not withdraw from the course.

Waivers of prerequisites only (ie. no degree credit) will be at the discretion of the department.

## 5. English Language Proficiency

If you have been asked to meet our English Language Proficiency requirement, you must demonstrate English language proficiency by achieving the minimum requirements as specified by McMaster. The university reserves the right to require applicants with an English Language Proficiency score disparate from their English prerequisite subject grade to present further evidence of achievement. You may review acceptable tests of English Language Proficiency and minimum score requirements on our web site <http://future.mcmaster.ca/admission/admission-requirements/language/>. It is your responsibility to make all arrangements regarding the writing of the English Language Proficiency tests and to have the official score report forwarded to the Office of the Registrar, Admissions directly from the testing center in a timely manner. At the discretion of the university, you may be exempted from this requirement if you meet one of the following requirements:

- i. Attended immediately prior to application to McMaster, in full-time academic studies (non-ESL), an accredited Secondary School (High School) or Post-Secondary College in an English-speaking country for at least four years, **OR**
- ii. Attended immediately prior to application to McMaster, in full-time academic studies (non-ESL), an accredited English medium Secondary School (High School) or Post-Secondary College for at least four years,\* **OR**
- iii. Attended immediately prior to application to McMaster, in full-time academic studies (non-ESL), an accredited English medium University for at least one year, **OR**
- iv. Resided in an English speaking country for at least four years immediately prior to application to McMaster.

\*Please note that the Undergraduate MD program requires a minimum of three years of study at an English-medium university. More information about the admission requirements for Medicine at McMaster can be found at: <http://www.fhs.mcmaster.ca/mdprog>.

### Statements for Application Fraud

If McMaster concludes based on reasonable grounds that the applicant has falsified any information presented to the University as part of his or her application, without limiting any other rights of McMaster available at law, McMaster reserves the right to revoke the offer and, subject to applicable law and University Policy, to terminate a student's registration.

Without limiting McMaster's General Statement on Collection of Personal Information and Protection of Privacy, please take note that McMaster University collects and retains personal information of applicants for admissions to McMaster University under the authority of The McMaster University Act, 1976. This information may be used for the administration of admissions and registration and, subject to McMaster University policies (as may be amended or revoked from time to time), McMaster may disclose any evidence of misrepresentation, fraud or falsification of admissions documentation to other educational institutions, to government agencies, to law-enforcement agencies and to other relevant third parties. The information you provide on any application for admissions will be protected and used in compliance with *Ontario's Freedom of Information and Protection of Privacy Act (RSO 1990)* and will be disclosed only in accordance with this Act. If you have

any questions about the collection and use of this information please contact the University Registrar, University Hall, Room 209, Student Records, Gilmour Hall, Room 108, or the University Secretary, Gilmour Hall, Room 210, McMaster University.

## McMaster English Language Development Diploma (MELD)

Department of Linguistics and Languages (Faculty of Humanities)  
Phone: (+1) 905.525.9140 Ext. 23718

Email: [meld@mcmaster.ca](mailto:meld@mcmaster.ca)

Web: <http://meld.mcmaster.ca>

**Students** who meet the academic admission requirements for their choice of Level 1 program, but do not meet McMaster's English Language Proficiency requirement may be admitted to the MELD bridging program which has been developed for international students, providing them with a supportive environment in which they can succeed. The diploma is a two-term, full-time intensive bridging program in English language development, acculturation and engagement.

Students accepted into MELD are given a conditional offer of admission to their program of choice, pending successful completion of the MELD diploma. Once the diploma in MELD has been successfully completed, the student may register in the program to which he/she was given conditional admission and will have completed 6 units of degree credit courses in Linguistics that may be applied as electives to that program. In exceptional circumstances, MELD will consider transfers from other McMaster programs.

Please visit [meld.mcmaster.ca](http://meld.mcmaster.ca) for more information or email [meld@mcmaster.ca](mailto:meld@mcmaster.ca).

### Fall Term

(September - December)

- MELD 1A03 - Academic Writing and Integrity
- MELD 1B03 - English Phonetics and Pronunciation
- MELD 1C03 - Academic Reading Skills
- MELD 1D03 - Social Perspectives on Language
- MELD 1L00 - Linguistics Lab 1
- MELD 1M00 - Mentorship Lab 1
- LINGUIST 1Z03 - Structure of Modern English I (degree credit course)

### Winter Term

(January - April)

- MELD 1AA3 - Advanced Academic Writing
- MELD 1BB3 - Advanced Speaking and Presentation Skills
- MELD 1CC3 - Advanced Academic Reading Skills
- MELD 1DD3 - Advanced Academic Listening Skills
- MELD 1LL0 - Linguistics Lab 2
- MELD 1MM0 - Mentorship Lab 2
- LINGUIST 1ZZ3 - Structure of Modern English II (degree credit course)

## McMaster English Readiness for Graduate Excellence Certificate

<https://meld.humanities.mcmaster.ca/merge/>

**MERGE** (the McMaster English Readiness for Graduate Excellence Certificate) is an intensive 10-week summer Academic English preparatory program, intended for graduate and professional students. Admission requirements include successful completion of an undergraduate degree and English language proficiency minimum requirements of **TOEFL iBT 90** or **IELTS**

**6.5** (with minimum category requirements). Target English proficiency upon program completion will be an **IELTS score of 7-7.5** or **Common European Framework Reference for Languages (CEFR) level C2.1**, in keeping with graduate English proficiency admission requirements.

Students in MERGE will complete a program that includes intensive practice of academic English (listening, reading, writing, speaking), with an emphasis on professional development. The MERGE certificate does not require current or conditional admission to a McMaster University graduate program and program completion does not guarantee admission to a graduate program of study in and of itself. As a stand-alone program, the MERGE certificate coursework cannot be utilized for advanced standing or credit towards degree studies.

### CERTIFICATE REQUIREMENTS

- MERGE 100 - Advanced Reading and Writing for Graduate Studies (6 units)
- MERGE 200 - Advanced Listening and Speaking for Graduate Studies (3 units)
- MERGE 300 - Presentation Skills & Lecture Series (3 units)
- MERGE 400 - Professional Development (3 units)

## Application Procedures

### HOW TO APPLY

1. Determine the appropriate application form and/or procedures. (See *Categories of Admission* below.)
2. Determine application deadline. (See *Application and Documentation Deadlines* in this section.)
3. Refer to the Admission Requirements and specific Faculty sections of this Calendar for further information.
4. Complete and submit your application as directed.
5. Submit all required documentation to McMaster. (See *Documents* in this section.)
6. Once your application has been received, McMaster's Office of the Registrar, Admissions will provide you with an acknowledgment of receipt of your application plus further instructions/details about tracking your application.

## 1. Categories of Admission

### A. Current Ontario High School Students

You should complete the 101 application if you meet ALL of the following requirements:

- You are taking courses during the day at an Ontario secondary school (this includes students returning for second semester and graduated students returning to upgrade one or more courses)
- You have not, at some point, been out of secondary school for more than seven consecutive months
- You will have received or expect to receive your Ontario Secondary School diploma (OSSD) with six 4U/M courses at the end of the current year
- **You have not attended a postsecondary (college/university/ career college) institution**
- You are applying to the first year of an undergraduate degree program or diploma program at an Ontario university
- You are under 21 years of age.

Use the Undergraduate 101 on-line application at [www.ouac.on.ca/101/](http://www.ouac.on.ca/101/).

Please consult with your secondary school guidance office regarding this application process.

## B. All Other Canadian High School Students

If you are currently attending secondary school outside of Ontario or have recently completed a secondary school diploma in any Canadian province or territory

- Use the OUAC 105D on-line application at [www.ouac.on.ca/105/](http://www.ouac.on.ca/105/).

## C. High School Students with International Qualifications

If you are currently attending or have recently completed a secondary school program outside of Canada, and you are not a Canadian citizen nor Permanent Resident of Canada

- Use the OUAC 105F on-line application at [www.ouac.on.ca/105/](http://www.ouac.on.ca/105/).

## D. University/College Transfer/Continuing Students

If you are currently registered in or have completed an undergraduate degree program at another university and wish to attend McMaster **OR**

If you are currently registered in or have attended or completed a college diploma program and wish to attend McMaster

- Use the OUAC 105 on-line application at [www.ouac.on.ca/105/](http://www.ouac.on.ca/105/). Applicants residing in Canada (Canadian citizens, permanent residents or applicants studying in Canada on a student permit or other visa) should use the **105D** form. Applicants currently residing outside of Canada who are not Canadian citizens nor Permanent Residents should use the **105F** form.

## E. Nursing Consortium Programs

If you are interested in applying to McMaster's Nursing (B.Sc.N). program at the Mohawk College or Conestoga College sites

- Apply on-line through the Ontario College Application Services (OCAS) at [www.ocas.on.ca/](http://www.ocas.on.ca/).

## F. Previous McMaster Degree Students (Returning Students)

1. **Readmission:** If you are a former McMaster student with a record of course enrolment, who was in good standing and who voluntarily withdrew from an undergraduate program more than five years ago (providing you have not attended another university nor received a college diploma since last registered at McMaster). If you are a former Nursing student, you must apply for readmission regardless of the amount of time that has elapsed. Apply on-line at: [future.mcmaster.ca/admission/process/returning/](http://future.mcmaster.ca/admission/process/returning/)
2. **McMaster Second Degree:** If you are a McMaster graduate or potential graduate at the end of your current academic term and wish to pursue a second undergraduate degree (providing you have not attended another university nor received a college diploma since last registered at McMaster).
  - Use the McMaster Returning Student Application to apply on-line at [future.mcmaster.ca/admission/process/returning/](http://future.mcmaster.ca/admission/process/returning/)
3. **Reinstatement:** If you are a former McMaster student who was required to withdraw from studies at McMaster.
  - Obtain the *Reinstatement Request Form* from the Office of the Registrar, Gilmour Hall, Room 108, McMaster University, Hamilton, Ontario, L8S 4L8.
4. **Continuing Student:** If you are a McMaster graduate from an undergraduate program and wish to become a Continuing Student.
  - You do not need to apply for admission.

## G. Visiting Students (Letter of Permission - For

## Credit at Another University)

If you are currently enrolled at another university and wish to attend McMaster to take courses on a Letter of Permission for credit at that university

- Use the OUAC 105 on-line application at [www.ouac.on.ca/105/](http://www.ouac.on.ca/105/)

## H. Part-Time Degree Studies at McMaster Only

If you wish to begin undergraduate studies on a part-time basis (enrolled in less than 18 units of study)

- Use the OUAC 105 on-line application at [www.ouac.on.ca/105/](http://www.ouac.on.ca/105/).

## I. Post-Degree Studies

If you wish to register as a post-degree student (taking graduate courses but not proceeding to an advanced degree)

- Contact the Graduate Studies Office, Gilmour Hall, Room 212, McMaster University, Hamilton, Ontario, L8S 4L8 for information on how to apply to the appropriate academic department(s).

## J. Medical Program

See the heading *Admission Policy for the Medical Program* in the *Faculty of Health Sciences* section of this Calendar.

## 2. Documents

### A. Required Documents

A complete application includes: an application form, relevant transcripts and all other documentation stipulated in the *Admission Requirements* and specific Faculty sections of this Calendar, in letters from the appropriate Faculty and/or in letters from Office of the Registrar, Admissions.

You must provide McMaster with transcripts of marks and/or certificates from all secondary and post-secondary institutions you have attended. When you are requested to provide an **official** transcript, then an official transcript is a signed and sealed record of all academic achievement **issued and sent by an academic institution directly to McMaster University, Office of the Registrar, Admissions.**

If you are currently attending secondary school, please see your guidance counselor to request that your current Grade Report showing all courses you will be completing in Grade 12 be sent by your school to McMaster. If you have previously attended secondary school in another province, you may need to submit a request for a transcript containing your secondary school marks from the Ministry or Department of Education in that province if it is not normally provided by your high school..

Where documentation from a school outside of Canada is in a language other than English, you must provide official transcripts in the original language as well as official, notarized English translations.

For specific document submission requirements and processes/procedures, please review: <https://future.mcmaster.ca/admission/documents/>.

If McMaster concludes based on reasonable grounds that the applicant has falsified any information presented to the University as part of his or her application, without limiting any other rights of McMaster available at law, McMaster reserves the right to revoke the offer and, subject to applicable law and University Policy, to terminate a student's enrolment.

Without limiting McMaster's General Statement on Collection of Personal Information and Protection of Privacy, please take note that McMaster University collects and retains personal information of applicants for admissions to McMaster University under the authority of *The McMaster University Act, 1976*. This information may be used for the administration of admissions and registration and, subject to McMaster University policies (as may be amended or revoked from time to time), McMaster may disclose any evidence of misrepresentation, fraud or falsification of admissions

documentation to other educational institutions, to government agencies, to law-enforcement agencies and to other relevant third parties. The information you provide on any application for admissions will be protected and used in compliance with Ontario's *Freedom of Information and Protection of Privacy Act (RSO 1990)* and will be disclosed only in accordance with this Act. If you have any questions about the collection and use of this information please contact the University Registrar, University Hall, Room 209, Student Records, Gilmour Hall, Room 108, or the University Secretary, Gilmour Hall, Room 210, McMaster University.

## B. Retention of Documents

All documentation submitted in support of your application for admission **becomes the property of the University and is not returnable.**

If you are not accepted, or you fail to enroll following acceptance, your documentation will be destroyed at the end of the admissions cycle. If you reapply, you must submit any new academic information in addition to the documentation submitted previously.

## 3. Application and Documentation Deadlines

McMaster University reserves the right, at its sole discretion, not to accept, process or adjudicate applications or amendments to applications to any program at any time. Meeting minimum application requirements does not guarantee admission to any program at McMaster University. **Application fees are non-refundable so we strongly advise you to review our admission requirements carefully before applying,** to determine your academic eligibility for consideration for admission. Please see the *Admission Requirements* section of this calendar for general information. University transfer applicants should review programs by Degree and Minors requirements before applying.

McMaster University has a number of highly competitive by-selection programs that require a mandatory supplementary application/assessment, and all of these programs have early application and supplementary submission deadlines, as specified in the chart below. Failure to apply on time or to submit the required supplementary application/assessment by the specified dates will automatically disqualify consideration for these specified programs. You are advised to submit your application and/or amendments well in advance of the deadlines listed below.

## Fall and Winter Terms

The dates and deadlines listed below are for applications submitted for the 2020-2021 academic year. Please refer to <http://future.mcmaster.ca> for the date and deadline information for new applications.

PROGRAM	APPLICATIONS	MANDATORY SUPPLEMENTARY APPLICATIONS
<b>Arts &amp; Science</b>	February 1	February 1
<b>Actuarial &amp; Financial Mathematics (Above Level 1) Regular and Co-op Programs</b>	April 1	April 30 For information see: <a href="https://www.math.mcmaster.ca/index.php/undergraduate-studies/undergraduate-programs/41-undergraduate-studies/1758-afm-supplementary-application.html">https://www.math.mcmaster.ca/index.php/undergraduate-studies/undergraduate-programs/41-undergraduate-studies/1758-afm-supplementary-application.html</a>

PROGRAM	APPLICATIONS	MANDATORY SUPPLEMENTARY APPLICATIONS
<b>Bachelor of Technology Degree Completion (Above Level 1)</b>	April 1 (May intake) July 15 (September intake) November 1 (January intake)	Must be completed by the application deadline. View more information about the mandatory supplementary application for the Bachelor of Technology degree.
<b>Biomedical Discovery &amp; Commercialization (Level 3 entry)</b>	February 1	February 1
<b>Engineering 1 (Regular and Co-op)</b>	January 15	Kira© Assessment Assessment dates available February 1 to February 14 after payment via: <a href="http://www.eng.mcmaster.ca/future/apply.html">http://www.eng.mcmaster.ca/future/apply.html</a>
<b>Health Sciences I (Honours)</b>	January 15	Early February Details at <a href="http://bhsc.mcmaster.ca">bhsc.mcmaster.ca</a>
<b>Health Sciences (Honours) (Above Level 1)</b>	April 1	Early May Details at <a href="http://bhsc.mcmaster.ca">bhsc.mcmaster.ca</a>
<b>Health Sciences (Above Level 2) Biomedical Discovery &amp; Commercialization</b>	February 1	February 1 Details at: <a href="https://bdcprogram-mcmaster.ca/">https://bdcprogram-mcmaster.ca/</a>
<b>Honours Biology and Pharmacology Co-op (Above Level 1)</b>	February 1	February 1 Mandatory Letter of Intent specifying reasons for applying and applicant suitability for the program. Email <a href="mailto:biophrm@mcmaster.ca">biophrm@mcmaster.ca</a> by February 1.
<b>Honours Integrated Science I</b>	February 1	February 1
<b>Integrated Biomedical Engineering &amp; Health Sciences 1 (Regular and Co-op)</b>	January 15	February 1 Online Kira© Assessment
<b>Integrated Business &amp; Humanities</b>	February 1	February 1 Online Kira© Assessment
<b>Justice, Political Philosophy &amp; Law</b>	April 1	April 1 For more information see: <a href="https://www.humanities.mcmaster.ca/programs/undergraduate-programs/justice-political-philosophy-law/">https://www.humanities.mcmaster.ca/programs/undergraduate-programs/justice-political-philosophy-law/</a>



PROGRAM	APPLICATIONS	MANDATORY SUPPLEMENTARY APPLICATIONS
<b>Midwifery</b> (including submission of all transcripts)	February 1	N/A
<b>Physician Assistant</b> (including submission of all official transcripts) <b>Note:</b> This program is not open to International Applicants. This program is open to Canadian citizens and present Permanent Residents of Canada only.	February 1	February 1
<b>Social Work</b>	December 1	February 1
<b>Nursing I:</b> Secondary School Applicants	February 1	Mandatory Supplementary application information is available on the CASPer™ website.
<b>Nursing 1 (university transfer applicants from programs other than Nursing and applicants from college pre-health programs)</b> (including submission of all official transcripts)	February 1	Mandatory Supplementary application information is available on the CASPer™ website.
<b>Transfer from another Nursing program to the McMaster site.</b>		Students from other university Nursing programs should contact the McMaster Nursing program office at 9055259140, ext. 22232, for information about transfer options and application procedures. McMaster will not typically accept transfer applications from students already in a Nursing program elsewhere.
<b>Nursing Basic-Accelerated Stream (above level 1) (including submission of all official transcripts)</b>	February 1	Mandatory Supplementary application information is available on the CASPer™ website.

## Application Deadlines for All Other McMaster

## Programs for Fall and Winter Terms

**\*February 1** - Applications received on or before February 1 with all supporting official documentation received no later than February 15 from applicants with no postsecondary experience will be reviewed for admission pending space availability in the program. All applications received after February 1 will be considered only if there is space available in the program.

**April 1** - The final date to apply for admission and submit all required documentation for admission consideration is April 1. This final deadline applies to all international and domestic applicants.

	APPLICATION DEADLINE	SUPPORTING DOCUMENTATION DEADLINE
<b>Ontario High School Applicants (Recommended)</b>	January 15	April 1
<b>Early Deadline* (see above)</b>	February 1	February 15
<b>Final Deadline Domestic Applicants</b>	April 1	April 1
<b>Final Deadline International Applicants</b>	April 1	April 1
<b>B.Tech. Degree Completion Program Only - January Entry</b>	November 15	November 15

## Spring/Summer Term

	DOMESTIC DEADLINE	INTERNATIONAL DEADLINE
<b>May Entry (Term 1 or 3)</b>	April 1	April 1
<b>Supporting Documentation for May Entry</b>	April 1	April 1
<b>June Entry (Term 2)</b>	May 15	May 15
<b>Supporting Documentation for June Entry</b>	May 15	May 15

## Former McMaster Students: Re-admission / Re-instatement Deadlines for Fall and Winter Terms

	DOMESTIC DEADLINE	INTERNATIONAL DEADLINE
<b>Re-instatement Deadline</b>	June 30	June 30
<b>Re-admission Deadline</b>	July 15	July 15
<b>Nursing Deadline</b>	February 1	February 1

## Academic Counselling for Admitted Students

If you are offered admission to a program at McMaster, you will be asked to confirm that you have accepted the offer of admission and will attend the University. Your admission will include information regarding acceptance procedures for the offer of admission, specified deadline for your acceptance and registration procedures. Offer of admission acceptance deadlines specified in your Offer of Admission letter are strictly enforced. Please ensure that you accept your offer of admission as directed well before the specified deadline date.

If you are admitted to Level 1, your Faculty may also arrange a visit to the

University so you may meet with a Faculty advisor to set up your program. Although attendance at the summer counselling and registration sessions is not compulsory, you are strongly advised to participate. If you cannot attend one of these sessions, counselling will be provided in September. If you are offered admission above Level 1, you may arrange for academic counselling with the Office of the Associate Dean of the Faculty offering the program, or the Office of the Director of the program.

## 4. Review of Admission and Re-Admission Decisions

**No appeal procedure shall be available for decisions on admission or re-admission to the University.** Such decisions may be reviewed within the following framework:

- An applicant to the University who believes that the admission or re-admission decision, or, in the case of a transfer student the decision to grant credits, is incorrect, or based on incorrect or incomplete information, may, **within one week of receiving the decision**, request a review of that decision by writing to the Senior Associate Registrar, Undergraduate Admissions, stating why she/he thinks the decision should be reviewed.
- The Senior Associate Registrar, Undergraduate Admissions, shall determine whether the information on which the decision was based was incomplete or incorrect and, if so, shall refer the request for review to the appropriate Faculty Committee. That Committee shall make a final decision and report it to the Senior Associate Registrar, Undergraduate Admissions, who shall then convey the decision in writing to the student. The Senior Associate Registrar, Undergraduate Admissions may, at his/her discretion, supply reasons.

## Enquiries: Application Procedures

Please direct your enquiries about Application Procedures to:

### Office of the Registrar, Admissions

Gilmour Hall, Room 109  
 McMaster University  
 Hamilton, Ontario, L8S 4L8  
 Telephone: (905) 525-4600  
<http://ask.mcmaster.ca>

# General Academic Regulations

This section outlines the general undergraduate academic regulations of the University. Students must read and comply with both these regulations and those set out by their Faculty elsewhere in this Undergraduate Calendar, as applicable. In the event of a conflict between the Faculty/Program Regulations and these General Academic Regulations, the program regulations take precedence.

Since the Academic Regulations are continually reviewed, the University reserves the right to change the regulations in this section of the Calendar. The University also reserves the right to cancel the academic privileges of a student at any time should the student's scholastic record or conduct warrant so doing. Faculties are authorized to use discretion in special situations by taking into account past practice, the spirit of the regulations, and extraordinary circumstances. Students who believe their situations warrant special consideration should consult the appropriate Faculty/Program Office.

## Academic Commitments

Students should expect to have academic commitments for instructional activities (e.g., lectures, labs, tutorials, etc.) Monday through Saturday, normally 8:30 a.m. to 10:30 p.m., but not on statutory holidays, as outlined in the Sessional Dates. Also, students may be required to write tests or examinations Monday through Sunday. Students are responsible for meeting all course requirements, including final examinations, as scheduled.

## Academic Accommodations: Religious, Indigenous or Spiritual Observances

Students who require accommodations to meet religious, Indigenous or Spiritual Observances are expected to read the *Policy on Academic Accommodation for Religious, Indigenous and Spiritual Observances* ("RISO policy") and must make their requests within 10 working days from the beginning of the start of term to their Faculty/Program Office.

## Academic Accommodations: Permanent Disability, Temporary Disability, and Retroactive Accommodation

Students seeking an accommodation related to a permanent or temporary disability, or a retroactive accommodation, are expected to read the *Academic Accommodation of Students with Disabilities* policy. Important excerpts from the current policy include:

- students are not to seek accommodation directly from their professors, instructors, and/or teaching assistants. Accommodation requests should be directed to Student Accessibility Services or the Faculty Office;
- students are not required to reveal their private medical information, such as the cause of the disability, diagnosis, symptoms or treatment (unless these clearly relate to the accommodation being sought) to register with Student Accessibility Services, or receive accommodations or supports;
- students may request interim accommodations for disabilities (this includes mental health disabilities) pending receipt of medical documentation;
- both Temporary and Permanent disabilities will be accommodated
- Permanent Disability** is where a functional limitation will occur for more than one academic term or as defined by a regulated health professional.
- Temporary Disability** may be a short-term injury or illness (such as mononucleosis, a broken limb or concussion) or an episodic condition (e.g. mental illness) where a functional limitation *generally* occurs within one academic term or less or as defined by a regulated health professional.
- requests for accommodation should be submitted in a prompt and timely manner. Requests made after a deadline has passed may be considered Retroactive Accommodations. A Retroactive Accommodation may be for either a Permanent or Temporary Disability when the request is made after the fact (e.g. after a course has been completed), as the result of the discovery or diagnosis of an existing disability of which the student was previously unaware.

## Sessional Dates

Please visit the Sessional Dates page for important dates for this academic year.

# Student Responsibilities

## Academic

McMaster University provides many resources to help students achieve their academic goals, including the Undergraduate Calendar, program advisement reports and academic advisors. The University endeavours to enable students to enrol in required courses so that their program admission requirements and course requisites can be met in a timely manner. The University reserves the right to change a student's enrolment in classes should the need occur (e.g. low enrolment, urgent timetable changes, etc.).

Students must assume certain responsibilities. They include:

- meeting admission requirements and application deadlines for their intended program(s) of study
- selecting and completing courses in an order that meets requisite and program requirements
- becoming familiar with and respecting University Sessional Dates, the General Academic Regulations, their Faculty/Program-specific regulations, and the Regulations for Aid and Awards as found in the appropriate sections of this Calendar.

Students who do not follow these guidelines may experience academic consequences such as cancellation of course enrolment, completion of courses that are not counted toward their degree, or delayed graduation.

In addition to the responsibilities listed above, students are expected to:

- know and follow the Senate policies
- keep their student account in good standing, paying all charges on time
- be aware that changes to course load and program may affect eligibility for government and University aid and awards (e.g. OSAP, work programs, bursaries, scholarships, etc.)
- consult with Student Accessibility Services in a timely manner to make disability related accommodation requests under the *Academic Accommodation of Students with Disabilities* policy

## Communication

It is the student's responsibility to:

- maintain current contact information with the University, including address, phone numbers, and emergency contact information
- use the university provided e-mail address or maintain a valid forwarding e-mail address
- regularly check the official University communications channels, including the Mosaic Student Centre. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca account
- accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca account

## Due Date Restrictions

Academic assessments, due dates and evaluations are described in course outlines except where other University policies apply, e.g., SAS accommodations, deferred exams, etc. When students are aware of their progress early in a course they can make informed decisions. Restrictions are placed on academic obligations to enable students to plan their work schedules.

1. Due dates for all term work must be on or before the final day of classes for courses with a final examination. For courses with no final examination, academic assessments can be due on or before the final date of examinations.
2. Tests, quizzes, exams and take home exams worth more than 10%

cannot be assigned or due during the last five days of classes plus the days(s) between the end of classes and the beginning of examinations. Assignments worth more than 10% that are assigned at the beginning of the course and noted on the course outline, can be due during this time period, provided students are given sufficient additional detail to enable them to work on the assignment in advance of the due date.

3. Academic obligations cannot be due during the December holiday break or the fall and winter mid-term recesses, with the exception of deferred exams scheduled by the Office of the Registrar.

## Maximum Value of Academic Assessments

1. Student learning in undergraduate courses should be assessed on more than one occasion. To that end, no single academic obligation (e.g., essay, test, examination, etc.) should have a value of more than 75% of the final grade without approval from the Department Chair or Associate Dean's Office. Clinical, placement, thesis and capstone courses are exempt.
2. For students requiring relief from an academic obligation, it is at the discretion of the instructor to determine the nature of the relief. In cases such as this, students can be offered the choice of another assessment or the option of writing a final examination which may be worth more than 75% of the course grade.

## Early Feedback

1. All students must receive feedback regarding their progress prior to the final date by which a student may cancel the course without failure by default.
2. For Level 1 and Level 2 courses, this feedback must equal a minimum of 20% of the final grade.
3. For Level 3 courses and above, this feedback must equal a minimum of 10% of the final grade.
4. For courses where it is difficult to achieve a numeric grade due to the design of the course (e.g., supervised study, thesis, capstone, inquiry, independent research/study, experiential courses, etc.), clear and early feedback must be provided.
5. When academic obligations are completed by the due dates in the course outline, early feedback will be received by the final date by which a student can cancel a course without failure by default. Students who use the MSAF process and other petitionable accommodations may not receive feedback by the early feedback deadline.

## Residence Requirements

Most students complete all undergraduate work at McMaster University. However, students who complete work at other universities must meet the minimum requirements set out below.

To obtain any four- or five-level, first undergraduate degree:

- at least two levels (approximately 60 units of work) beyond Level 1, including the final level, must be completed at McMaster University.

To obtain a three-level, first undergraduate degree:

- the final level and at least one other level (a minimum of approximately 60 units of work) must be completed at McMaster University, or,
- the final level (approximately 30 units of work) including at least 18 units of program-specific requirements must be completed at McMaster University.

Courses taken at another university on a *Letter of Permission* will not count toward the residence requirements.

All course work for a second bachelor's degree must be completed at McMaster University.

## McMaster University Statement on the Collection of Personal Information and the Protection of Privacy

McMaster University collects and retains personal information of students, alumni and other parties, including but not limited to faculty, staff, visiting academics and private citizens using services provided by McMaster University, under the authority of the *McMaster University Act, 1976*. This information is used for the academic, administrative, employment-related, safety and security, financial and statistical purposes of the University, including for the administration of admissions, registration, awards and scholarships, convocation, alumni relations and other fundamental activities related to being a member of the University community, a user of services provided by McMaster or an attendee of, or applicant to, a public post-secondary institution in the Province of Ontario. The information will be used, among other things, to admit, register and graduate students, record academic achievement, issue library cards and, where applicable, local transit passes, to provide access to information systems and to operate academic, financial, athletic, recreational, residence, alumni and other University programs. Additionally, this information may be shared with other institutions of higher education in order to administer collaborative programs. Information on admissions, registration and academic achievement may also be disclosed and used for statistical and research purposes by the University, other post-secondary educational institutions and the federal and provincial governments. The names of alumni, their Faculty and program, award information, degree(s) awarded and date of graduation is considered public information and may be published by McMaster University. In addition, student photographs posted by the University in the form of individual pictures or class pictures may be publicly displayed. Aside from the foregoing, the information you provide and any other information placed in a student record, or in a personnel record, will be protected and used in compliance with Ontario's *Freedom of Information and Protection of Privacy Act (RSO 1990)* and will be disclosed only in accordance with this Act. If you have any questions about the collection and use of this information please contact the University Registrar, University Hall, Room 209, Student Records, Gilmour Hall, Room 108, or the University Secretary, Gilmour Hall, Room 210, McMaster University.

McMaster University may also collect personal information from other relevant sources including, without limitation, the Ontario Universities' Application Centre, secondary schools, colleges, universities and other institutions previously attended, including third-party services and test score providers where the items collected form a part of the application or admission process to a university program.

Furthermore, McMaster is required to disclose personal information such as Ontario Education Numbers, student characteristics and educational outcomes to the Ministry of Colleges and Universities. The Ministry collects this data for purposes such as planning, allocating and administering public funding to colleges, universities and other post-secondary educational and training institutions and to conduct research and analysis, including longitudinal studies, and statistical activities conducted by or on behalf of the Ministry for purposes that relate to post-secondary education and training. Any information collected by McMaster for the purposes of self-identification as a member of a specific group (i.e. First Generation, First Nations, etc.) may be subject to disclosure to the Ministry by McMaster and collected by the Ministry pursuant to its statutory authority. Further information on how the Ministry uses personal information is available on the ministry's website (<https://www.ontario.ca/page/ministry-colleges-universities>).

In addition to collecting personal information for the purposes noted above, McMaster University collects specific and limited personal information

on behalf of the McMaster Student Union, the McMaster Association of Part-time Students and/or the McMaster Graduate Students Association. These constituent student groups use personal information for the purpose of membership, administration, elections, annual general meetings, health plans and other related matters only. Please contact the relevant Student Union or Association office if you have questions about this collection, use and disclosure of your personal information and their respective privacy policies.  
*June 2019*

## Notification of Disclosure of Personal Information to Statistics Canada

Statistics Canada is the national statistical agency. As such, Statistics Canada carries out hundreds of surveys each year on a wide range of matters, including education. In order to carry out such studies, Statistics Canada asks all colleges and universities to provide data on students and graduates. Institutions collect and provide to Statistics Canada student identification information (student's name, student ID number), student contact information (address and telephone number), student demographic characteristics, enrolment information, previous education and labour force activity.

The *Federal Statistics Act* provides the legal authority for Statistics Canada to obtain access to personal information held by educational institutions. The information may be used only for statistical purposes, and the confidentiality provisions of the *Statistics Act* prevent the information being released in any way that would identify a student. Students who do not wish to have their information used are able to ask Statistics Canada to remove their identification and contact information from the national database. For further information, please see Statistics Canada's web site at: <http://www.statcan.ca> or write to the Postsecondary Section, Centre for Education Statistics, 17th Floor, R.H. Coats Building, Tunney's Pasture, Ottawa, K1A 0T6.

## Record Retention

When individuals apply for admission to and enrolment in programs at McMaster they accept the University's right to collect pertinent personal information. This information is needed to assess qualifications for entry, establish records of performance in programs and courses, provide the basis for University aid and awards and governmental student aid programs, and to assist the University in the academic and financial administration of its affairs. All documentation submitted to the University in support of applications for admission, residence accommodation, University aid and awards, appeals and/or petitions becomes the property of the University.

All application documents are normally destroyed at the end of each admission cycle for applicants who are not accepted, or who do not enrol following acceptance. For applicants who become McMaster students, their application documents are normally destroyed five years after the last term of their enrolment at the University (regardless of whether or not they graduate). Supporting documentation relevant to government student aid programs (e.g., OSAP) is kept per the retention policies of the Federal and/or Provincial governments. Supporting documentation, by aid year, relevant to the administration of online aid applications, as well as University aid and awards, will normally be destroyed after seven years.

All information needed to produce official transcripts is maintained permanently.

## Second Bachelor's Degree Programs

For admission to a second undergraduate degree program a student must hold a first undergraduate degree. A second degree is not available in all



degrees and/or subject areas. See *University Graduates Applying for a Second Bachelor's Degree*.

1. All work for the second degree must be completed at McMaster University.
2. Second degree programs may not be available where there is substantial overlap in the requirements of the first degree. See individual Faculty/Program regulations or consult Faculty/Program Offices for exclusions or further information.
3. Extra courses taken while enrolled in a first degree program, or courses completed as a Continuing Student, may, with the approval of the Faculty, be applied to the second degree program.
4. Students must meet the same regulations for continuation and graduation as are applied to students enrolled in a first degree program.
5. Credit from the first two degrees cannot be applied to a third undergraduate degree. To obtain a third undergraduate degree students must complete all program requirements, i.e. approximately 90 units for a three-level degree and approximately 120 units for a four-level degree.

## Requirements for Second Bachelor's Degree Programs

- **Honours Degree following a Three-Level Degree in the Same Subject:** For consideration into an Honours B.A., Honours B.Sc., or Honours B.A.Sc. degree program following a three-level degree in the same subject, a Cumulative GPA of at least 5.0 in the first degree program is required. For consideration into all other eligible degree programs, a Cumulative GPA of at least 6.0 in the first degree program is required. If admitted, at least 30 units beyond the first degree, including all program requirements, must be completed.
- **B.A. or B.Sc. in Another Subject:** For consideration, students must meet the admission requirements for the program. If admitted, at least 30 units beyond the first degree, including all program requirements, must be completed. Students are not eligible for a second B.A. or B.Sc. degree in a program in which they have been awarded a minor, however, they may apply for an honours second degree in that subject.
- **Honours B.A., Honours B.A.Sc., Honours B.Sc. or Honours B.H.Sc. in Another Subject:** For consideration, students must meet the admission requirements for the program and have a Cumulative GPA of at least 5.0. If admitted, at least 60 units beyond the first degree, including all program requirements, must be completed.
- **B.M.R.Sc.:** For consideration, students must meet the admissions requirements for the program. If admitted, students will be required to complete a minimum of 24 units during Level 1 of the program. Some of these units may be extra to the degree requirements.
- **B. Eng., B.Tech., and B.A.Sc.:** For consideration, students must meet the admission requirements for the program. If admitted, students must complete at least 60 units beyond the first degree including all program requirements.

## McMaster Students Studying at Another University: Letter of Permission (LOP) and Exchange (Study Abroad)

1. McMaster students who wish to complete courses at another university for transfer credit towards their McMaster degree must be in good academic standing.
2. Grades obtained in courses at another university will not be included in the calculation of McMaster averages, which may affect consideration for in-course academic awards.

3. Courses taken at another university cannot be used to satisfy McMaster's Residence Requirements.
4. Students may take up to six units at another university toward a minor.

### Letter of Permission (LOP):

1. Students must obtain necessary approval in advance from their Faculty/Program Office.
2. Upon completion of course work, if a grade of 60% or better is obtained, the transcript designation reads T indicating *transfer credit*. If less than a 60% grade is attained, the transcript designation reads NC indicating *no credit*. If the student withdraws from the course, the transcript designation reads W indicating *withdrawn*.
3. Students who do not to use their Letter of Permission or drop the course must supply the Faculty/Program Office with a certified letter from the host university, otherwise a grade of NC will be placed on the transcript.

### Exchange (Study Abroad):

1. Students must obtain necessary approvals in advance from both their Faculty/Program Office and International Student Services.
2. Upon completion of course work, if a passing grade (as determined by the host university) is obtained, the transcript designation reads T indicating *transfer credit*. If less than a passing grade is attained, the transcript designation reads NC indicating *no credit*. If the student withdraws from the course(s), the transcript designation reads W indicating *withdrawn*.
3. Students who return from exchange prior to completion of course work must supply the Faculty/Program Office with a proof of withdrawal from the host university, otherwise grades of NC will be placed on the transcript.

## Credit in Courses by Special Assessment (Challenge Examinations)

Students who have acquired knowledge at a different type of institution or in a manner that makes assessment of their qualifications difficult are permitted to seek degree credit through special assessment (*Challenge for Credit*). Challenge for credit is not intended to give credit for skills or knowledge gained through high school, college or previous university instruction. The special assessment may include one or more of the following: written examinations, papers, essays, submissions of a substantial body of work, or portfolios, or laboratory tests. Credit can be granted only for those courses listed in the current McMaster calendar. Not all courses in all disciplines are available for challenge. Faculties and departments are free to determine which, if any, of their courses are open for special assessment. Challenges are assessed on a pass/fail basis. The passing grade for a challenge appears on the transcript as COM (*Complete*) and is not used in computing averages or evaluating honours or scholarship standing, but is counted as a course attempt. Unsuccessful attempts will be noted on the transcript as a grade of F. Special Assessment is not available for a course taken previously and a course may be attempted only once by special assessment. Once you have registered for a course by such means (known as *challenge exams*) the registration may not be cancelled and you may not withdraw from the course. Waivers of prerequisites only (i.e. no degree credit) will be at the discretion of the department.

## Voluntary Withdrawal from the University

Students who wish to permanently or temporarily withdraw from the University must consult their Faculty/Program Office. Students in receipt of government student aid (e.g., OSAP) and/or University aid or awards should contact the Office of the Registrar, Aid & Awards.

## Petitions for Special Consideration

The University wishes to assist students with legitimate difficulties. It also has the responsibility to ensure that degree, program and course requirements are met in a manner that is equitable to all students. Students may submit, in a prompt and timely manner, a Petition for Special Consideration to the Faculty/Program Office in those instances where a student acknowledges that the rules and regulations of the University have been applied fairly, but is requesting that an exception to the regulations be made because of special circumstances. Requests related to temporary or permanent disabilities, or for retroactive accommodations related to a disability are excluded from petitions and must be processed under the *Academic Accommodation of Students with Disabilities* policy. Petitions should be submitted in a prompt and timely manner for the relevant term, but no later than July 31 immediately following the Fall/Winter Term or November 15 immediately following the Spring/Summer Term.

Two forms are available from your Faculty/Program Office:

### Petition for Special Consideration (Form A):

The *Petition for Special Consideration (Form A)* is submitted for a variety of issues, including, when a student wishes to have a leave of absence or seeks to depart from University requirements based on compelling medical or personal reasons; or a student believes that an adverse ruling or decision about their academic performance, such as failing a course, or being required to withdraw from a program for failure to meet program requirements, should be waived because of compelling medical or personal circumstances. Requests related to temporary or permanent disabilities, or for retroactive accommodations related to a disability are excluded from petitions and must be processed under the *Academic Accommodation of Students with Disabilities* policy.

### Petition for Special Consideration: Request for Deferred Examination (Form B):

The *Petition for Special Consideration: Request for Deferred Examination (Form B)* is used when a student misses an examination because of compelling medical or personal reasons. Requests related to temporary or permanent disabilities, or for retroactive accommodations related to a disability are excluded from petitions and must be processed under the *Academic Accommodation of Students with Disabilities* policy.

1. Once a student has completed an examination, no special consideration will be granted.
2. A student who misses an examination because of compelling medical or personal reasons may submit a Petition for Special Consideration: Request for Deferred Examination (Form B) to the Faculty/Program Office, normally within five working days of the missed examination.
3. If the reason is medical, the approved McMaster University Medical Form must be used. The student must be seen by a doctor at the earliest possible date, normally on or before the date of the missed exam and the doctor must verify the duration of the illness. Relief will not be available for minor illnesses. If the reason is non-medical, appropriate documentation with verifiable origin covering the relevant dates must be submitted, normally

within five working days.

4. In deciding whether or not to grant a petition, the adequacy of the supporting documentation, including the timing in relation to the due date of the missed work and the degree of the student's incapacitation, will be taken into account.
5. It is the student's responsibility to check Mosaic Student Center > Deferred Exam Approvals or with the Faculty/Program Office for a decision on the request for a deferred examination. If the deferred examination is granted, the student will be informed officially by means of the notation DEF which will appear against the relevant course on the student's academic record and via Mosaic > Student Center > View My Grades.
6. Deferred examinations are written during the next official University deferred examination period. Default of the deferred examination will result in a fail for that examination.
7. Students who have been granted more than one deferred examination may be required by their Faculty/Program Office to reduce their course load during the term in which the deferred examinations are being written. The decision on a reduced load will be made and communicated with the decision on the request for deferred examinations.
8. At the discretion of the Faculty/Program Office, students who have been granted one or more deferred examinations, may not be allowed to enrol in a subsequent term until all deferred examinations have been completed and the Academic Standing calculated. Students will be notified of this decision by their Faculty/Program Office.
9. Students who will be living more than 160 kilometres from Hamilton during the deferred examination period and wish to write their approved deferred examination at an institution other than McMaster must submit a Request to Write Deferred Examination Off-campus Form at least 15 working days prior to the deferred examination period. Students are responsible for making arrangements for a presider to conduct the deferred examination at an outside institution and for paying any fees such as invigilation and return courier.
10. The authority to grant any petitions lies with the Faculty/Program Office and is discretionary. It is imperative that students make every effort to meet the originally-scheduled course requirements and it is a student's responsibility to write examinations as scheduled.

Decisions made on Petitions for Special Consideration are final. In accordance with the *Student Appeal Procedures*, decisions made on Petitions for Special Consideration cannot be appealed to the Senate Board for Student Appeals. However, should students believe that a decision may be a violation of their human rights, they may wish to contact the Equity and Inclusion Office to identify appropriate avenues of recourse as per the *Policy on Discrimination and Harassment: Prevention & Response*. Requests related to temporary or permanent disabilities, or for retroactive accommodations related to a disability, are excluded from Petitions for Special Consideration and, therefore, must be processed under the *Academic Accommodation of Students with Disabilities* policy.

## Requests for Relief for Missed Academic Term Work (MSAF)

The University recognizes that students periodically require relief from academic work for medical or other personal situations. This academic regulation aims to manage these requests by taking into account the needs and obligations of students, instructors and administrators. It is the prerogative of the instructor of the course to determine the appropriate relief for missed term work in his/her course.

Any concerns regarding the granting of relief should be directed to the respective Faculty/Program Office. Requests for relief should be made with a commitment to academic integrity in mind. Requests that deviate from this

commitment will be handled under the Academic Integrity Policy and Code of Student Rights and Responsibilities, where appropriate.

1. Relief for missed academic work worth less than 25% of the final grade resulting from medical or personal situations lasting up to three calendar days:
  - Use the McMaster Student Absence Form (MSAF) on-line self-reporting tool. No further documentation is required.
  - Students may submit requests for relief using the MSAF once per term.
  - An automated email will be sent to the course instructor, who will determine the appropriate relief. Students must immediately follow up with their instructors. Failure to do so may negate the opportunity for relief.
  - The MSAF cannot be used to meet a religious obligation or to celebrate an important religious holiday.
  - The MSAF cannot be used for academic work that has already been completed/ attempted.
  - An MSAF applies only to work that is due within the period for which the MSAF applies, i.e. the 3-day period that is specified in the MSAF; however, all work due in that period can be covered by one MSAF.
  - The MSAF cannot be used to apply for relief for any final examination or its equivalent. See *Petitions for Special Consideration*.
2. For medical or personal situations lasting more than three calendar days, and/or for missed academic work worth 25% or more of the final grade, and/or for any request for relief in a term where the MSAF has been used previously in that term:
  - Students must report to their Faculty/Program Office to discuss their situation and will be required to provide appropriate supporting documentation (see *Documentation Requirements* below).
  - If warranted, the Faculty/Program Office will approve the absence, and the instructor will determine appropriate relief.

## Documentation Requirements

If the reason for a request for relief is medical, the approved McMaster University Medical Form covering the relevant dates must be submitted. The student must be seen by a doctor at the earliest possible date, normally on or before the date of the missed work and the doctor must verify the duration of the illness.

If the reason is non-medical, appropriate documentation with verifiable origin covering the relevant dates must be submitted, normally within three working days.

In some circumstances, students may be advised to submit a Petition for Special Consideration (Form A) seeking relief for missed academic work. In deciding whether or not to grant a petition, adequacy of the supporting documentation, including the timing in relation to the due date of the missed work and the degree of the student's incapacitation, may be taken into account. Failure to do so may negate the opportunity for relief.

If the petition is approved, the Faculty/Program Office will notify the instructor(s) recommending relief. It is the prerogative of the instructor of the course to determine the appropriate relief for missed term work in their course.

## Late Withdrawal

McMaster University provides a Late Withdrawal option to assist students who have become irretrievably behind in a course. Students who have fallen behind with assignments and/or are not prepared to write final examinations (or equivalent) in one or more courses are encouraged to make use of this option and must contact their Academic Advisor in the Faculty/Program Office. Students will work with their Academic Advisor to discuss the situation and what steps they can take to prevent a recurrence.

The maximum number of units for which students may request a Late

Withdrawal is 18 units throughout their undergraduate degree.

Students may request a Late Withdrawal, without petition, no later than the last day of classes in the relevant Term. However, it is important to note that:

- Requests for Late Withdrawal cannot be made in courses for which the final exam (or equivalent) has been attempted or completed. This also includes courses where a final grade has been assigned (e.g. clinical courses).
- Such requests will be cancelled or revoked if it is determined that the student attempted or completed the final exam (or equivalent).
- Students cannot use the Late Withdrawal option for courses in which they are under investigation or for which they have been found guilty of academic dishonesty.

Course(s) approved for Late Withdrawal will be:

- Assigned a non-numeric grade of LWD, in lieu of an alpha/numerical grade
- Excluded from the calculation of the GPA
- Ineligible for tuition refund

Approval of a late withdrawal is final, and requests to be re-enrolled in the withdrawn course(s) will not be considered. A withdrawal will not preclude students from enrolling in the course(s) in a subsequent term.

## Examinations

(See also *Office of the Registrar (Examinations)*)

Examinations conducted by the Office of the Registrar will appear in the Mosaic Student Center and may be scheduled in the morning, afternoon, or evening, Monday through Sunday. Other instructor-scheduled tests and examinations may be held throughout each term in compliance with Academic Obligations: Restrictions.

Full details regarding examination procedures conducted by the Office of the Registrar are found in the Undergraduate Examinations Policy.

McMaster student photo identification cards are required at all examinations.

Examinations are not rescheduled for purposes of travel. Students must be available for the entire examination period as listed in the Sessional Dates section.

The Office of the Registrar will reschedule final examinations within the examination period for the reasons listed below. Application to reschedule examinations must be made at least 10 working days before the scheduled examination period. Failure to meet the stated deadline may result in the denial of the application.

- Conflict with religious obligations
- More than one examination scheduled at the same time
- Three examinations in one calendar day (midnight to midnight).
- Three consecutive examinations over two days (e.g., December 14th at 4:00 pm and 7:30 pm and December 15th at 9:00 am).

Students who miss a final examination for medical or personal reasons may submit a Petition for Special Consideration: Request for Deferred Examination (Form B) to their Faculty/Program Office, normally within five working days of the missed examination.

Students who begin a final examination, but are unable to complete it for medical reasons, may submit a Petition for Special Consideration (Form A) to their Faculty/Program Office, normally within five working days of the examination.

Students with disabilities are required to inform Student Accessibility Services of accommodation needs for examinations on or before the last date for withdrawal from a course without failure by default. This allows sufficient time to verify and arrange appropriate accommodation.

## Request to Write Deferred Examinations at an Off-Campus Location

Students living more than 160 kilometers from Hamilton during the deferred examination period and wishing to write their approved deferred examination at an institution other than McMaster must submit a Request to Write Deferred Examination Off-campus Form at least 15 working days prior to the deferred examination period.

If the deferred examination is written at an off-campus location, any fees incurred are the responsibility of the student. This includes the fee to courier the written examinations back to the Office of the Registrar, Scheduling and Examinations (GH 114).

For information regarding application for Deferred Examination, see *Petition for Special Consideration: Request for Deferred Examination (Form B)*.

## Academic Evaluations

### Numeric Grading System

The results of all courses attempted will appear on the transcript. The method for determining final grades will be given in the course outline. Unless otherwise specified in the course outline, course results determined on a percentage scale will be converted to an official letter grade, as indicated in the following equivalent percentage scale.

Grade	Equivalent Grade Point	Equivalent Percentages
A+	12	90-100
A	11	85-89
A-	10	80-84
B+	9	77-79
B	8	73-76
B-	7	70-72
C+	6	67-69
C	5	63-66
C-	4	60-62
D+	3	57-59
D	2	53-56
D-	1	50-52
F	0	0-49 - Failure

### Non-Numeric Grades and Notations:

#### Non-Numeric Grades

AUD	Audit
CAN	Cancelled
COM	Complete
CR	Credit
F	Fail
INC	Incomplete
IP	In Progress
LWD	Late Withdrawal
MT	Multi-Term
NC	No Credit

NMR	No Mark Received
P	Pass
T	Transfer Credit
W	Withdrawn
XCH	Exchange

### Notations

DEF	Deferred Examination
EXTRA	Extra credits not used towards degree
REPEAT	Repeat of a previously failed course (under discontinued repeat regulations)
(R)	Repeat of a previous course (under current repeat regulations)
UPGRADE	Repeat of a previously passed course (under discontinued repeat regulations)

#### WITHDRAWN

After the last day for enrolment and course changes, students may withdraw from courses until the last day to withdraw without failure by default. Withdrawn courses will be shown on the student's transcript with a grade of W. After the last day to withdraw without failure by default, the student will remain enrolled, whether or not they fulfil any further academic obligations, and a final grade will be assigned.

#### DEF

Courses with the notation DEF have been approved for a deferred examination.

#### EXTRA

Courses designated as "Extra" at the time of registration by the Faculty Office are not included as units toward completion of a student's program. The grades obtained in such courses will not be included in the computation of the Cumulative GPA. However, they will be included in the computation of the Fall-Winter Average and the Spring-Summer Average.

#### UNUSED

Courses designated as "Unused" cannot be used to fulfil the requirements for the student's current degree program. The grades obtained in such courses will be included in the computation of all averages.

#### GRADED UNITS

Graded units refer to the number of units taken at McMaster for which a letter or Numeric Grade is earned. Graded units do not include courses assessed with a Non-Numeric Grade.

#### PASS/FAIL COURSES

Courses evaluated on a Pass/Fail basis are not included in the calculation of averages. The earned units are counted towards degree requirements.

#### MULTI-TERM FALL/WINTER COURSES

Codes for multi-term Fall/Winter courses have an A/B suffix. Part A must always be taken in the Fall Term immediately preceding Part B. Neither Part A nor B of a multi-term course has academic credit independent of both parts being successfully completed. Students who drop or withdraw from Part A must also withdraw from B.

Upon completion of the Fall Term, a grade of MT indicating multi-term will be assigned to Part A and the final grade will be assigned to Part B.

#### CUMULATIVE GRADE POINT AVERAGE (CUMULATIVE GPA)

The Cumulative GPA is the weighted average based on the Graded Units taken throughout the undergraduate career. The Repeating Courses regulation, effective September 1, 2018, will affect the calculation of subsequent Cumulative GPA.



**FALL-WINTER AVERAGE**

The Fall-Winter Average is a weighted average based on the grades attained in the Fall and Winter Terms. Overload courses and Extra courses are included in the Fall-Winter Average.

**SPRING-SUMMER AVERAGE**

The Spring-Summer Average is a weighted average based on the grades attained in the Spring and Summer Term. Overload courses and Extra courses are included in the Spring-Summer Average.

**TERM GRADE POINT AVERAGE (TERM GPA)**

The Term GPA is a weighted average based on the Graded Units taken in the term.

**WEIGHTED AVERAGE**

Weighted average is calculated by multiplying the grade points achieved in each course by the number of units in each course, totaling these results, and then dividing this result by the total number of course units.

Example of a weighted average calculation, using the grade points and units for courses attempted:

Grade	Grade Points		Units		Total Points
A-	10	x	6	=	60
C+	6	x	3	=	18
B	8	x	6	=	48
B+	9	x	3	=	27
F	0	x	6	=	0
		Total	24		153
			To calculate average: $153 \div 24 = 6.4$		

**HONOUR LISTS**

Students are reviewed for Deans' Honour Lists (DHL) and Provost's Honour List (PHL) each time a minimum of 30 units (may not exceed 6 units assessed with a non-numeric grade) have been completed. Subsequent assessments are based on all units completed since the previous review. Students will be named to the Deans' Honour List when a minimum average of 9.5 is achieved. Students will be named to the Provost's Honour List when an average of 12.0 is achieved.

**WITH DISTINCTION**

Graduation *With Distinction* standing is awarded when a minimum Cumulative GPA of 9.5 is achieved in a degree program. In this case, the Latin phrase *summa cum laude* ("with highest honour") will appear on the graduate's diploma.

**TRANSCRIPTS**

A transcript summarizes a student's academic career at McMaster University and is available by electronic request through Mosaic. Students may request a transcript upon demand and free of charge in the Office of the Registrar, Student Services, Gilmour Hall Room 108. Transcript requests will not be processed for students with outstanding financial accounts at the University or those under investigation for an academic integrity violation.

**CREDENTIALS**

A credential is a body of academic work or collection of course work that stands on its own and for which a parchment is issued. McMaster credentials include certificates, diplomas and degrees. A single course is permitted to be counted toward a maximum of two credentials.

**MINORS**

Students enrolled in a four- or five-level program (with the exception of the Medical Radiation Sciences programs) are eligible to obtain a Minor in another subject area, provided that the subject area is not integral to the requirements of their degree program. At least 18 units must be completed at McMaster. Students who wish to receive a Minor must consult the appropriate department section of the calendar. McMaster also offers Interdisciplinary Minors and Thematic Areas. To apply for a Minor, students must complete the

Minor/Certificate Application in addition to their online Graduation Information Centre (GIC) application. The student's Faculty will verify that the requirements have been met and, if successful, the transcript will indicate that a Minor has been obtained. Minors cannot be revoked once approved.

**OVERLOAD WORK**

Students wishing to take more units than prescribed for their Level/program in the Fall-Winter Term or more than 12 units in the Spring-Summer Term (no more than 6 units in either session of that term) must seek permission from their Faculty/Program Office. Normally, a Fall-Winter Average of at least 7.0 in the immediately preceding review period will be required if an overload is to be permitted. Additional academic fees will be assessed for overload work.

**OSAP ELIGIBLE COURSE LOAD**

OSAP Eligible Course Load or equivalent refers to the 60% minimum course load per term (40% minimum course load per term for students with permanent disabilities) required to be eligible for full-time OSAP government student aid funding.

**REPEATING COURSES**

Effective September 1, 2018, students may repeat a course twice (i.e. attempt a course three times). Cross-listed courses count as attempts. Grades from every attempt will appear on the academic transcript. The Cumulative GPA will include only the grade earned on the most recent attempt. Units earned will be counted once toward the student's program requirements, regardless of the number of times the course is repeated. Prior to September 1, 2018 the grades from all attempts are included in the GPA calculation.

**AUDITING COURSES**

Students currently enrolled in a degree program wishing to audit a course must obtain approval from the course instructor and their Faculty/Program Office. Additionally:

- course requisites must be met
- academic obligations (assignments, test, examinations, etc.) are not completed
- a grade of AUD (audit) will be assigned
- units will not be earned nor applied toward the student's program requirements
- tuition fees apply
- students will not be permitted to enrol for credit in the course after the Last Day for enrolment and course changes
- students enrolled in a course for credit will not be permitted to change the course to 'audit' after the Last Day for enrolment and course changes

Non-McMaster students wishing to audit a course must enrol as a Listener.

**PERSONAL INTEREST COURSE (PIC)**

McMaster University encourages interdisciplinary study and believes undergraduate studies provides an excellent opportunity to explore topics which are new and unfamiliar. Students, however, may be reluctant to take a course if they are unsure of their academic performance for fear of compromising their Cumulative GPA. The Personal Interest Course (PIC) option is designed to encourage students to explore interests outside of their program without affecting their Cumulative GPA.

1. A student can declare a PIC to signify they want an elective course to be assessed on a *Credit or No Credit (CR/NC)* grading scale.
2. To receive the grade of CR, the student must earn a final mark of at least 50%. Units earned from a successfully completed PIC will be counted in the units required for a student's degree as applicable.
3. Courses with a final grade of NC do not count as degree credits or as failures, nor are they included in the GPA calculation or averages. Please note, government student aid (e.g., OSAP) will consider a NC grade as a failure.
4. The PIC option is not available for any course that is considered a program requirement (which includes courses listed as possible required courses), independent study, thesis, field study or placement course, or on a list of

required courses. Students are responsible for ensuring the course is an elective course for their program. Engineering students should note the PIC option is available only for complementary studies electives. For students in a Bachelor of Commerce program, only non-Commerce electives may be taken as a PIC.

5. Students may declare a maximum of 3 units of PIC per term to a maximum of 12 units per four- or five-level degree or a maximum of 9 units per three-level degree. A maximum of 6 units of PIC may be used to satisfy requirements toward a Minor.
  6. The PIC option is available to undergraduate students registered in a program above Level 1, with a Cumulative GPA of at least 3.5, who are enrolled in a Program/Faculty which is participating in the PIC option. Exchange students should seek advice from the International Study Office and Faculty/Program Office.
- The PIC option is not available to students who
- are enrolled in the School of Medicine, or
  - are enrolled in a Program/Faculty which is not participating in the PIC option (see Faculty Academic Regulations), or
  - have graduated and are in a second degree or a non-degree program, e.g., continuing, etc.
7. If a percentage grade in a course is required for future applications to graduate or professional school, the PIC option should not be selected for that course. Students may not subsequently request to have a PIC grade recalculated to a numeric grade. Students must carefully review any government (e.g., OSAP) and University aid and award eligibility rules which may be affected by the use of the PIC option.
  8. If the student changes their program of study and a course taken as a PIC becomes a required course, the new Faculty/Program Office may accept the course grade of CR or NC or have the grade converted back into a numeric grade. If a grade is converted back into a numeric grade, there will be no retroactive reconsideration of aid and award.
  9. Students cannot use the PIC option for courses in which they have been found guilty of academic dishonesty. In these cases, the grade will be converted into a numeric grade.

#### DEADLINES:

1. Students must declare a course as a PIC on Mosaic by the last day for enrollment and course changes date. The student progresses in the course as per normal, and has the option to withdraw from the course as per the normal procedures and deadlines.
2. If the student would rather keep the numeric grade, they must indicate the course is no longer a PIC on Mosaic by the final date in which a student can withdrawal from a course without failure by default and the numeric grade will appear on their transcript.

#### ACADEMIC STANDING REVIEW:

Each year in May and August (and after deferred examinations) academic standing is reviewed and determined for students who have:

- attempted at least 18 units of work since the last review, or
- may be eligible to graduate.

In the academic standing review, three determinations are made:

- whether a student may graduate
- whether a student may continue at the University
- whether a student may continue in a program.

#### ACADEMIC STANDINGS:

##### GOOD STANDING

A student who satisfies the minimum requirements to continue in their program without restriction.

##### MAY CONTINUE IN PROGRAM - ACADEMIC PROBATION

Academic probation is assigned when a student:

- achieves a Cumulative GPA between 3.0 and 3.4. If at any future academic standing review their Cumulative GPA falls below 3.5, the academic standing assigned will be *May Not Continue at the University*.

- returns to studies after being Reinstated. If at any future academic standing review their Cumulative GPA falls below 3.5, the academic standing assigned will be *Required to Withdraw from the University*.

##### MAY CONTINUE IN PROGRAM - PROGRAM PROBATION

Program Probation is assigned when a student's Cumulative GPA falls below the minimum requirements to remain in their program. Failure to achieve *Good Standing* at the next academic standing review will result in their removal from the program. See Faculty specific *Minimum Requirements for Entering and Continuing in a Program Beyond Level 1*.

##### MAY NOT CONTINUE IN PROGRAM

This standing is assigned to:

- students who fail to achieve the minimum Cumulative GPA to remain in the program, or
- students previously on Program Probation who fail to achieve *Good Standing*.

To continue at the University, the student must apply to transfer to another program.

##### MAY NOT CONTINUE IN FACULTY

*May Not Continue in Faculty* is assigned when:

- a student enrolled in a program in the Faculty of Engineering or Business has achieved a Cumulative GPA between 3.0 and the minimum requirements to remain in their Faculty, or
- a student enrolled in a program in the Faculty of Business in Level 2 or above receives a grade of F in more than 6 units.

To continue at the University, the student must apply to transfer to another program or continue as a transition student for one reviewing period.

##### MAY NOT CONTINUE AT UNIVERSITY

*May Not Continue at University* is assigned when:

- a student achieves a Cumulative GPA below 3.0, or
- a student previously on Academic Probation fails to achieve *Good Standing*.

The student cannot enroll in courses at the University unless granted Reinstatement.

##### REQUIRED TO WITHDRAW FROM UNIVERSITY

A student who at any time received a standing of Academic Probation and at a future academic standing review achieves a Cumulative GPA below 3.5 will be required to withdraw from the University. The student will be unable to apply for Reinstatement for at least 12 months.

##### REINSTATEMENT

Students must contact the Office of the Registrar to apply for reinstatement within the application deadlines. Reinstatement is not guaranteed.

If reinstatement is granted, the student is placed on academic probation and their Cumulative GPA is re-set to 0.0 on zero units. At the discretion of the Faculty, the student may retain credit for courses successfully completed. If at any academic standing review after reinstatement the student's Cumulative GPA falls below 3.5, the student will be required to withdraw from the University.

The student must complete a minimum of 60 units of work after reinstatement to be eligible for Graduation With Distinction or other recognition based on the Cumulative GPA.

## Level 1 Registration and Academic Standing Requirements

When you are admitted to McMaster University for a first degree, you will enrol in one of the following Level 1 programs: Automation Engineering Technology I Co-op (B.Tech.), Automotive and Vehicle Engineering Technology I Co-op, Arts & Science I, Biotechnology I Co-op, Business I, Chemical and Physical Sciences Gateway, Computer Science I, Economics I (effective 2019-2020), Engineering I, Environmental and Earth Sciences Gateway, Health

Sciences I, Honours Health and Society I (effective 2019-2020), Humanities 1, Honours Integrated Science (Level I), Honours Kinesiology (Level I), Integrated Biomedical Engineering and Health Sciences (IBEHS) I, Integrated Business & Humanities I, Life Sciences Gateway, Mathematics and Statistics Gateway, Medical Radiation Sciences (Level I), Midwifery I, Music 1, Nursing I, Process Automation Technology I, Social Sciences I, and Studio Art 1. If you enter the University without Advanced Standing being granted, you must normally attempt a full load of Level 1 work before proceeding to the work of higher levels.

If you are studying part-time, the Office of the Associate Dean has the discretion to permit you to take some of the work in the higher levels prior to having attempted the full load of Level 1. Decisions will be made on an individual basis, according to the special circumstances that apply in the particular case.

At any review during Level 1 before you complete the Level 1 work, as in the case of a part-time student, you must attain a GPA of at least 3.5 to continue at the University in good standing. If you attain a GPA of 3.0 to 3.4 you may remain at the University for one reviewing period, but will be placed on academic probation. You may be on academic probation only once during your University career. If your GPA is less than 3.0 you may not continue at the University.

At the review when you complete the Level 1 work, if you attain a GPA of at least 3.0 and have not previously been on academic probation, but fail to meet the admission requirements of any program, you may continue at the University for one additional reviewing period on academic probation. You will be enrolled in your original Faculty, and will be classified as a Level 1 transition student if your work may only qualify you to be considered for admission to a program in another Faculty. If, at the end of the next reviewing period, you again do not qualify for admission to a program, you may not continue at the University. If your GPA is less than 3.0 you may not continue at the University.

Students in Arts & Science I should refer to the Arts & Science Program regulations listed below.

Health Sciences I, Nursing I and Midwifery I students should refer to the program regulations listed in the Faculty of Health Sciences section in this Calendar.

## Minimum Requirements for Entering and Continuing in a Program Beyond Level 1

Admission to the programs beyond Level 1 is based on performance in Level 1. You must meet both the minimum requirements to continue at the University, as described above, and program-specific requirements of each Faculty, as described in this Calendar.

### Arts & Science Program

#### B.Arts Sc. (Honours) AND B.Arts Sc. Programs

You must have a Grade Point Average (GPA) of at least 6.0 to continue in the program. If your GPA is from 5.5 to 5.9, you may remain in the program, but will be placed on program probation for one reviewing period. You may be on program probation only once.

If your GPA is 3.5 to 5.4, you must transfer to another program for which you qualify, or enrol in the Arts & Science Program as a transition student for one reviewing period. During that period you cannot take Arts & Science Program courses. At the end of that period, you may apply for readmission to the Arts & Science Program.

If your GPA is 3.0 to 3.4, you will be placed on academic probation. You may continue in the program for one reviewing period as a transition student but

cannot take Arts & Science Program courses. The purpose of this period is to prepare yourself for a program outside the Arts & Science Program. You may be on academic probation only once.

If your GPA is less than 3.0 you may not continue at the University.

## School of Business

### Business I

For specific admission requirements to the Honours B.Com. program, see *Program Notes* under the heading *Programs* in the *DeGroot School of Business* section of this Calendar.

If you are not admitted to the Honours B.Com. program at the end of Business I, you have the following options available to you:

- If your cumulative Grade Point Average is 3.5 or greater, you are still in good standing at the University. You may continue at the University in a program outside the School of Business or as a *transition* student in Business. To continue in a program outside the School of Business you must apply for admission to that program through the Office of the Associate Dean appropriate for that program. You should consult that office for more details.
- If you are not admitted to another Faculty you may enrol in the School of Business as a transition student for one reviewing period. During that period you cannot take upper-level Commerce courses. The purpose of your registration as a transition student is to make yourself eligible for admission to a degree program. If you have a cumulative Grade Point Average of 3.0 to 3.4, you will be on academic probation and may continue at the University for one reviewing period as a transition student in the School of Business but will not be permitted to take any upper-level Commerce courses. The purpose of the probation period is to make yourself eligible for a degree program.

If you have a cumulative Grade Point Average of less than 3.0 at the end of Business I, you may not continue at the University either on a full-time or part-time basis.

### Honours B.Com. Program:

You must have a cumulative Grade Point Average of at least 5.0 to continue in the Honours B.Com. Program. Once admitted to Honours B.Com., if your cumulative GPA is 4.5 to 4.9, you may continue in the Honours B.Com. Program, but will be placed on program probation. You may be on program probation for only one reviewing period. If your GPA is a 3.5 to 4.4, you may transfer to the B.Com. Program.

### B.Com. Program:

You must have a cumulative Grade Point Average of at least 4.0 to continue in the B.Com. Program. If your GPA is 3.5 to 3.9, you are permitted to continue in the B.Com. Program on program probation for one reviewing period.

### Integrated Business & Humanities:

To be admitted to Level 2 of the Integrated Business & Humanities (IBH) program, students must have completed at least 24 units of the required Level 1 courses with a minimum Cumulative Grade Point Average (GPA) of 5.0. In Level 2 and above, you must maintain a cumulative GPA of at least 5.0 to continue in the IBH program. If your cumulative GPA is 4.5 to 4.9, you may continue in the Integrated Business & Humanities program, but will be placed on program probation. You may be on program probation for only one reviewing period. If your cumulative GPA is a 3.5 to 4.4, you must transfer to another program for which you qualify, or enrol in the IBH program as a transition student for one reviewing period. During that period you cannot take IBH program courses. The purpose of this period is to prepare yourself for a program outside the IBH program. If your GPA is 3.0 to 3.4, you will

be placed on academic probation. You may continue in the program for one reviewing period as a transition student but cannot take IBH program courses. The purpose of this period is to prepare yourself for a program outside the IBH program. You may be on academic probation only once. If your GPA is less than 3.0 you may not continue at the University.

## Faculty of Engineering

### B.Eng., B.A.Sc. Programs

Admission to Level 2 Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. Admission to Level 2 Honours Business Informatics requires completion of the minimum requirements for these individual programs as stated within the Faculty of Engineering section in this Calendar. In Level 2 and above, you must maintain a GPA of at least 4.0 to continue in an Engineering program or in the Honours Computer Science or Honours Business Informatics programs. If you have a GPA of 3.0 to 3.9, you may not continue in the Faculty. If your GPA is less than 3.0, you may not continue at the University.

### B.Tech. Programs

For specific minimum requirements, please see the descriptions for the individual programs within the Faculty of Engineering section in this Calendar.

## Faculty of Health Sciences

For specific minimum requirements, please see the descriptions for the individual programs within the Faculty of Health Sciences section in this Calendar.

## Faculties of Humanities and Social Sciences

### Honours B.A. Programs; B.Mus. (Honours) Program; BFA (Honours) Program

You must have a Grade Point Average (GPA) of at least 5.0 to continue in an Honours B.A. program. If your GPA is 4.5 to 4.9, you may remain in the Honours program, but will be placed on program probation for one reviewing period. You may be on program probation only once. If your GPA is 3.0 to 4.4, you must transfer to another program for which you qualify. If your GPA is less than 3.0, you may not continue at the University.

### Honours B.S.W., B.A./B.S.W. and B.S.W. Programs

You must have a Grade Point Average (GPA) of at least 6.0 to continue in an Honours B.S.W., B.A./B.S.W. or B.S.W. program. If your GPA is 5.5 to 5.9, you may remain in the program, but will be placed on program probation for one reviewing period. You may be on program probation only once. If your GPA is 3.0 to 5.4, you must transfer to another program for which you qualify. If your GPA is less than 3.0, you may not continue at the University.

### B.A. Programs

You must have a Grade Point Average (GPA) of at least 3.5 to continue in, or graduate from, a three-level B.A. program. If your GPA is 3.0 to 3.4, you may remain in the program, but will be placed on academic probation. You may be on academic probation only once. If your GPA is less than 3.0, you may not continue at the University.

## Faculty of Science

### Honours B.Sc. Programs

Students must have a Grade Point Average (GPA) of at least 5.0 to continue in and graduate from an Honours B.Sc. program. Students with a GPA between 4.5 to 4.9, may remain in the Honours B.Sc. program, but will be placed on program probation. Students may be on program probation for only one reviewing period. Students with a GPA between 3.0 to 4.4, must transfer to another program for which they qualify. Students with a GPA below 3.0 may not continue at the University.

### Honours B.Sc. Kinesiology Program

Students must complete Level I Honours Kinesiology (including KINESIOL 1A03, 1AA3, 1E03, 1F03, 1K03) with a Grade Point Average (GPA) of at least 6.0 to continue onto Level II Honours Kinesiology.

If, upon completion of Level I Honours Kinesiology (including KINESIOL 1A03, 1AA3, 1E03, 1F03, 1K03), students achieve a GPA between 5.5 and 5.9, they may enrol in Level II Honours Kinesiology but will be placed on program probation for one reviewing period. Students may be on program probation only once.

If, upon completion of Level I Honours Kinesiology, students who achieve a GPA between 3.5 and 5.4 and/or fail to successfully complete each of KINESIOL 1A03, 1AA3, 1E03, 1F03, 1K03, may enrol in Level II Kinesiology General and take Level II required Kinesiology courses (for which all prerequisites have been met). At the next review, such students must achieve a GPA of at least 6.0 including, successful completion of KINESIOL 1A03, 1AA3, 1E03, 1F03, 1K03, to transfer to the Honours Kinesiology program. Such students must attend a mandatory preregistration counselling session with an Academic Advisor. Students who fail to meet the minimum requirements for transfer to Honours Kinesiology, must transfer to a non-Kinesiology program for which they qualify. Students with a GPA between 3.0 to 3.4, must transfer to another program to which they qualify. Students with a GPA below 3.0 may not continue at the University.

### B.Sc. Programs

Students must have a Grade Point Average (GPA) of at least 3.5 to continue in a three-level B.Sc. program. Students with a GPA between 3.0 to 3.4, may continue on academic probation for one reviewing period. Students may be on academic probation only once. Students with a GPA below 3.0 may not continue at the University.

### Honours B.A.Sc. Programs

Students must have a Grade Point Average (GPA) of at least 5.0 to continue in an Honours B.A.Sc. program. Students with a GPA between 4.5 to 4.9, may remain in the Honours B.A.Sc. program, but will be placed on program probation. Students may be on program probation for only one reviewing period. Students with a GPA between 3.0 to 4.4, must transfer to another program for which they qualify. Students with a GPA below 3.0 may not continue at the University. Graduation from an Honours B.A.Sc. program requires a Grade Point Average of at least 5.0.

### M.R.Sc. Program

Students must complete all the course requirements prescribed for Level I Medical Radiation Sciences by the end of Winter Term of Level I, with a Grade Point Average (GPA) of at least 5.0 or permission of the Committee of Instruction (Chair Medical Radiation Sciences (Mohawk), Coordinator Medical Radiation Sciences (McMaster), Coordinator Radiation Therapy Specialization, Coordinator Radiography Specialization, Coordinator Ultrasonography Specialization). For additional program-specific regulations, see the School of



Interdisciplinary Science (SIS) in the Faculty of Science section of this Calendar.

## Graduation

The following minimum Cumulative GPA are required to graduate:

- B.A. - 3.5
- B.A. (Honours) - 5.0
- B.S.W. (Honours), B.A. /B.S.W. and B.S.W. - 6.0
- B.Arts Sc. and B.Arts Sc. (Honours) - 5.0
- B.A.Sc. (Faculty of Engineering) - 4.0
- B.A.Sc. (Honours) (Faculty of Science) - 5.0
- B.Com. - 4.0
- B.Com. (Honours) - 5.0
- B.Eng., B.Eng.BME., B.Eng.Biosciences, B.Eng.Mgt., B.Eng.Society - 4.0
- B.F.A. (Honours) - 5.0
- B.H.Sc. - 3.5
- B.H.Sc. (Honours) - 5.0
- B.H.Sc. (Midwifery) - 6.0
- B.H.Sc. (Honours) (HESE Specialization) - 4.0
- B.M.R.Sc.\*- 4.5
- B.Mus. (Honours) - 5.0
- B.Sc. - 3.5
- B.Sc. (Honours) - 5.0
- B.Sc.Kin. (Honours) - 5.0
- B.Sc.N. - 5.0
- B.Tech - 3.5

\* All requirements must be completed within five years from the time of registration in Level 2.

Students who intend to graduate must complete the online Graduation Information Centre form by the appropriate deadline in their final term of study. Students wishing to graduate with a Minor must complete the application in the Minor/Certificate Application Centre.

Degrees will be conferred at the Convocation immediately following the completion of the degree. Students unable to attend the convocation ceremony who wish to attend a later ceremony should consult the *Policy on Deferral of Attendance at Convocation* and must contact the Office of the Registrar within the prescribed deadlines.

## Parchments, Diplomas and Certificates

Diplomas will not be released to students with an outstanding financial account with the University. Diplomas are held for a period of 12 months following the Convocation date before being destroyed. Students requesting diplomas after this period are required to pay a replacement fee. Graduates may request a duplicate or replacement degree parchment, diploma or certificate (fees apply). A duplicate copy will be issued when requested by a graduate or when the original document has been lost or destroyed. The words *duplicate copy* or *reissued* will be affixed to all degree parchments, diplomas or certificates requested in this manner and will bear the signatures of the current Chancellor, President and Vice-Chancellor, and Registrar. Damaged parchments must be returned to the Office of the Registrar before the new parchment, diploma or certificate is issued.

## Senate Policy Statements

The University has defined its expectations of students in both the academic and nonacademic life of the University community, and has developed procedures to ensure that all members of the community receive equitable treatment. Policies that govern academic and student life at McMaster can be found on the university website at the following address: <http://www.mcmaster.ca/policy>

Following are some of the policies most relevant to undergraduate students, available at the website above:

- Academic Accommodation of Students with Disabilities
- Academic Accommodation for Religious, Indigenous and Spiritual Observances (RISO)
- Academic Integrity Policy
- Alcohol Policy
- Anti-Discrimination Policy
- First Year Student Guiding Principles
- Petitions for Special Consideration
- Research Integrity Policy
- Residence Admissions Policies and Procedures
- Residence Code of Conduct
- Sexual Harassment Policy
- Student Appeal Procedures
- Student Code of Conduct
- Student Rights and Responsibilities
- Undergraduate and Graduate Awards Policy
- Undergraduate Course Management Policies
- Course Outlines
- Early Feedback
- Assessment Ban
- Turnitin.com
- Welcome Week Regulations

As policies are reviewed and revised on a regular basis, students are advised to check the Policies, Procedures and Guidelines section of the University website for the most up-to-date information. Complete versions of the policies may also be obtained from the **University Secretariat, Room 210, Gilmour Hall**.

## Academic Integrity and Academic Dishonesty

The Academic Integrity Policy explains the expectations the University has of its scholars. Some departments and instructors have also developed more specific rules and regulations designed to maintain scholarly integrity. It is the responsibility of each instructor to make students aware of these expectations. The main purpose of a university is to encourage and facilitate the pursuit of knowledge and scholarship. The attainment of this purpose requires the individual integrity of all members of the University community, including all graduate and undergraduate students.

The University states unequivocally that it demands scholarly integrity from all its members. Academic dishonesty, in whatever form, is ultimately destructive of the values of the University; furthermore, it is unfair and discouraging to those students who pursue their studies honestly.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. In an academic setting, this may include any number of forms such as:

- copying or the use of unauthorized aids in tests, examinations and laboratory reports,
- plagiarism, i.e., the submission of work that is not one's own or for which previous credit has been obtained, unless the previously submitted work was presented as such to the instructor of the second course and was deemed acceptable for credit by the instructor of that course,
- aiding and abetting another student's dishonesty,
- giving false information for the purposes of gaining admission or credit,
- giving false information for the purposes of obtaining deferred examinations or extension of deadlines, and
- forging or falsifying McMaster University documents.

For a complete definition and examples, please refer to the *Academic*

*Integrity Policy*, Appendix 3. Students are encouraged to view:

[www.mcmaster.ca/academicintegrity](http://www.mcmaster.ca/academicintegrity) for further information on academic integrity and how to avoid academic dishonesty. Allegations of academic dishonesty will be handled according to the procedures described in the *Academic Integrity Policy*. Penalties may be imposed on students who have been found guilty of academic dishonesty. Examples of penalties include a mark of zero on an assignment, zero for the course with a transcript notation, and suspension or expulsion from the University, etc.

## Research Integrity and Research Misconduct

The Research Integrity Policy explains the expectations the University has of its institutional personnel to maintain research integrity.

One of the main purposes of a university is to encourage and facilitate the pursuit of research (e.g., an undertaking intended to extend knowledge through a disciplined inquiry or systematic investigation). The University states unequivocally that it demands research integrity from all of its members. Research misconduct, in whatever form, is ultimately destructive to the values of the University; furthermore, it is unfair and discouraging to those who conduct their research with integrity.

This Policy applies to all faculty, postdoctoral fellows, graduate students and undergraduate students taking part in research, directly or indirectly, and other research support staff (for complete definition of Institutional Personnel please see page 4 of the Research Integrity Policy).

All institutional personnel who are involved in research have a responsibility to report what they, in good faith, believe to be research misconduct. The Office of Academic Integrity is the appropriate office to receive concerns and questions regarding an allegation of research misconduct. Responsible allegations, or information related to responsible allegations, should be sent directly to the Office of Academic Integrity in writing.

For the complete definitions and examples, please refer to the Research Integrity Policy: [www.mcmaster.ca/academicintegrity](http://www.mcmaster.ca/academicintegrity)

## Financial Information

Upon receiving official acceptance from the Registrar's Office and upon submission of registration, you are responsible for the payment of all fees as defined in this Calendar. Payment of academic fees does not imply your acceptance to the University. Academic requirements have to be fulfilled before your enrollment is completed.

If you are a new student, you may not forward academic fees to Financial Services until you have both: accepted your Offer of Admission before the stated deadline and enrolled in courses.

You should not send residence fees unless you have received notification of acceptance.

You are responsible for the full fees for each academic term. No fee credits can be transferred from one academic session to another.

It is the policy of the University not to accept enrolment until all previous accounts are paid in full. Any payments received are, therefore, first applied to previous debts and any balances to the most recent debts.

**The following fees and regulations were the most recent available at the time of publication. All fees are subject to approval by the Board of Governors. For the most current fee information, please visit <https://registrar.mcmaster.ca/fees/>.** The University reserves the right to amend the fees and regulations at any time.

For information on student awards and financial aid, please refer to Undergraduate Academic Awards and Student Financial Aid sections of this Calendar.

## Undergraduate Fees

If you are a full-time student, fees cover your portion of the tuition cost, enrolment, library, campus health services, student organizations, and athletics, and are payable by all students.

No caution deposits are required, but students will be assessed for any unwarranted loss or breakage.

The University reserves the right to assess other supplementary fees or charges in some courses or programs to recover - in part or in full - the cost of providing course materials, accommodation and transportation for field trips, and the costs of breakages.

Fees charged by the University are approved annually by the Board of Governors for the academic year beginning September 1.

Fees shown below are for 2019-2020. The fee schedules for 2020-2021 will be available on the Office of the Registrar website at <https://registrar.mcmaster.ca/fees/> in the spring of 2020.

Tuition fees include a base per unit fee plus mandatory non-tuition related supplementary fees.

### Base Per Unit Tuition Per Faculty

Below is a breakdown of Canadian, International (new admissions for 2012-2013 onward). Fees shown below are for 2019-2020. The fee schedules for 2020-2021 will be available on the Office of the Registrar website at <https://registrar.mcmaster.ca/fees/> in the spring of 2020.

FACULTY/PROGRAM	CANADIAN/ PERMANENT RESIDENT STATUS (\$ per unit)	INTERNATIONAL STATUS (\$ per unit)
Arts & Science Level 1	201.42	1079.80
Arts & Science Level 2	199.96	1020.90
Arts & Science Level 3	198.51	983.09
Arts & Science Level 4	198.51	946.69
B.Com. Integrated Business and Humanities Level 1	336.38	1325.23
B.Com. Integrated Business and Humanities Level 2	336.38	1276.15
B.Com. Integrated Business and Humanities Level 3	336.38	1228.88
B.Com. Integrated Business and Humanities Level 4	332.21	1183.37
Business Level 1	311.83	1272.26
Commerce Level 2	311.83	1225.14
Commerce Level 3	311.83	1179.76
Commerce Level 4	307.97	1136.06
Engineering Level 1	336.38	1349.77
Engineering Level 2	336.38	1276.15
Engineering Level 3	336.38	1228.88
Engineering Level 4	332.21	1183.37
Engineering Level 5	332.21	1183.37
Eng. Mgt. Level 2	336.38	1276.15
Eng. Mgt. Level 3	336.38	1276.15
Eng. Mgt. Level 4	332.21	1228.88
Eng. Mgt. Level 5	327.15	1183.37
Eng. B.Tech. Level 1	265.77	1187.80

<b>FACULTY/PROGRAM</b>	<b>CANADIAN/ PERMANENT RESIDENT STATUS (\$ per unit)</b>	<b>INTERNATIONAL STATUS (\$ per unit)</b>
Eng. B.Tech. Level 2	265.77	1123.01
Eng. B.Tech. Level 3	265.77	1081.42
Eng. B.Tech. Levels 4, 5	262.47	1041.37
Eng. Computer Science Level 1	266.58	1160.79
Eng. Computer Science Level 2	266.58	1097.48
Eng. Computer Science Level 3	266.58	1056.83
Eng. Computer Science Level 4	263.28	1017.69
Health Sciences (Honours) Level 1	201.42	1079.80
Health Sciences (Honours) Level 2	199.96	1020.90
Health Sciences (Honours) Level 3	198.51	983.09
Health Sciences (Honours) Level 3	198.51	946.69
Humanities Level 1	201.42	1025.81
Humanities Level 2	199.96	969.86
Humanities Level 3	198.51	933.94
Humanities Level 4	198.51	899.36
IBEHS Engineering and Biomedical Engineering Level 1	336.38	1349.77
IBEHS Engineering and Biomedical Engineering Level 2	336.38	1276.15
IBEHS Engineering and Biomedical Engineering Level 3	336.38	1228.88
IBEHS Engineering and Biomedical Engineering Level 4	332.21	1183.37
IBEHS Engineering and Biomedical Engineering Level 5	327.15	1183.37
IBEHS Health, Engineering Science and Entrepreneurship Level 1	336.38	1349.77
IBEHS Health, Engineering Science and Entrepreneurship Level 2	336.38	1276.15
IBEHS Health, Engineering Science and Entrepreneurship Level 3	336.38	1228.88
IBEHS Health, Engineering Science and Entrepreneurship Level 4	332.21	1183.37
IBEHS Health, Engineering Science and Entrepreneurship Level 5	327.15	1183.37
Nursing Level 1	201.12	1187.80
Nursing Level 2	199.96	1123.01
Nursing Level 3	198.51	1081.42
Nursing Level 4	198.51	1041.37
All Science Level 1 programs	201.42	1079.80
All Science Level 2	199.96	1020.90
All Science Level 3	198.51	983.09
All Science Level 4	198.51	946.69
Social Sciences Level 1	201.42	1025.81
Social Science Level 2	199.96	969.86
Social Science Level 3	198.51	933.94
Social Science Level 4	195.51	899.36

## Supplementary Fees

Fees shown below are for 2019-2020. The fee schedules for 2020-2021 will be available on the Office of the Registrar website at <https://registrar.mcmaster.ca/fees/> in the spring of 2020.

### STUDENTS TAKING 1 TO 17 UNITS PAY (PER UNIT):

Academic Fee	\$2.58
Career Services Fee	\$0.74
Student Building Fee	\$0.39
Athletics and Recreation Activity Fee	\$5.40
Transcript, Letters, Tax Form & Certificates Fee	\$1.29
Auxilliary Fee	\$0.70
Basic Health Resources	\$2.38
Handbook Fee	\$0.36
Newsletter Fee	\$0.09
Student Tax Returns	\$0.13
Total Charge per unit	\$14.31

**McMaster Association of Part-Time Students Fees:**

Organization Fee	\$7.12
Total Charge per unit	\$13.77

**Nursing Students Add:**

Learning Resource Fee	\$9.42
Communicable Disease Screening	\$30.20
Respiratory Mask Fitting Fee	\$24.66

**STUDENTS TAKING 18 UNITS OR MORE PAY:**

Students registered in 18 or more units at ANY time during the session (including cancelled courses) will be responsible for the following fees.

Student Service Fee	\$439.88
SOLAR Car	\$1.11
Ontario Public Interest Research Group (OPIRG)	\$5.50
Engineers Without Borders	\$0.41

**Note:** If you do not wish to support the work of McMaster OPIRG you can claim a full refund by bringing your student card to the OPIRG Office within three weeks after the completion of the drop and add period.

**MCMMASTER STUDENT UNION FEES:**

Student Organization Fee	\$135.53
Health Plan Premium*	\$108.00
Dental Plan Premium*	\$129.01
H.S.R. Bus Pass	Referendum
WUSC Student Refugee Fee	\$1.66
Ancillary Fee for CFMU-FM	\$13.95
Incite Publication	\$1.08
McMaster Marching Band	\$1.01

**\*Note:** Students who can prove comparable coverage may opt out of the McMaster Students Union Health Plan and Dental Plan Premiums. For deadline dates and detailed information, students should consult the MSU Insurance Plans web site at <http://www.msumcmaster.ca/services-directory/36-health-and-dental-insurance>.

**PLUS:**

- McMaster Student Union's University Student Centre Building fee (\$0.68 per unit), to a maximum of \$20.40
- Administrative Services Fee (\$1.29 per unit), to a maximum of \$38.10
- Athletics and Recreation Building Fee (\$8.10 per unit), to a maximum of \$243.00

**AND FACULTY SPECIFIC SOCIETY/SUPPORT FEES AS FOLLOWS:**

Arts & Science	\$33.81
Bachelor of Health Sciences (Honours)	\$30.69
Commerce	\$217.23
Engineering	\$196.97
Humanities	\$60.00
Medical Radiation Science Collaborative Fee	\$156.21
Nursing	\$206.86
Science	\$53.38
Social Sciences	\$66.12

**Canadian Citizens, Landed Immigrant Students and Visa Students**

The fee schedules for 2020-2021 will be available on the Office of the Registrar website at <https://registrar.mcmaster.ca/fees/>.

**Student Health Services Fees**

The McMaster Students Union Health Plan Premium fee of \$108.44 includes reimbursement of expenses resulting from an accident incurred during the academic year, where such expenses are not recoverable under the Ontario Health Insurance Plan. The McMaster Students Union Dental Plan Premium fee of \$129.00 provides a dental plan for all full-time undergraduates students enrolled in 18 units or more.

For details concerning coverage, contact the McMaster Students Union Office at ext. 22003 or visit their website at <http://www.msumcmaster.ca>.

**Note:** Students who can prove comparable coverage may opt out of the McMaster Students Union Health Plan and Dental Plan Premiums. For deadline dates and detailed information, students should consult the MSU Insurance Plans web site at <http://www.msumcmaster.ca/services-directory/36-health-and-dental-insurance>.

**Co-op Fees**

Co-op students attending the full academic term (September-April) should add a \$1,300.00 Co-op Fee to the regular 30 unit Science fee. Co-op students attending one academic term should pay half the 30 unit Science fee plus a \$650.00 Co-op Fee. Faculty of Engineering Admin Co-op Fee is \$100.00 and B-Tech Co-op Fee (per work term) is \$600.00.

**Listeners**

You may register as a Listener in some degree courses. The cost is equivalent to a regular course but the student simply audits the course and does not receive a grade. Listener status is not available in limited enrolment classes. For any degree course, written permission to attend must be obtained from the course instructor before registration is finalized by the Office of the Registrar. Listeners withdrawing from a course may do so without penalty up to five working days before the first session. After that and before the second class, an administrative fee of \$60.00 applies. There is no refund after the second class. This category excludes currently registered students, who may audit a course. See *Admission Requirements* section in this Calendar for details.

**Persons Aged 65+**

Subject to meeting admission and prerequisite requirements, if you will be aged 65 or over during the academic session for which you are enrolling, you may enrol without payment of tuition and supplementary fees.



## Residence and Meal Plan Fees

### Regular Session

If you live on campus, your residence fees cover the period, from Labour Day weekend to 5 p.m. on the day following your final April examination, and excludes the December holiday break.

**The fees below are those for 2019-2020.**

**Add to the fees below the Residence Life Activity fee of 40.00 per student. For more information, visit <http://www.mcmaster.ca/residence-life.html>.**

#### RESIDENCES

Traditional Residences	
Lofted Quad	\$5,800.00
Lofted Triple/Single-User Washroom	\$6,100.00
Triple Room	\$6,300.00
Quad Room	\$6,500.00
Double Room	\$6,650.00
Double/Single User Washroom	\$6,975.00
Double Washroom	\$7,300.00
Single Room	\$7,600.00
Single/Single User Washroom	\$7,650.00
Single Washroom	\$7,950.00
Apartment	
2 person (Double Room)	\$7,900.00
4/6 person (Single Room)	\$8,325.00
Suite	
4 person (Single Room)	\$8,825.00

#### MEAL PLANS

The Residence Meal Plan is an integral component of living in any of the McMaster University residences and all students living in residence must purchase a mandatory meal plan.

If you are living in a traditional residence, you must purchase a meal plan from Group A. Students living in Bates and the Mary E. Keyes Residence must purchase a meal plan from *either* Group A *or* Group B.

**The fees below are those for 2019-2020.**

GROUP A FULL MEAL PLAN (AVAILABLE TO ALL RESIDENCE STUDENTS)		GROUP B REDUCED MEAL PLAN (AVAILABLE TO BATES AND MARY E. KEYES RESIDENCE STUDENTS ONLY)	
Mandatory Meal Plan 1	\$4,495.00	Mandatory Meal Plan 1	\$3,105.00
Optional Meal Plan 2	\$4,695.00	Optional Meal Plan 2	\$3,305.00
Optional Meal Plan 3	\$4,895.00	Optional Meal Plan 3	\$3,505.00
Optional Meal Plan 4	\$5,095.00	Optional Meal Plan 4	\$3,705.00

For more information on meal plans visit our web page at <http://hospitality.mcmaster.ca/> or contact Mac Express, Commons Building, Room 128, telephone (905) 525 9140, ext. 27448, email [express@mcmaster.ca](mailto:express@mcmaster.ca). For information regarding applying to residence visit the Housing web page at <http://housing.mcmaster.ca/> or contact Residence Admissions, Commons

Building, Room 101, telephone (905) 525 9140, ext. 24342, email [resnote@mcmaster.ca](mailto:resnote@mcmaster.ca).

### Summer Residence

McMaster University offers residence accommodation for summer students and casual guests from early May to late August each year. For further information, contact Conference Services, McKay Residence, Room 124, telephone (905) 525-9140, ext. 24781.

### Payment of Fees

#### Payment deadline dates:

Tuition fees are due in full on the following dates:

- Fall term - September 25 (for all students)
- Winter term - January 25 (for all students)
- Spring/Summer terms - May 25 (for all students)

For 2020-2021 dates, please visit Office of the Registrar: Fees web site at <https://registrar.mcmaster.ca/fees/>

**Residence/Meal plan fees are due in full on the following dates:**

- September 1 (September 22 for OSAP students)

Our web site at <https://registrar.mcmaster.ca/fees/> contains valuable information about your fees and important deadline dates.

Students who do not pay in full by the deadline dates provided in their account on MOSAIC will find balances subject to interest charges, late fees and in time, suspended privileges. Interest is charged at an annual rate of 14.4% (1.2% per month) subject to change. A full month's interest is calculated on any unpaid balance on the second-to-last working day of each month. Past-due balances are subject to collections activity.

In addition, if you refuse to pay fees, or any part of the fees, you may be refused admission to the University or you may be requested to withdraw with all privileges suspended. Fees to the date of withdrawal will be assessed. If you wish to re-register within the same academic session, you will also be assessed a \$100.00 reinstatement fee.

It is the policy of the University not to accept enrolment until all previous accounts are paid in full. Any payments received are, therefore, first applied to previous debts and any balances to the most recent debts.

You will not be eligible for any grades, examination results, transcripts, diplomas or the payment of awards of any kind, until fees and any other accounts owed to the University are paid in full.

Note: Graduands who have outstanding accounts with the University will be permitted to attend convocation, but will not receive their diplomas until their accounts have been cleared in full.

### Refunds

If you are forced, by illness or other personal reasons, to withdraw from courses, you will be charged a partial fee for courses that are cancelled. The charge is determined by the date on which the course is cancelled. It is important that you review the 2020-2021 cancellation schedule. It will be available on the Registrar's Office website at <https://registrar.mcmaster.ca/fees/> in the spring of 2020.

### Miscellaneous Fees

The following fees were in effect for the 2019-2020 academic year, and are over and above assessed academic fees, supplementary fees, and residence fees and meal plan fees.

#### Academic User Fees

Applications for re-admission	\$100.00
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Applications to Part-Time Studies	\$100.00
Certification of Enrolment Fee	No fee
Challenge of Credit	Equal to tuition
Diploma Delivery Fee (not charged for pick-up at University)	\$25.00
Examination Reread (Refunded if grade increases by 3 points)	\$50.00
Graduation Fee (Service) for those attending	\$45.00
Letter of Permission	No fee
Notarizing Fee (plus \$0.50 per page over 10 pages)	No fee
Replacement of Diploma	\$50.00
Verification of Student I.D. Card at Exams	\$30.00
Replacement of Student I.D. Card	\$30.00
Rush Transcript Fee (24 hour rush service)	\$15.00
External Exam Administration Fee	\$110.00
On Demand Transcript Request (immediate production of official transcripts)	\$20.00
Transcript per copy (students who are not covered under Service Fee agreements)	\$10.00
Supplementary Application Processing Fee	\$90.00

Students writing deferred examinations at another centre are responsible for payment of fees, which may be assessed by the other examination centre.

### Financial/Administrative User Fees

<b>Certificate Replacement Fee</b>	
Income Tax Receipt/Education Credit Certificate	No fee
<b>Certification of Fee Payment</b>	No fee
<b>Interest Charge on Unpaid Accounts - per month</b>	1.20%
<b>Meal Plan Withdrawal Fee</b>	\$50.00
<b>Meal Card Misuse Fine</b>	\$25.00
<b>Returned Cheque Charge (NSF, Stopped Payment)</b>	
First Occurrence	\$55.00
Each Subsequent Occurrence (Additional)	\$15.00
<b>Option to use Credit Card to pay Student Account</b>	1.90%
<b>Late Payment Fee - per term</b>	\$75.00
<b>Personal Cheque Handling Fee</b>	\$15.00
<b>Reinstatement Fee</b>	\$100.00
<b>Library Charges</b>	
Overdue Recalled Books (per day)	\$5.00
Overdue Reserve Material (per hour)	\$5.00
Overdue multimedia equipment or room key (per hour). Daily maximum of \$250	\$20.00
Classroom audiovisual rental for data projectors and camcorders (per hour). Daily Maximum of \$65	\$25.00
Replacement Cost (up to); list of item costs will be posted for users	\$2,500.00
Non-refundable Administration fee for Replacement Cost	\$25.00

## Expenses

### COSTS OTHER THAN FEES FOR STUDENTS IN CLINICAL COURSES

You must buy uniforms, shoes and uniform accessories, for clinical practice. If you are a Nursing student, your uniform and accessories are ordered under the direction of the School of Nursing. The approximate cost is \$200.00. Level 1 Nursing students are also required to purchase a stethoscope at approximately \$100.00 and a basic blood pressure cuff at approximately \$40.00.

### REGISTRATION EXAMINATIONS

Graduates of the B.Sc.N. program can expect to pay fees (currently, approximately \$600.00) to write the comprehensive registration examinations administered by the College of Nurses of Ontario.

### INSURANCE OF PERSONAL PROPERTY ON UNIVERSITY PREMISES

The University cannot assume any responsibility for the personal property of any employees, faculty members, or students, nor does the University carry any insurance that would cover their personal property. In most cases, personal fire insurance policies provide an automatic 10% extension covering property away from home. You should inspect your insurance policies to be certain that this is the case.

### DEATH AND DISMEMBERMENT INSURANCE

The University considers that the purchase of insurance coverage for death and dismemberment is the individual responsibility of its students. There are various insurance plans available, and although the University does not specifically endorse any one of these plans, it has no objection to explanatory brochures and literature being posted on bulletin boards or distributed in appropriate places. If you are involved in laboratory or field work, you are particularly encouraged to investigate such coverage.

# Faculties, Programs and Schools

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## Arts & Science Program

L.R. Wilson Hall, Room 3038, ext. 24655, 23153

<http://artsci.mcmaster.ca>

### DIRECTOR

**Jean Wilson**/B.A., B.Ed., M.A., Ph.D.

### PROGRAM ADMINISTRATORS

**S. Anderson**

**R. Bishop**/B.A

### COUNCIL OF INSTRUCTORS AS OF JANUARY 15, 2020

**Brian Baetz** (*Civil Engineering*)

**Alan Chen** (*Physics and Astronomy*)

**David Clark** (*English and Cultural Studies*)

**Wendy D'Angelo** (*Linguistics and Languages*)

**Megumi Harada** (*Mathematics and Statistics*)

**Henry Giroux** (*English and Cultural Studies*)

**David Goutor** (*Labour Studies*)

**Roger Jacobs** (*Biology*)

**Stephen Jones** (*Economics*)

**P. Travis Kroeker** (*Religious Studies*)

**David Lozinski** (*Mathematics and Statistics*)

**John Maclachlan** (*Arts & Science*)

**Elizabeth Marquis** (*Arts & Science; SOTA*)

**P.K. Rangachari** (*Medicine*)

**Mat Savelli** (*Health, Aging and Society*)

**Vanessa Watts** (*Indigenous Studies*)

**Jean Wilson** (*Arts & Science; Linguistics and Languages*)

The Arts & Science Program provides students with a broad-based, liberal education. By means of electives, the Program also allows for substantial specialization in a particular discipline or area. The interdisciplinary Program has been designed for students who wish to further their intellectual growth through the study of significant achievements in both the arts and the sciences and through practice in methods of inquiry.

The integrated curriculum consists of courses offered by the Council of Instructors of the Arts & Science Program, together with other courses offered by departments across the University. The curriculum is designed to meet three major objectives:

1. to enable substantial work in both the arts and the sciences;
  2. to develop skills in writing, speaking, and critical thinking;
  3. to foster the art of scholarly inquiry into issues of public concern.
- Meeting the last of these objectives is the particular aim of inquiry courses, which begin in Level I and continue in Upper Levels. To investigate with skill and insight a complex public issue, such as world population growth in relation to food supply, requires an understanding of the methods and findings of many disciplines; it calls on a liberal education. Moreover, acquiring skill in such investigations requires practice in formulating questions, searching out evidence, and bringing the insights of academic disciplines to bear on the interpretation of evidence.
- The Program offers preparation for advanced study in many professional schools, including those of architecture, business, dentistry, health administration, journalism, law, medicine, and teaching; and for research in many disciplines and interdisciplinary areas.
- Students in this program who wish to prepare for graduate study in an academic discipline should consult with the appropriate department concerning requirements. In general, preparation for graduate study may be accomplished by combining the core Honours Arts & Science curriculum with a concentration of electives in the intended area of graduate study. Combined Honours Programs, which are available in many subjects, combine the core curriculum of the Arts & Science Program with a prescribed set of courses in a subject and can be expected to satisfy course requirements for admission to graduate study in the particular subject.

## Academic Regulations

### STUDENT ACADEMIC RESPONSIBILITY

You are responsible for adhering to the statement on student academic responsibility found in the *General Academic Regulations* of this calendar.

### ACCESS TO COURSES

All undergraduate courses at McMaster have an enrolment capacity. The University is committed to making every effort to accommodate students in required courses so that their program of study is not extended. Unless otherwise specified, registration is on a first-come basis and in some cases priority is given to students from particular programs or Faculties. Students will be informed of their enrolment periods and are encouraged to enroll as soon as online enrolment is available to them in the Student Centre in Mosaic.

### STUDENT COMMUNICATION RESPONSIBILITY

It is the student's responsibility to:

- maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- use the university provided e-mail address or maintain a valid forwarding e-mail address.
- regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.
- accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.

*The Arts & Science Program is governed by the General Academic Regulations of the University, (See the General Academic Regulations section in this Calendar) and the regulations described below.*

The Program begins in Level I and leads to the degree, Bachelor of Arts & Science (Honours) on completion of Level IV. The four-level program provides an opportunity for specialization through electives and through an individual study or thesis course.

Students who decide to conclude their studies in the program on completion of Level III may qualify to graduate with the degree, Bachelor of Arts & Science

(B.Arts Sc.). Students must have a GPA of at least 6.0 to continue in the program. In the case of some Combined Honours programs, the average must include specified courses.

Registration in Level I of the Arts & Science Program is limited to approximately 70 students.

#### INQUIRY SEMINAR REQUIREMENTS

Inquiry courses comprise ARTSSCI 1C03 and a set of Upper-Level Inquiry seminars on a variety of topics. ARTSSCI 1C03 must be completed in Level I. Nine units of Upper-Level Inquiry are required and are taken in Level III or IV.

#### COMBINED HONOURS PROGRAMS

Students in the Arts & Science Program may undertake Combined Honours Programs in many disciplines within the Faculties of Business, Engineering, Humanities, Science, and Social Sciences. See *Arts & Science and Another Subject* for a list of combined programs that are already established. Students should consult the Director of the Arts & Science Program for consideration of other possible combinations. **On-line application for Admission to Level II (April) is required for all Combined Honours Programs.**

#### INDIVIDUAL STUDY/THESIS

Students in the B.Arts Sc. (Honours) Program are required to complete an individual study or thesis (ARTSSCI 4A06 A/B or 4C06 A/B). Students in many Combined Honours Programs are also required to complete an individual study or thesis, often through a course in the discipline of their Combined Honours Program (offered by the relevant department). Students should consult the Combined Honours Program description for specific requirements (<http://artsci.mcmaster.ca>).

For further information, please see *Academic Standing and Program Requirements* in the *General Academic Regulations* section in this Calendar.

#### INTERNATIONAL/CANADIAN EXCHANGE PROGRAMS

**One calendar year before study abroad:** Interested students should consult the Director, Arts & Science Program.

**Calendar year of planned travel:** No later than the end of December, students must propose a program of study for approval by the Director. Credit will be confirmed only after transcripts are received and academic achievements are reviewed on the student's return.

To be eligible for study abroad students must have completed 60 units with a GPA of at least 7.0. The B.Arts Sc. (three-year) degree is not granted on the basis of international study; the 30 final units of work must be done at McMaster.

Information concerning student exchanges can also be found in the Academic Facilities, Student Services and Organizations section of this Calendar under the heading International Student Services. Inquiries can be directed to the office at:

#### International Student Services / MacAbroad

Gilmour Hall, Room 110

Telephone: (905) 525-9140, extension 24254

## Bachelor of Arts & Science (Honours)

### COMBINED HONOURS PROGRAM IN ARTS & SCIENCE AND ANOTHER SUBJECT

Established Combined Honours Programs are listed below. Students are encouraged to consult the Director of the Arts & Science Program by September of Level II for consideration of other possible combinations. Application for Admission to Level II (early-April) is required for all Combined Honours Programs. Combined Honours Program descriptions are available on the web (<http://artsci.mcmaster.ca>) or from the Arts & Science Program Office.

### COMBINED HONOURS PROGRAMS, ARTS & SCIENCE AND:

<ul style="list-style-type: none"> <li>• Anthropology</li> <li>• Art History</li> <li>• Biochemistry</li> <li>• Biology</li> <li>• Molecular Biology and Genetics</li> <li>• Business</li> <li>• Chemical Biology</li> <li>• Chemistry</li> <li>• Classics</li> <li>• Communication Studies</li> <li>• Computer Science</li> <li>• Economics</li> <li>• English and Cultural Studies</li> <li>• Environmental Sciences</li> <li>• French</li> <li>• Environment and Society</li> <li>• Health and Society</li> </ul>	<ul style="list-style-type: none"> <li>• History</li> <li>• Indigenous Studies</li> <li>• Linguistics</li> <li>• Mathematics</li> <li>• Multimedia</li> <li>• Music</li> <li>• Peace Studies</li> <li>• Philosophy</li> <li>• Physics</li> <li>• Political Science</li> <li>• Psychology, Neuroscience &amp; Behaviour</li> <li>• Psychology, Neuroscience &amp; Behaviour (Music Cognition Specialization)</li> <li>• Society, Culture, &amp; Religion</li> <li>• Sociology</li> <li>• Theatre &amp; Film Studies</li> </ul>
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### HONOURS ARTS & SCIENCE (B.ARTS SC.)

#### NOTES

1. Nine units from the following list are required: ARTSSCI 3A06 A/B, 3B03, 3BB3, 3RL3/3S03. Students who choose to take ARTSSCI 3RL3 or 3S03 may only use one of those courses towards satisfying 3 units of the requirement. Students are encouraged, however, to take additional units from this list as an elective.
2. Nine units of Upper-Level Inquiry beyond Level I are required. Additional units of Upper-Level Inquiry may be included as an elective with the permission of the Director. Upper-Level Inquiry courses are: ARTSSCI 3CL3, 3CU3, 3EH3, 3GJ3, 3TR3, 4CB3, 4CD3, 4CF3, 4CI3, 4CP3, 4CT3, 4EP3, 4HS3, 4ST3, 4VC3.
3. Students who are planning to combine Arts & Science with Physics are strongly advised to take PHYSICS 1C03 and 1CC3 in Level I, in lieu of ARTSSCI 2D06 A/B in Level II.
4. Six units of individual study or thesis are required. Special permission may be granted to take 9 units (ARTSSCI 4A09 A/B, 4C09 A/B). Electives will be adjusted accordingly.

#### COURSE LIST 1

- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity
- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II
- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour

#### REQUIREMENTS

120 units total (Levels I-IV), of which 48 units may be Level I

#### 24 UNITS

- ARTSSCI 1A06 A/B - Practices of Knowledge
- ARTSSCI 1B03 - Writing
- ARTSSCI 1BB3 - Argumentation
- ARTSSCI 1C03 - Inquiry: Global Challenges
- ARTSSCI 1CC3 - Contemporary Indigenous Studies
- ARTSSCI 1D06 A/B - Calculus

#### 6 UNITS

- Level I Electives



**6 UNITS**

- from *Course List 1* (requirement must be completed by the end of Level II)

**18 UNITS**

- ARTSSCI 2A06 A/B - Social and Political Thought
- ARTSSCI 2D06 A/B - Physics
- ARTSSCI 2E03 - Economics: Principles and Policy
- ARTSSCI 2R03 - Applied Statistical Inference

**9 UNITS**

from

- ARTSSCI 3A06 A/B - Literature
- ARTSSCI 3B03 - Technology and Society I
- ARTSSCI 3BB3 - Technology and Society II
- ARTSSCI 3RL3 - Religion and Law **OR**
- ARTSSCI 3S03 - The East Asian Religious Tradition

**9 UNITS**

- Upper-Level Inquiry (See *Note 2*)

**6 UNITS**

from

- ARTSSCI 4A06 A/B - Individual Study
- ARTSSCI 4C06 A/B - Thesis

(See *Note 4*)

**42 UNITS**

- Electives

## DeGroote School of Business

DeGroote School of Business, Room 112, ext. 24433

<http://www.ug.degroote.mcmaster.ca>

[buscom@mcmaster.ca](mailto:buscom@mcmaster.ca)

DEAN OF BUSINESS

**Leonard Waverman**

ASSOCIATE DEAN, ACADEMIC

**Susan McCracken**

### FACULTY AS OF JANUARY 15, 2020

CHAIR, ACCOUNTING AND FINANCIAL MANAGEMENT SERVICES AREA

**Khalid Nainar**

CHAIR, FINANCE AND BUSINESS ECONOMICS AREA

**Trevor Chamberlain**

CHAIR, HEALTH POLICY AND MANAGEMENT AREA

**Glen Randall**

CHAIR, HUMAN RESOURCES AND MANAGEMENT AREA

**Aaron Schat**

CHAIR, INFORMATION SYSTEMS AREA

**Brian Detlor**

CHAIR, MARKETING AREA

**Sourav Ray**

CHAIR, OPERATIONS MANAGEMENT AREA

**Elkafi Hassini**

CHAIR, STRATEGIC MANAGEMENT AREA

**Brent McKnight**

UNIVERSITY SCHOLAR

**Elkafi Hassini** (2018-2022)

PROFESSORS

**Prakash L. Abad**/B.Tech. (*Indian Institute of Technology*), M.S., M.B.A., Ph.D. (*Cincinnati*)/(Operations Management)

**Vishwanath Baba**/B. Eng. (*Madras*), M.B.A. (*Western Illinois*), Ph.D. (*British Columbia*)/(Human Resources and Management)

**Ronald Balvers**/B.A. (*Tilburg University*), Ph.D. (*University of Pittsburgh*)/(Finance and Business Economics)/(Michael Lee-Chin & Family Chair in Investment and Portfolio Management)

**Trevor W. Chamberlain**/B.Sc. (*California-Berkeley*), M.B.A. (*McGill*), Ph.D. (*Toronto*), C.P.A., C.A. (Finance and Business Economics)/(Chair, Finance and Business Economics)

**Y.C. Lilian Chan**/B.B.A. (*Chinese University of Hong Kong*), Ph.D. (*Virginia Polytechnic*) C.P.A., C.M.A., F.C.M.A. (Accounting and Financial Management Services)

**Narat Charupat**/B.A. (*Thammasat*), M.B.A. (*Drexel*), Ph.D. (*York*)/(Finance and Business Economics)

**C. Sherman Cheung**/B.S. (*Louisiana State*), M.S., Ph.D. (*Illinois*)/(Finance and Business Economics)

**Catherine Connelly**/B.Com. (*McMaster*), M.Sc., Ph.D. (*Queen's*)/(Human Resources and Management)/(Canada Research Chair)

**Kenneth R. Deal**/B.S., M.B.A., Ph.D. (*SUNY-Buffalo*)/(Marketing)

**Brian Detlor**/B.Sc. (*Western Ontario*), M.I.S., Ph.D. (*Toronto*)/(Information Systems)/(Chair, Information Systems)

**Rick D. Hackett**/B.Sc. (*Toronto*), M.A. (*Windsor*), Ph.D. (*Bowling Green State*)/(Human Resources and Management)/(Canada Research Chair)

**Khaled Hassanein**/B.Sc. (*Kuwait*), M.A.Sc. (*Toronto*), Ph.D. (*Waterloo*), M.B.A. (Information Systems)/(Wilfrid Laurier)/(Associate Dean, Graduate Studies and Research)/(Director, McMaster Digital Transformation Research Centre)

**Elkafi Hassini**/B.Sc. (*Bilkent*), M.A.Sc., Ph.D. (*Waterloo*)/(Operations Management)/(Chair, Operations Management)

**Milena Head**/B.Math. (*Waterloo*), M.B.A., Ph.D. (*McMaster*)/(Information

*Systems*)/(Wayne C. Fox Chair in Business Innovation)/(Academic Director, E.M.B.A. Program)

**Benson L. Honig**/B.A. (San Francisco State), Ph.D. (Stanford)/(Human Resources and Management)/(Teresa Cascioli Chair in Entrepreneurial Leadership)

**Clarence C.Y. Kwan**/Ph.D. (Ottawa), M.B.A. (McMaster), Ph.D. (Toronto), P.Eng. (Finance and Business Economics)

**Rosemary Luo**/B.Eng. (Business) (Beijing), M.A. (McMaster), Ph.D. (Western Ontario)/(Finance and Business Economics)

**John Maheu**/B.A. (McMaster), M.A., Ph.D. (Queen's)/(Finance and Business Economics)/(Bank of Montreal (BMO) Financial Group Chair in Capital Markets - Financial Literacy and the Individual Investor)

**John W. Medcof**/B.A. (New Brunswick), M.A., Ph.D. (Toronto)/(Human Resources and Management)/(Academic Director, Blended Learning Part-time M.B.A.)

**Peter Miu**/B.Sc. (Hong Kong), M.B.A., Ph.D. (Toronto)/(Finance and Business Economics)

**Ali R. Montazemi**/H.N.D. (Teesside Polytechnic), M.Sc. (Southampton), Ph.D. (Waterloo)/(Information Systems)

**Dean C. Mountain**/B.A. (McMaster), M.A., Ph.D. (Western Ontario)/(Finance and Business Economics)

**S.M. Khalid Nainar**/B.A., M.A. (Delhi), Ph.D. (Florida), C.G.A. (Accounting and Financial Management Services)/(Chair, Accounting and Financial Management Services)

**Mahmut Parlar**/B.Sc., M.Sc. (Middle East Technical University), Ph.D. (Waterloo)/(Operations Management)/(Distinguished Business Research Professor)

**Devashish Pujari**/B. Com, M.Com., M.Phil., (Kuruksheetra), Ph.D. (Bradford)/(Marketing)

**Jiaping Qiu**/B.A. (Xiamen), M.Sc. (Hong Kong University of Science and Technology), Ph.D. (Toronto)/(Finance and Business Economics)/(CIBC Chair in Financial Markets)

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**Joseph K. Tan**/B.A. (Wartburg College), M.S. (Iowa), Ph.D. (UBC)/(Information Systems)

**Leonard Waverman**/B.Com., M.A. (Toronto), Ph.D. (MIT)/(Economics)/(Dean of Business)

**Yufei Yuan**/B.S. (Fudan), Ph.D. (Michigan)/(Information Systems)

#### ASSOCIATE PROFESSORS

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**Anna Danielova**/B.Sc. (Yerevan Polytechnic Institute), M.S. (American University of Armenia), M.A., Ph.D. (Indiana)/(Finance and Business Economics)/(Associate Dean, Faculty Affairs and Accreditation)

**Kai Huang**/B.Sc. (Huazhong Univ of Science & Technology), M.Sc. (Tsinghua), Ph.D. (Georgia Inst of Technology)/(Operations Management)

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**Christopher Longo**/B.A. (York), M.Sc. (Western Ontario), Ph.D. (Toronto)/(Health Policy and Management)

**Mandeep Malik**/B.A. (Panjab), M.A. (Canberra)/(Marketing)

**Katya Malinova**/B.Sc. (St. Petersburg), Ph.D. (Michigan)/(Finance and

*Business Economics*)/(Mackenzie Investments Chair in Evidence-Based Investment Management)

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**Susan McCracken**/B.Com. (Queens), Ph.D. (Waterloo), C.P.A., C.A. (Accounting and Financial Management Services)/(Associate Dean, Academic)

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**Erin Reid**/Hons. B.Comm. (McMaster), M.Sc. (Queen's) A.M., Ph.D. (Harvard)/(Human Resources and Management)

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**John Siam**/B.A., M.A., Ph.D. (Concordia)/(Accounting and Financial Management Services, and Finance and Business Economics)/(Director, Gould Trading Floor and Horizon Exchange Traded Funds Investment Decision Centre)

**Manish Verma**/M.B.A., Ph.D. (McGill)/(Operations Management)

**Patricia Wakefield**/B.S. (Alberta), M.S. (Cornell), M.P.A. (New York), Ph.D. (Boston)/(Health Policy and Management)

**Willi Wiesner**/B.A. (Wilfrid Laurier), M.A.Sc., Ph.D. (Waterloo)/(Human Resources and Management)/(Director, M.B.A. Program)

**Ruhai Wu**/B.A., M.S. (Tsinghua), M.S., Ph.D. (Texas)/(Marketing)

**Hongjin Zhu**/B.A. (Peking), Ph.D. (Singapore)/(Strategic Management)

#### ASSISTANT PROFESSORS

**William Allender**/B.Sc. (California Polytechnic), M.Sc. (Arizona State), Ph.D. (Arizona State)/(Marketing)

**Goran Calic**/B.Com. (Ottawa), M.B.A., Ph.D. (Purdue)/(Strategic Management)

**Candice Chow**/B.Mech. (University of London), M.B.A. (Western), M.Sc. (University of Reading)/(Strategic Management)

**Rita Cossa**/H.B.A. (Wilfrid Laurier), M.B.A. (McMaster)/(Strategic Management)

**Jenna Evans**/B.Hs. (York), Ph.D. (Toronto)/(Health Policy and Management)

**Maryam Ghasemaghahi**/B.Sc., M.Sc. (Isfahan), Ph.D. (McMaster)/(Information Systems)

**Yaqin Hu**/Honors B.A. (Wilfrid Laurier), M.A. (Toronto), Ph.D. (Texas-Dallas)/(Accounting and Financial Management Services)

**Aadil Merali Juma**/B.E.E., M.B.A. (McMaster)/(Accounting and Financial Management Services)

**Ken Li**/B.Math (Waterloo), M.Acc. (Waterloo), Ph.D. (Stanford)/(Accounting and Financial Management Services)

**François Neville**/B.Com., M.Sc. (Ottawa) Ph.D. (Georgia State)/(Strategic Management)

**Sean O'Brady**/B.A. (Concordia), M.A. (Carleton), Ph.D. (Université de Montréal)/(Human Resources and Management)

**Yang Pan**/B.Sc., M.Sc. (University of Science and Technology), Ph.D. (Iowa)/(Marketing)

**Frances Tuer**/B.A., M.B.A. (Western), Ph.D. (McMaster)/(Human Resources and Management)

**Shashank Vaid**/B.A. (Kakatiya), M.B.A. (Duke), Ph.D. (Houston)/(Marketing)

**Kevin Veenstra**/B.A., M.Acc. (Waterloo), C.P.A., C.A., C.P.A., C.M.A., C.F.A. (Accounting and Financial Management Services)

**Peter Vilks**/B.Sc.E.E. (*Suny-Buffalo*), M.B.A. (*McMaster*), P.Eng./(*Strategic Management*)

**Nicole Wagner**/B.Math. (*Waterloo*), M.B.A., Ph.D. (*McMaster*)/(*Director, McMaster MSc eHealth Program*)

**Yan Wang**/B.Sc. (*Beijing University of Chemical Technology*) M.A., Ph.D. (*McGill*)/(*Finance and Business Economics*)

**Abdolmanaf Zargoush**/B.Sc. (*Shahid Chamran University*), M.Sc. (*Sharif University of Technology*), M.B.A., Ph.D. (*ESSEC Business School*), Ph.D. (*McGill*)/(*Health Policy and Management*)

**Yun Zhou**/B.Sc., Ph.D. (*Tsinghua*) Ph.D. (*Toronto*)/(*Operations Management*)

#### INDUSTRY PROFESSORS

**Teresa Cascioli**/B.Com. (*McMaster*)/(*Industry Professor in Entrepreneurship*)

**Tom Gleave**/B.A. (*Guelph*), M.B.A. (*Western*), M. A. (*Tufts*)/(*Industry Professor in Human Resources and Management*)

**John Pecman**/(*TMX Industry Professor*)

**Alfredo Tan**/H.B.Sc., Information Systems and Technology (*Toronto*)/(*Industry Professor in Strategic Management*)

**Karel Vredenburg**/B.Sc., M.A., Ph.D. (*Toronto*)/(*EMBA Industry Professor*)

#### MANAGER, UNDERGRADUATE PROGRAMS

**G. Rombough**/M.B.A., C.P.A., C.M.A.

#### ACADEMIC ADVISORS

**E. Blanchard**/B.A.

**A. Fortino**/B.A.

**L. Hill**

**L. Johnston**/B.Sc.

#### ADMISSIONS AND RECRUITMENT OFFICER

**V. Doidge**/B.A.

#### ACADEMIC SUPPORT SPECIALIST

**A. Maynard**/B.A.

#### B.COM. STUDENT EXPERIENCE ASSOCIATE

**N. Buston**

## Faculty of Business Degree Programs

### HONOURS BACHELOR OF COMMERCE PROGRAM

**The Honours Bachelor of Commerce (B.Com. (Honours)) requires the completion of 120 units, including specific courses from each level of the program.**

The Honours Bachelor of Commerce allows substantial concentration in business subjects beyond the essential core of studies. Students must apply and qualify for the Honours Bachelor of Commerce program. Please see the admission requirements below to qualify for the Honours Bachelor of Commerce program listed for each year of entry.

### HONOURS BACHELOR OF COMMERCE PROGRAM WITH INTERNSHIP

The Honours Bachelor of Commerce with Internship, B.Com. (Honours), requires the completion of 120 units, including specific courses from each level of the program and successful completion of an approved 12-16 month full-time internship. Enrolment in this program is limited and admission occurs following Level II. The internship is designed to provide students with an opportunity to engage in a career-oriented work experience with one host employer, following their third year of study, for a period of 12 - 16 months. Students compete for opportunities with participating employers through multiple recruitment cycles facilitated by Career & Professional Development office.

### BACHELOR OF COMMERCE PROGRAM

The Bachelor of Commerce program requires the successful completion of 120 units, including specific courses from each level of the program. The Bachelor of Commerce program provides students with the same core business courses as the Honours Bachelor of Commerce, but focuses elective work on courses outside of the business discipline and Faculty.

### INTEGRATED BUSINESS AND HUMANITIES PROGRAM

The Integrated Business & Humanities program leads to an Honours Bachelor of Commerce degree. Students will be exposed to a variety of learning opportunities via coursework and co-curricular activities, with an emphasis on responsible leadership and management tactics for the changing global economy. The program also focuses on community engagement and sustainable business practices. The Integrated Business & Humanities program is a limited enrolment program and students begin the program in their first year of studies.

### INTEGRATED BUSINESS AND HUMANITIES PROGRAM WITH INTERNSHIP

The Integrated Business & Humanities program leads to an Honours Bachelor of Commerce degree and requires the completion of 120 units, including specific courses from each level of the program and successful completion of an approved 12-16 month full-time internship. Enrolment in this program is limited and occurs following Level II. The internship is designed to provide students with an opportunity to engage in a career-oriented work experience with one host employer, following their third year of study, for a period of 12 - 16 months. Students compete for opportunities with participating employers through multiple recruitment cycles facilitated by Career & Professional Development office.

### ENGINEERING AND MANAGEMENT PROGRAMS

In addition, the School of Business and the Faculty of Engineering offer nine five-level joint programs for the Bachelor of Engineering and Management (B.Eng.Mgt.) degree.

For the **Honours Arts & Science and Business program (B.Arts.Sc.)**, see *Arts & Science Program*.

For the **Certificate in Business Technology Management (BTM)**, see *Certificates and Diplomas: Concurrent Certificates*.

## Academic Regulations

### STUDENT ACADEMIC RESPONSIBILITY

You are responsible for adhering to the statement on student academic responsibility found in the *General Academic Regulations* of this calendar.

### ACCESS TO COURSES

All undergraduate courses at McMaster have an enrolment capacity. The University is committed to making every effort to accommodate students in required courses so that their program of study is not extended. Unless otherwise specified, registration is on a first-come basis and in some cases priority is given to students from particular programs or Faculties. Students will be informed of their enrolment periods and are encouraged to enroll as soon as online enrolment is available to them in the Student Centre in Mosaic.

### STUDENT COMMUNICATION RESPONSIBILITY

It is the student's responsibility to:

- maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- use the university provided e-mail address or maintain a valid forwarding e-mail address.
- regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.
- accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.

*Students enrolled in the DeGroot School of Business, in addition to meeting the General Academic Regulations of the University, shall be subject to additional Faculty Regulations.*



## Change of Program

Business students may be permitted to transfer between programs, or students in other Faculties may apply to transfer to a program in the Faculty of Business, provided they have obtained a GPA of at least 5.0 and have completed the necessary admission requirements as described on the Faculty undergraduate website. However, students cannot transfer into the Honours Bachelor of Commerce with Internship Program nor either of the Integrated Business and Humanities programs.

## Exchange Programs

There are a number of official exchange programs offered to undergraduate students registered in the School of Business. The countries involved include Australia, China, Denmark, France, Germany, Japan, the Netherlands, New Zealand, Norway, India, Ireland, Mexico, Singapore, and the United Kingdom. Official exchange programs offer students the most inexpensive means of studying abroad as students participating in these exchanges avoid the foreign student fees by paying fees to McMaster. All students must be in good standing with a cumulative Grade Point Average of at least 7.0 to be eligible to participate in an exchange. In most cases, students who participate in exchange programs go abroad for Level III of their program. Students are only permitted to take one exchange opportunity, regardless of whether it is a one or two term exchange. Information is available from the Student Experience - Academic Office, DeGroote School of Business, Room 112.

Additional information may be found under *International Study* in the *General Academic Regulations* section of this Calendar.

Inquiries can be directed to the office at:

### International Student Services / MacAbroad

Gilmour Hall, Room 110

Telephone: (905) 525-9140, extension 24254

<http://iss.mcmaster.ca>

## International/Cross-Cultural/Language Menu for Students in the Honours Bachelor of Commerce and Bachelor of Commerce Programs

The School of Business emphasizes the importance of breadth of knowledge. Students who entered Business I prior to September, 2020 are required to take courses in a variety of business disciplines, thus giving them a sound understanding of business functions and their relationships. They also obtain exposure to international and cross-cultural issues. This will provide them with the knowledge needed for the world of global organizations. Prior to graduation, students who entered prior to September 2020 are required to successfully complete **two courses** from an International/Cross-Cultural/Language menu. **Note:** Students who participate in an official McMaster University exchange are required to successfully complete one course from an International/Cross-Cultural/Language menu prior to graduation. Students must satisfy the normal prerequisites for the courses listed on the menu. Students follow the menu requirements of the Calendar in force when they enter Business I, however, when a later Calendar expands the menu options, students may choose from those additional courses as well.

### The menu for 2020-21 is as follows:

- All Anthropology courses
- All courses in the Faculty of Humanities open to Commerce students, with the exception of all Multimedia courses, PHILOS 2N03 and English courses other than those listed below.
- All Indigenous Studies courses
- All Political Science courses, except POLSCI 4006 A/B
- All Religious Studies and Society, Culture, and Religion courses
- CSCT 1CS3
- ECON 3H03 - International Monetary Economics

- ECON 3HH3 - International Trade
- ECON 3T03 - Economic Development
- ENGLISH 1CS3 - Studying Culture: A Critical Introduction
- ENGLISH 2C03 - Contemporary Canadian Fiction
- ENGLISH 3D03 - Science Fiction
- ENGLISH 3EE3 - African American Literature
- ENGLISH 3Y03 - Children's Literature
- ENVSOCTY 1HA3 - Society, Culture and Environment (or GEOG 1HA3)
- ENVSOCTY 1HB3 - Population, Cities and Development (or GEOG 1HB3)
- ENVSOCTY 3RW3 - Regional Geography of a Selected World Region (or GEOG 3RW3)
- ENVSOCTY 3UR3 - Urban Social Geography (or GEOG 3UR3)
- SOCIOL 3Z03 - Ethnic Relations
- All courses included under the Peace Studies Minor (See *Minor in Peace Studies* in the Faculty of Humanities section of this Calendar)

## CONTINUING STUDENTS

Graduates of a DeGroote undergraduate Business program, or one of the Engineering and Management programs may take, as part-time students, Commerce courses (to a maximum of 18 units), subject to space availability.

## SECOND UNDERGRADUATE DEGREE

A student with an undergraduate degree will not be admitted or readmitted to any DeGroote undergraduate program. Such a student may wish to apply for admission to the M.B.A. program.

## CREDIT TOWARDS PROFESSIONAL DESIGNATIONS

Educational requirements toward professional designations can be met in varying degrees within the Honours and non-Honours Bachelor of Commerce programs, as well as the Engineering and Management programs. The professional accounting designation Chartered Professional Accountant (C.P.A.) is awarded by the Chartered Professional Accountants of Ontario. The designation C.H.R.P. is awarded by the Human Resources Professionals Association. Further opportunities for meeting educational requirements for professional designations are available to students in all Business and Engineering and Management programs. Additional course work may be taken while in the program provided the student is satisfying all course requirements for their degree. Further units of credit may also be taken after graduation (See *Continuing Students* above.). Information concerning credit towards these professional designations can be obtained from the Student Experience - Academic Office in the School of Business (DSB 112).

## MINOR

A Minor is an option available to a student enrolled in a four- or five-level program. A Minor consists of at least 18 units of Level II, III or IV courses beyond the designated Level I course(s) that meet the requirements set out in the program description of that Minor. A student is responsible for ensuring that the courses taken fulfill these requirements. Those who have completed the necessary courses may apply for recognition of that Minor when they graduate. If recognition is granted for a Minor, a notation to that effect will be recorded on the student's transcript. For further information, please refer to *Minors* in the *General Academic Regulations* section of this Calendar.

## QUALIFYING FOR THE HONOURS BACHELOR OF COMMERCE PROGRAM (FOR STUDENTS ENTERING BUSINESS I IN SEPTEMBER 2020 OR LATER)

To be considered for entry to the Honours Commerce program, students must have successfully completed Business I (as described in the *Program Notes for Students who Enter Business I in 2020 or Later*) with a cumulative Grade Point Average of at least 5.0.

## QUALIFYING FOR THE HONOURS BACHELOR OF COMMERCE PROGRAM (FOR STUDENTS ENTERING BUSINESS I IN SEPTEMBER 2016-2019)

To be considered for entry to the Honours Commerce program, students must have successfully completed Business I (as described in the *Program Notes for Students who Enter Business I in 2016-2019*) with a cumulative Grade Point Average of at least 5.0.



**WORKLOAD**

A full-time student must complete minimum 9-unit load in each Fall and Winter term. Advance credit and credit earned during the Spring/Summer term may not be used to reduce this load requirement. Such reductions will be applied as late as possible in a student's program.

Students who wish to take more courses than recommended for a single Level of their program may do so only if their Fall-Winter Average in the immediately preceding review period is at least 7.0. Students registered in the final Level of their program are permitted to overload by up to six additional units during the Fall and Winter terms, with **no more than three units of overload per term**, in order to become eligible to graduate.

**DEFERRED EXAMINATIONS**

See the heading *Deferred Examinations* under *Examinations* in the *General Academic Regulations* section of the Calendar for application procedures.

Students who are in a precarious position with respect to achieving the minimum GPA or otherwise meeting the Commerce program requirements for continuation in the program will not necessarily be permitted to undertake further work before clearing deferred examinations.

**LEVEL I COURSES**

Students are not permitted to take more than 48 units of Level I courses in their program.

**LEVEL OF REGISTRATION**

A student enrolled in a program in the Faculty of Business is required to register in the lowest level for which more than six units of work is incomplete. Work of the next higher level may be undertaken only when necessary to fill a program load.

**READMISSION**

A student in Level II, III or IV of an undergraduate Business program, who becomes ineligible to continue in the School of Business, may apply for readmission to their respective program in a subsequent calendar year up to a maximum of five years following the year in which the student becomes ineligible to continue. **Readmission is not guaranteed.**

Application for readmission must be made in writing to the Undergraduate Recruitment, Admissions, and Student Affairs Committee by June 30 for entry in September. This application should explain why the applicant would expect to succeed in the program if readmitted. Forms for this purpose may be obtained from the Student Experience - Academic Office in the DeGroote School of Business, Room 112.

A student who is readmitted after having become ineligible to continue in an undergraduate Business program must repeat all the courses of the level at which they became ineligible to continue unless specific course exemptions or credits are granted. The earliest possible term for readmission is the term starting in September of the year following the year in which the student became ineligible to continue.

Former undergraduate Business program students who have not been registered in an undergraduate Business program within the past five years, including those who were in good standing at the time of their most recent registration, must apply for readmission through the Office of the Registrar.

**REINSTATEMENT****BUSINESS I**

A student who May Not Continue at the University may apply for reinstatement.

There are two categories of students who may apply for reinstatement to Business I:

1. Applicants who have been registered in Business I within the past five years, have exceptional or extraordinary circumstances that affected their performance\*, and have not been registered in another McMaster program or at another University during that time, or
2. Applicants from other Faculties.

**INTEGRATED BUSINESS & HUMANITIES I**

An IBH student who May Not Continue at the University may apply for reinstatement.

Applicants must have been registered in IBH I within the past five years, have exceptional or extraordinary circumstances that affected their performance\*, and have not been registered in another McMaster program or at another University during that time.

Students seeking reinstatement must complete the Reinstatement Request Form available at the Office of the Registrar. The completed form and the \$100 fee must be submitted to the Office of the Registrar by June 30 for entry in September.

\*The application must clearly demonstrate extraordinary circumstances which caused inadequate performance and indicate whether the circumstances surrounding their academic situation have been resolved. The application should also include relevant supporting documentation. Reinstatement cases will be carefully screened and the evidence considered will include the student's academic performance before and after admission to McMaster, as well as the nature of the reasons cited in the application letter and the accompanying documentation. Such exceptional cases will be considered on their merit. **Reinstatement is not guaranteed.**

Upon reinstatement, the Grade Point Average for a student is reset to 0.0 on zero units. If at any review after reinstatement the student's cumulative Grade Point Average falls below 3.5, the student will be required to withdraw from the University for a period of at least 12 months.

**FORMER STUDENTS FROM THE FACULTY OF BUSINESS**

A student who was previously registered in a DeGroote undergraduate Business program, was in good standing and did not attend in the preceding year, but did attend another post-secondary institution must write to the Student Experience - Academic Office to seek readmission. The letter should describe the student's activities (academic and otherwise) since they were last registered.

If five years have passed since the student was last registered at McMaster, they should consult the heading *Readmission* in the *Admission Requirements* section of this Calendar.

**INQUIRIES REGARDING ACADEMIC REGULATIONS**

A student seeking relief from the School of Business academic regulations must apply in writing to the Undergraduate Recruitment, Admissions, and Student Affairs Committee with appropriate documentation attached.

Guidelines for such requests may be obtained from the Student Experience - Academic Office, in the DeGroote School of Business, Room 112.

**A. Programs for Students who Enter Business I in September 2020 or Later****PROGRAM NOTES**

1. To be considered for entry into the Honours Commerce Program, a Business I student must have met all of the following:
  - achieved a GPA of at least 5.0 on a minimum of 24 units of course work for Business I and these must include all required courses of the Business I program;
  - successfully completed all Business I required courses (See Business I Requirements). An exception to this condition is that no more than a single failure of a Business I required course is allowed for students with a GPA of at least 5.0 on a minimum of 24 units of course work for Business I. These students must successfully complete the failed course at the earliest possible opportunity or they will not be able to continue in the program;
  - successfully completed ALL required units of Business I course work and successfully completed enough units of elective course work where the total of successful units of course work equals 24 units.
2. Students seeking a Minor in Mathematics and Statistics must take MATH 1A03 and should refer to the Faculty of Science section of this Calendar

for the requirements for a Minor in Mathematics and Statistics. Students neither seeking this Minor nor planning on a transfer to the Faculty of Science, are advised to take MATH 1M03.

- Transfer students may be admitted from other universities or from other Faculties within McMaster University. Academic requirements for admission of transfer students will be more demanding than those for Business I students.
- Courses that are cross-listed with Commerce courses are considered Commerce electives for the purposes of fulfilling program requirements. This is the case regardless of the course-code the student has enrolled under.
- Non-Commerce students may enrol in specific upper-year Commerce courses if they have been accepted into a Specialized Minor offered by the Faculty of Business or can demonstrate that they are pursuing an interdisciplinary minor for which the specific Commerce courses are included.

## BUSINESS I

### LEVEL I: 30 UNITS

Students admitted to Business I must complete 30 units as follows:

#### 1 course

- COMMERCE 1GR0 A/B - DeGroot Student Experience and Development I

#### 15 units

- COMMERCE 1AA3 - Introductory Financial Accounting
- COMMERCE 1BA3 - Organizational Behaviour
- COMMERCE 1DA3 - Business Data Analytics
- COMMERCE 1E03 - Business Environment and Organization
- COMMERCE 1MA3 - Introduction to Marketing

#### 6 units

- ECON 1BB3 - Introductory Macroeconomics
- ECON 1BX3 - Introductory Microeconomics for Business Students

#### 3 units

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1M03 - Calculus for Business, Humanities and the Social Sciences

(See *Program Note 2* regarding the Minor in Mathematics)

#### 0-3 units

- MATH 1F03 - Introduction to Calculus and Analytic Geometry (for those students without Grade 12 Calculus and Vectors U or equivalent)

#### 3-6 units

- Non-Commerce electives to total 30 units

## HONOURS COMMERCE

Requirements for continuation in the Honours B.Com. Program are specified in the General Academic Regulations section of this Calendar.

Students who are currently registered in this program should refer to their advisement reports in Mosaic Student Centre or contact the Student Experience - Academic Office (DSB-112) to discuss their program requirements.

### REQUIREMENTS

#### Level II: 30 Units

##### 1 course

- COMMERCE 2GR0 A/B - DeGroot Student Experience and Development II

##### 21 units

- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 2DA3 - Decision Making with Analytics

- COMMERCE 2FA3 - Introduction to Finance
- COMMERCE 2FB3 - Managerial Finance
- COMMERCE 2KA3 - Information Systems in Business
- COMMERCE 2OC3 - Operations Management

##### 6 units

- Electives from non-Commerce courses

##### 3 units

- Open electives

#### Level III: 30 Units

##### 1 course

- COMMERCE 3GR0 A/B - DeGroot Student Experience and Development III

##### 6 units

- COMMERCE 3MC3 - Applied Marketing Management
- COMMERCE 3S03 - Management Skills Development

##### 12 units

- Electives from Commerce courses

##### 6 units

- Electives from non-Commerce courses

##### 6 units

- Open electives

#### Level IV: 30 Units

##### 9 units

- COMMERCE 4GR3 - DeGroot Student Experience and Development IV
- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4SA3 - International Business

##### 6 units

- Electives from non-Commerce courses

##### 15 units

- Open electives

## HONOURS COMMERCE WITH INTERNSHIP

### ADMISSION

**Enrolment in this program is limited.** Applications for admission into the Honours B.Com. with Internship will be accepted at the end of the Spring/Summer term and prior to the start of the Fall term (specific deadline dates will vary each year and will be communicated in the Undergraduate Faculty of Business Bulletin, OSCARplus and on DeGroot's website).

Only full-time Honours B.Com. students in good standing with a minimum cumulative Grade Point Average of 7.0 at the time of application, who have completed Level II (and who will have at least 18 units of course work left to complete following their internship) and have passed COMMERCE 2IN0 - Career Development Course, will be eligible to apply for the Honours B.Com. with Internship degree program. Selection into the program will be based on academic achievement, statement of interest, work and volunteer experience and interview.

### PROGRAM NOTES

- To remain in the Honours B.Com. with Internship program, students must maintain a cumulative Grade Point Average of 7.0, and remain in good academic standing.
- Only students completing an approved 16-month internship will enroll in COMMERCE 4IC0.
- Students should refer to the table below to plan their enrolment for their work term.

Work Term	Spring/ Summer	Fall	Winter	Spring/ Summer
16-month	COMMERCE 4IA0	COMMERCE 4IB0	COMMERCE 4IC0	COMMERCE 4ID0

<b>12-month beginning Spring term</b>	COMMERCE 4IA0	COMMERCE 4IB0	COMMERCE 4ID0	-
<b>12-month beginning Fall term</b>	-	COMMERCE 4IA0	COMMERCE 4IB0	COMMERCE 4ID0

**REQUIREMENTS**Level I: 30 Units

30 units

Completed prior to admission in the program

Level II: 30 Units

30 units

Completed prior to admission in the program

Level III: 30 Units

1 course

- COMMERCE 3GR0 A/B - DeGroote Student Experience and Development III

6 units

- COMMERCE 3MC3 - Applied Marketing Management
- COMMERCE 3S03 - Management Skills Development

12 units

- Electives from Commerce courses

6 units

- Electives from non-Commerce courses

6 units

- Open electives

Level IV: Work term**Commerce Internship Work Term (12-16 months)**

Work term

3-4 courses

from

- COMMERCE 4IA0 - Internship 1
- COMMERCE 4IB0 - Internship 2
- COMMERCE 4IC0 - Internship 3 (see *Note 2* above.)
- COMMERCE 4ID0 - Internship Final Term (see *Note 3* above.)

Level V: 30 Units

9 units

- COMMERCE 4GR3 - DeGroote Student Experience and Development IV
- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4SA3 - International Business

6 units

- Electives from non-Commerce courses

15 units

- Open electives

**COMMERCE (B.COM.)**

Requirements for continuation in the B.Com. Program are specified in the *General Academic Regulations* section of this Calendar.

Students who are currently registered in this program should refer to their advisement reports or contact the Student Experience - Academic Office (DSB-112) to discuss their program requirements.

**REQUIREMENTS**Level III: 30 Units

1 course

- COMMERCE 3GR0 A/B - DeGroote Student Experience and Development III

6 units

- COMMERCE 3MC3 - Applied Marketing Management

- COMMERCE 3S03 - Management Skills Development

6 units

from

- Electives from Commerce Courses

12 units

- Electives from non-Commerce courses

6 units

- Open electives

Level IV: 30 units

9 units

- COMMERCE 4GR3 - DeGroote Student Experience and Development IV
- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4SA3 - International Business

9 units

- Electives from non-Commerce courses

12 units

- Open electives

**B. Programs for Students who Entered Business I in September 2016-2019****PROGRAM NOTES**

1. Students have only one opportunity to be reviewed for entry to a Commerce program. Other options may be pursued through the Student Experience - Academic Office (DSB-112).
2. To be considered for entry into the Honours Commerce Program, a Business I student must have met all of the following:
  - achieved a GPA of at least 5.0 on a minimum of 24 units of course work for Business I (on first attempts only) and these must include all required courses of the Business I program;
  - successfully completed, on first attempts only, all Business I required courses (See *Business I Requirements*). An exception to this condition is that no more than a single failure of a Business I required course is allowed for students with a GPA of at least 5.0 on a minimum of 24 units of course work for Business I. These students must successfully complete the failed course at the earliest possible opportunity or they will not be able to continue in the program;
  - successfully completed ALL required units of Business I course work and successfully completed enough units of elective course work where the total of successful units of course work equals 24 units.
3. Refer to Workload under the Academic Regulations section in the School of Business for information on full-time and part-time Business I course loads.
4. Students seeking a Minor in Mathematics and Statistics must take MATH 1A03 (or 1LS3) and should refer to the Faculty of Science section of this Calendar for the requirements for a Minor in Mathematics and Statistics. Students neither seeking this Minor nor planning on a transfer to the Faculty of Science, are advised to take MATH 1M03.
5. Transfer students may be admitted from other universities or from other Faculties within McMaster University. Academic requirements for admission of transfer students will be more demanding than those for Business I students.
6. Courses that are cross-listed with Commerce courses are considered Commerce electives for the purposes of fulfilling program requirements. This is the case regardless of the course-code the student has enrolled under.
7. Students who have been granted Faculty permission to take COMMERCE 4EL3 in Level III Commerce will have this course applied against the program requirements for Level IV Commerce as three of the six required units of Level III or IV Commerce courses. See the *DeGroote School of Business (Faculty of Business)* program requirements section of this calendar.

## BUSINESS I

### LEVEL I: 30 UNITS

Students admitted to Business I must complete 30 units as follows:

#### 1 course

- COMMERCE 1DE0 - Business I Orientation

#### 9 units

- COMMERCE 1AA3 - Introductory Financial Accounting
- COMMERCE 1BA3 - Organizational Behaviour
- COMMERCE 1E03 - Business Environment and Organization

#### 6 units

- ECON 1B03 - Introductory Microeconomics
- ECON 1BB3 - Introductory Macroeconomics

#### 3 units

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1M03 - Calculus for Business, Humanities and the Social Sciences

(See *Program Note 4* regarding the Math Minor)

#### 0-3 units

- MATH 1F03 - Introduction to Calculus and Analytic Geometry (for those students without Grade 12 Calculus and Vectors U or equivalent)

#### 0-3 units

- STATS 1L03 - Probability and Linear Algebra (for those students without Grade 12 Mathematics of Data Management U or equivalent)

#### 9-12 units

- Electives to total 30 units. See also the *International/Cross-Cultural/Language Menu*

## HONOURS COMMERCE

Requirements for continuation in the Honours B.Com. Program are specified in the *General Academic Regulations* section of this Calendar.

Students who are currently registered in this program should refer to their advisement reports in Mosaic Student Centre or contact the Student Experience - Academic Office (DSB-112) to discuss their program requirements.

### REQUIREMENTS

#### Level II: 30 units

#### 24 units

- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 2FA3 - Introduction to Finance
- COMMERCE 2KA3 - Information Systems in Business
- COMMERCE 2MA3 - Introduction to Marketing
- COMMERCE 2OC3 - Operations Management
- COMMERCE 2QA3 - Applied Statistics for Business
- COMMERCE 3FA3 - Managerial Finance

#### 6 units

- Electives from non-Commerce courses (See also the *International/Cross-Cultural/Language Menu*).

#### Level III: 30 units

#### 9 units

- COMMERCE 3MC3 - Applied Marketing Management
- COMMERCE 3QA3 - Management Science for Business
- COMMERCE 3S03 - Management Skills Development

#### 12 units

- Level III or IV Commerce courses

#### 9 units

- Electives from non-Commerce courses (See also the *International/Cross-Cultural/Language Menu*.)

#### Level IV: 30 units

#### 6 units

- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4SA3 - International Business

#### 15 units

from

- Level III or IV Commerce courses
- Electives from non-Commerce courses

#### 9 units

- Electives from non-Commerce courses (See also the *International/Cross-Cultural/Language Menu*).

## COMMERCE (B.COM.)

Requirements for continuation in the B.Com. Program are specified in the *General Academic Regulations* section of this Calendar.

Students who are currently registered in this program should refer to their advisement reports in Mosaic Student Centre or contact the Student Experience - Academic Office (DSB-112) to discuss their program requirements.

### REQUIREMENTS

#### Level III: 30 units

#### 9 units

- COMMERCE 3MC3 - Applied Marketing Management
- COMMERCE 3QA3 - Management Science for Business
- COMMERCE 3S03 - Management Skills Development

#### 3 units

from

- Level III or IV Commerce courses

#### 18 units

- Electives from non-Commerce courses (See also the *International/Cross-Cultural/Language Menu*).

#### Level IV: 30 units

#### 6 units

- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4SA3 - International Business

#### 9 units

from

- Level III or IV Commerce courses
- Electives from non-Commerce courses

#### 15 units

- Electives from non-Commerce courses (See also the *International/Cross-Cultural/Language Menu*).

## C. Programs for Students who Entered the Integrated Business & Humanities Program (IBH Program) in 2019 or Later

### INTEGRATED BUSINESS AND HUMANITIES

#### PROGRAM NOTES

1. Students cannot take elective work until Level III of the program.
2. Students have only one opportunity to be reviewed for entry to Level II. Other options may be pursued through the Student Experience - Academic Office (DSB-112.)
3. To be considered for entry into Level II of the IBH Program, students must have met all of the following:
  - achieved a cumulative GPA of at least 5.0 on a minimum of 24 units of the required course work for Level I (on first attempts only.)
  - cannot have failed more than one required course. These students must successfully complete the failed course at the earliest possible opportunity or they will not be able to continue in the program.
4. Students are responsible for ensuring that their course selection is meeting



the requirements of their degree.

### REQUIREMENTS

#### Level I: 30 Units

##### 24 units

- IBH 1AA3 - Financial Accounting
- IBH 1AB3 - Perspectives on Canadian Business
- IBH 1AC3 - Introduction to Language and Society
- IBH 1AD3 - IBH in the Community
- IBH 1BA3 - Leadership Coaching 1
- IBH 1BB3 - Insight and Inquiry: Questions to Change the World
- IBH 1BC3 - Fundamentals of Ethics
- IBH 1BD3 - Introduction to Peace Studies for IBH

##### 6 units

- ECON 1BB3 - Introductory Macroeconomics
- ECON 1BX3 - Introductory Microeconomics for Business Students

#### Level II: 30 Units

##### 30 units

- IBH 2AA3 - Introduction to Marketing
- IBH 2AB3 - Information Systems in Management
- IBH 2AC3 - Talent Management
- IBH 2AD3 - Statistical Data Analysis
- IBH 2AE3 - Critical Thinking
- IBH 2AF3 - Global Business Experience
- IBH 2BA3 - Managerial Accounting
- IBH 2BB3 - Introduction to Finance
- IBH 2BD3 - Moral Issues
- IBH 2BF3 - History of Capitalism

#### Level III: 30 Units

##### 27 units

- IBH 3AA3 - Relationship Management
- IBH 3AB3 - Applied Marketing Management
- IBH 3AC3 - Corporate Finance
- IBH 3AD3 - Cross-Cultural Communication
- IBH 3BA3 - Understanding Entrepreneurship and Social Entrepreneurship From a Historical and Theoretical Lens
- IBH 3BB3 - Organizational Strategy
- IBH 3BC3 - Poverty, Privilege and Protest in Canadian History
- IBH 3BD3 - Interpersonal Communication
- IBH 3BE3 - Operations Management

##### 3 units

- Open electives

#### Level IV: 30 Units

##### 12 units

- IBH 4AA3 - Leadership: Fostering Effective Communication Through Visual Literacy
- IBH 4BA3 - Leadership Effectiveness: Building Personal and Organizational Success
- IBH 4AB6 A/B - Social Entrepreneurship Capstone

##### 18 units

- Open electives

## INTEGRATED BUSINESS AND HUMANITIES WITH INTERNSHIP PROGRAM

### ADMISSION

Enrolment in this program is limited. Applications for admission into the Integrated Business and Humanities with Internship will be accepted at the end of the Spring/Summer term and prior to the start of the Fall term (specific deadline dates will vary each year and will be communicated in the Undergraduate Faculty of Business Bulletin, OSCARplus and on DeGroot's website).

Only full-time IBH students in good standing with a minimum cumulative Grade Point Average of 7.0 at the time of application, who have completed Level II (and who will have at least 18 units of course work left to complete following their internship) and have passed COMMERCE 2IN0 - Career Development Course, will be eligible to apply for the Integrated Business and Humanities with Internship degree program. Selection into the program will be based on academic achievement, statement of interest, work and volunteer experience and interview.

### PROGRAM NOTES

1. To remain in the Integrated Business and Humanities with Internship program, students must maintain a cumulative GPA of 7.0, and remain in good academic standing.
2. Only students completing an approved 16-month internship will enroll in COMMERCE 4IC0.
3. Students should refer to the table below to plan their enrolment for their work term.

Work Term	Spring/ Summer	Fall	Winter	Spring/ Summer
16-month	COMMERCE 4IA0	COMMERCE 4IB0	COMMERCE 4IC0	COMMERCE 4ID0
12-month beginning Spring term	COMMERCE 4IA0	COMMERCE 4IB0	COMMERCE 4ID0	-
12-month beginning Fall term	-	COMMERCE 4IA0	COMMERCE 4IB0	COMMERCE 4ID0

### REQUIREMENTS

#### Level I: 30 Units

##### 30 units

Completed prior to admission in the program

#### Level II: 30 Units

##### 30 units

Completed prior to admission in the program

#### Level III: 30 Units

##### 27 units

- IBH 3AA3 - Relationship Management
- IBH 3AB3 - Applied Marketing Management
- IBH 3AC3 - Corporate Finance
- IBH 3AD3 - Cross-Cultural Communication
- IBH 3BA3 - Understanding Entrepreneurship and Social Entrepreneurship From a Historical and Theoretical Lens
- IBH 3BB3 - Organizational Strategy
- IBH 3BC3 - Poverty, Privilege and Protest in Canadian History
- IBH 3BD3 - Interpersonal Communication
- IBH 3BE3 - Operations Management

##### 3 units

- Open electives

#### Level IV: Work term

Commerce Internship Work Term (12-16 months)

Work term

##### 3-4 courses

from

- COMMERCE 4IA0 - Internship 1
- COMMERCE 4IB0 - Internship 2
- COMMERCE 4IC0 - Internship 3 (See *Note 2* above.)
- COMMERCE 4ID0 - Internship Final Term (See *Note 3* above.)

#### Level V: 30 Units

##### 12 units

- IBH 4AA3 - Leadership: Fostering Effective Communication Through Visual Literacy
- IBH 4BA3 - Leadership Effectiveness: Building Personal and Organizational Success
- IBH 4AB6 A/B - Social Entrepreneurship Capstone

**18 units**

- Open electives

## D. Programs for Students who Entered the Integrated Business & Humanities Program (IBH Program) Prior to 2019

### INTEGRATED BUSINESS AND HUMANITIES

**PROGRAM NOTES**

1. Students cannot take elective work until Level III of the program.
2. Students have only one opportunity to be reviewed for entry to Level II. Other options may be pursued through the Student Experience - Academic Office (DSB-112.)
3. To be considered for entry into Level II of the IBH Program, students must have met all of the following:
  - achieved a cumulative Grade Point Average of at least 5.0 on a minimum of 24 units of the required course work for Level I (on first attempts only.)
  - cannot have failed more than one required course. These students must successfully complete the failed course at the earliest possible opportunity or they will not be able to continue in the program.
4. Students are responsible for ensuring that their course selection is meeting the requirements of their degree.

**REQUIREMENTS**Level I: 30 units

Students admitted to the Integrated Business & Humanities Program must complete 30 units as follows:

**24 units**

- IBH 1AA3 - Financial Accounting
- IBH 1AB3 - Perspectives on Canadian Business
- IBH 1AC3 - Introduction to Language and Society
- IBH 1AD3 - IBH in the Community
- IBH 1BA3 - Leadership Coaching 1
- IBH 1BB3 - Insight and Inquiry: Questions to Change the World
- IBH 1BC3 - Fundamentals of Ethics
- IBH 1BD3 - Introduction to Peace Studies for IBH

**6 units**

- ECON 1B03 - Introductory Microeconomics
- ECON 1BB3 - Introductory Macroeconomics

Level II: 30 units**30 units**

- IBH 2AA3 - Introduction to Marketing
- IBH 2AB3 - Information Systems in Management
- IBH 2AC3 - Talent Management
- IBH 2AD3 - Statistical Data Analysis
- IBH 2AE3 - Critical Thinking
- IBH 2BA3 - Managerial Accounting
- IBH 2BB3 - Introduction to Finance
- IBH 2BC3 - Operations Management
- IBH 2BD3 - Moral Issues
- IBH 2BE3 - Canadian Business History: the Canadian Experience in International Perspective

Level III: 30 Units**24 units**

- IBH 3AA3 - Relationship Management
- IBH 3AB3 - Applied Marketing Management

- IBH 3AC3 - Corporate Finance
- IBH 3AD3 - Cross-Cultural Communication
- IBH 3BA3 - Understanding Entrepreneurship and Social Entrepreneurship From a Historical and Theoretical Lens
- IBH 3BB3 - Organizational Strategy
- IBH 3BC3 - Poverty, Privilege and Protest in Canadian History
- IBH 3BD3 - Interpersonal Communication

**6 units**

- Open electives

Level IV: 30 units**12 units**

- IBH 4AA3 - Leadership: Fostering Effective Communication Through Visual Literacy
- IBH 4BA3 - Leadership Effectiveness: Building Personal and Organizational Success
- IBH 4AB6 A/B - Social Entrepreneurship Capstone

**18 units**

- Open electives

## Minors

### MINOR IN ACCOUNTING AND FINANCIAL MANAGEMENT SERVICES

The School of Business will admit a maximum of 30 students to the Minor in Accounting and Financial Management Services each year. Admission decisions are made on behalf of the Undergraduate Recruitment, Admissions, and Student Affairs Committee of the DeGroote School of Business.

**NOTES**

1. For admission, students must complete an application for admission to the Minor by using the Service Request function in the Student Centre in Mosaic before April 30th.
2. Students seeking the Minor must have completed ECON 1B03 and 1BB3 with an average of at least 7.0.
3. The Minor is not open to students registered in any Commerce or Engineering and Management program.

**REQUIREMENTS**

*30 units total*

**6 UNITS**

- ECON 1B03 - Introductory Microeconomics
- ECON 1BB3 - Introductory Macroeconomics

**12 UNITS**

- COMMERCE 1AA3 - Introductory Financial Accounting
- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 3AB3 - Intermediate Financial Accounting I
- COMMERCE 3AC3 - Intermediate Financial Accounting II

**12 UNITS**

from

- COMMERCE 4AA3 - Managerial Accounting II
- COMMERCE 4AC3 - Advanced Financial Accounting
- COMMERCE 4AD3 - Introduction to Auditing
- COMMERCE 4AF3 - Accounting Theory
- COMMERCE 4AX3
- COMMERCE 4SB3 - Introduction to Canadian Taxation
- COMMERCE 4SC3 - Advanced Canadian Taxation

### MINOR IN BUSINESS

**NOTES**

1. The Minor is not open to students registered in any Commerce or Engineering and Management program.
2. For purposes of the Business Minor, ECON 2I03 will be accepted as a

substitute for COMMERCE 2FA3. All courses listed as anti-requisite for COMMERCE 2QA3 in the *Course Listings* section of the Undergraduate Calendar will be accepted as a substitute for COMMERCE 2QA3.

### REQUIREMENTS

24 units total

#### 6 UNITS

from

- COMMERCE 1AA3 - Introductory Financial Accounting
- COMMERCE 1BA3 - Organizational Behaviour
- COMMERCE 1DA3 - Business Data Analytics
- COMMERCE 1MA3 - Introduction to Marketing
- ECON 1B03 - Introductory Microeconomics

#### 18 UNITS

from

- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 2DA3 - Decision Making with Analytics
- COMMERCE 2FA3 - Introduction to Finance
- COMMERCE 2FB3 - Managerial Finance (or 3FA3)
- COMMERCE 2KA3 - Information Systems in Business
- COMMERCE 2MA3 - Introduction to Marketing
- COMMERCE 2OC3 - Operations Management
- COMMERCE 2QA3 - Applied Statistics for Business
- COMMERCE 3MC3 - Applied Marketing Management

### MINOR IN FINANCE

The School of Business will admit a maximum of 30 students to the Minor in Finance each year. Admission decisions are made on behalf of the Undergraduate Recruitment, Admissions, and Student Affairs Committee of the DeGroote School of Business.

#### NOTES

1. The Minor is not open to students registered in any Commerce or Engineering and Management program.
2. For admission, students must complete an application for admission to the Minor by using the Service Request function in the Student Centre in Mosaic before April 30th.
3. Students seeking the Minor must have completed ECON 1B03 and 1BB3 with an average of at least 7.0.
4. Students seeking to obtain the Minor must complete both ECON 2B03 and 2H03 before undertaking any Level III or Level IV Finance courses.
5. For the purposes of this Minor, all courses listed as anti-requisite for COMMERCE 2QA3 in the Course Listings section of the Undergraduate Calendar will be accepted as a substitute for ECON 2B03.
6. For those taking COMMERCE 2FA3 and/or 3FA3, it is strongly recommended that MATH 1M03 be completed.

#### REQUIREMENTS

30 units total

#### 6 UNITS

- ECON 1B03 - Introductory Microeconomics
- ECON 1BB3 - Introductory Macroeconomics

#### 6 UNITS

- ECON 2B03 - Analysis of Economic Data
- ECON 2H03 - Intermediate Macroeconomics I

(See *Notes 4 and 5* above)

#### 9 UNITS

from

- COMMERCE 1AA3 - Introductory Financial Accounting
- COMMERCE 2FA3 - Introduction to Finance (or ECON 2I03)
- COMMERCE 2FB3 - Managerial Finance (or 3FA3)

#### 9 UNITS

- Levels III, IV Finance courses

### MINOR IN INFORMATION SYSTEMS

The School of Business will admit a maximum of 30 students to the Minor in Information Systems each year. Admission decisions are made on behalf of the Undergraduate Recruitment, Admissions, and Student Affairs Committee of the DeGroote School of Business.

#### NOTES

1. The Minor is not open to students registered in Commerce or Engineering and Management.
2. For admission, students must complete an application for admission to the Minor by using the Service Request function in the Student Centre in Mosaic before April 30th.
3. Students seeking the Minor must have completed, with a minimum grade of B-, one of COMPSCI 1BA3, 1MA3, 1JC3, 1TA3, ECON 1B03 or ECON 1BB3.

#### REQUIREMENTS

24 - 25 units total

#### 3-4 UNITS

from

- COMPSCI 1JC3 - Introduction to Computational Thinking
- COMPSCI 1MA3
- COMPSCI 1TA3 - Elementary Computing and Computer Use
- ENGINEER 1D04 - Engineering Computation

#### 3 UNITS

from

- ECON 1BB3 - Introductory Macroeconomics
- ECON 1BX3 - Introductory Microeconomics for Business Students

#### 3 UNITS

- COMMERCE 2KA3 - Information Systems in Business

#### 6 UNITS

from

- COMMERCE 3KA3 - System Analysis and Design
- COMMERCE 3KD3 - Database Design Management and Applications
- COMMERCE 3KE3 - Management of Enterprise Data Analytics

#### 9 UNITS

from

- COMMERCE 4KF3 - Project Management
- COMMERCE 4KH3 - Strategies for Electronic and Mobile Business
- COMMERCE 4KI3 - Business Process Management
- COMMERCE 4KX3 - Special Topics in Information Systems

### MINOR IN INNOVATION

The minor in innovation is a partnership between the Faculty of Engineering and the DeGroote School of Business and is intended for students from all Faculties who wish to learn more about innovation and develop a level of innovation literacy, as well as those who are themselves innovators and wish to develop skills to create their own enterprise. To meet these varied needs, the minor includes a wide range of courses in innovation and may be taken as a course only option, or may include a practicum.

#### REQUIREMENTS

24 units total

#### 6 UNITS

- INNOVATE 1X03 - The World of Entrepreneurship
- INNOVATE 2X03 - Lean Startup

#### 6-9 UNITS

from

- INNOVATE 2Z03 - Sprint Methodologies
- INNOVATE 3X03 - Persuasion, Pitching Skills and Marketing
- INNOVATE 3Z03 - From Founder to CEO

**9-12 UNITS**

from

- COMMERCE 3MA3 - Marketing Research
- COMMERCE 3MC3 - Applied Marketing Management
- COMMERCE 3MD3 - Introduction to Contemporary Applied Marketing
- COMMERCE 3S03 - Management Skills Development
- COMMERCE 4AK3 - Accounting Information for Decision Making
- COMMERCE 4BB3 - Recruitment and Selection
- COMMERCE 4BK3 - The Management of Technology
- COMMERCE 4BN3 - Leadership Development
- COMMERCE 4FO3 - Small Business and Entrepreneurial Finance
- COMMERCE 4FV3 - Venture Capital
- COMMERCE 4FW3 - Finance for Entrepreneurs
- COMMERCE 4KF3 - Project Management
- COMMERCE 4KH3 - Strategies for Electronic and Mobile Business
- COMMERCE 4KI3 - Business Process Management
- COMMERCE 4MC3 - New Product Marketing
- COMMERCE 4ME3 - Sales Management
- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4SA3 - International Business
- COMMERCE 4SD3 - Commercial Law
- COMMERCE 4SE3 - Entrepreneurship
- COMPSCI 4EN3 A/B - Software Entrepreneurship
- ENGNMGT 4A03 - Innovation Driven Project Development and Management
- ENGSOCY 4Y03 - Society Capstone Design
- HISTORY 2EE3 - Science and Technology in World History
- HISTORY 3UA3 - The History of the Future
- HTHSCI 4ID3 - Innovation By Design I
- HTHSCI 4LA3 - Innovation By Design II
- HTHSCI 4PA3 - Global Health Innovation
- HTHSCI 4SA3 - Competitive Advantage Through People
- INNOVATE 1Z03 - Artificial Intelligence - Innovative Technologies
- INNOVATE 3EX3 - Experiential Learning in Innovation
- INNOVATE 3ZZ3 - Imagining and Navigating the Future
- INNOVATE 4EX6 A/B - Founders Startup
- SUSTAIN 3S03 - Implementing Sustainable Change

## **SPECIALIZED MINOR IN COMMERCE FOR STUDENTS COMPLETING A SINGLE HONOURS B.A. IN HUMANITIES**

The Specialized Minor in Commerce for Humanities students is administered by the DeGroote School of Business. A maximum of 30 students will be admitted each year to this Specialized Minor.

**NOTES**

1. For admission, Humanities students (Level 1) must complete an application for admission to the Minor by using the Service Request function in the Student Centre in Mosaic during the Program/Plan Selection process in April.
2. Students must also be admitted to a Single Honours B.A. in one of the following programs: Art History, Classics, Cognitive Science of Language, Communication Studies, English and Cultural Studies, French, History, Justice, Political Philosophy and Law, Linguistics, Multimedia, Philosophy, or Theatre & Film Studies.
3. Students seeking the Specialized Minor in Commerce for Humanities must have completed ECON 1B03, and one of MATH 1M03 or ECON 1BB3.
4. Students must have a Grade Point Average of at least 6.0 to be considered for entry into the Minor.
5. Students planning to apply to the accelerated MBA program at McMaster are strongly encouraged to consult with MBA Admissions at the Ron Joyce Centre regarding admission requirements. In addition to meeting

all other admission criteria students must complete, with a minimum grade of B-, the following courses:

- all three of ECON 1B03, 1BB3, and MATH 1M03;
- all level 1 and 2 Commerce courses listed below with the exception of COMMERCE 2DA3;
- COMMERCE 3MC3

**REQUIREMENTS***33 units total***6 UNITS**

- COMMERCE 1AA3 - Introductory Financial Accounting
- COMMERCE 1BA3 - Organizational Behaviour
- COMMERCE 1DA3 - Business Data Analytics
- COMMERCE 1MA3 - Introduction to Marketing

**18 UNITS**

from

- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 2DA3 - Decision Making with Analytics
- COMMERCE 2FA3 - Introduction to Finance
- COMMERCE 2FB3 - Managerial Finance
- COMMERCE 2KA3 - Information Systems in Business
- COMMERCE 2OC3 - Operations Management
- COMMERCE 3MC3 - Applied Marketing Management
- COMMERCE 3S03 - Management Skills Development

**3 UNITS**

from

- HUMAN 3LM3 - Foundations of Leadership

or

- HUMAN 3CM3 - Leadership: Cross-Cultural Mentoring Lab

**6 UNITS**

- Level III or IV Commerce courses



# Faculty of Engineering

John Hodgins Engineering Building, Room H301, ext. 24646

<http://www.eng.mcmaster.ca/>

## DEAN OF ENGINEERING

**I. K. Puri**/B.Sc. (Delhi), M.S., Ph.D. (California-San Diego)

## ASSOCIATE DEAN OF ENGINEERING (ACADEMIC)

**S. Hranilovic**/B.A.Sc. (Waterloo), M.A.Sc., Ph.D. (Toronto), P.Eng.

## ASSOCIATE DEAN OF ENGINEERING (RESEARCH)

**J. Preston**/B.Eng. (McMaster), M.Sc., Ph.D. (Toronto), P.Eng.

## DIRECTOR, W. BOOTH SCHOOL OF ENGINEERING PRACTICE AND TECHNOLOGY

**M. Elbestawi**/B.Sc., M.Eng., Ph.D., FCAE, P.Eng.

## DIRECTOR, ENGINEERING I

**C. McDonald**/Ph.D., P.Eng.

## DIRECTOR, ENGINEERING & MANAGEMENT PROGRAM

**C. Churchill**/B.Eng., M.Eng.

## DIRECTOR, ENGINEERING & SOCIETY PROGRAM

**C. Churchill**/B.Eng., M.Eng.

## ASSISTANT DEAN (STUDIES)

**M. White**/B.Sc. (Hon.)

## ACADEMIC ADVISORS

**H. Abram**/B.A. Hon.

**B. Conry**/B.A.

**D. Hayward**/B.A.

**J. Hamilton**/B.A. Hon.

**S. Williams**/B.A.

Engineering is a profession concerned with the creation of new and improved systems, processes and products to serve human needs. The central focus of engineering is design, an art entailing the exercise of ingenuity, imagination, knowledge, skill, discipline and judgment based on experience. The practice of professional engineering requires a mastery of engineering methodology together with a sensitivity to the physical properties of materials, to the logic of mathematics, to the constraints of human, physical and financial resources, to the minimization of risk, and to the protection of the public and the environment.

## BACHELOR OF APPLIED SCIENCE PROGRAMS

The Faculty of Engineering offers a four-year Computer Science programs leading to the Bachelor of Applied Science (B.A.Sc.) degree:

- Honours Computer Science

Admission procedures and criteria can be obtained from the Office of the Associate Dean, Academic.

## BACHELOR OF TECHNOLOGY PROGRAMS

McMaster University's Faculty of Engineering and Mohawk College's School of Engineering Technology have partnered since 1997 to deliver the unique Bachelor of Technology program in response to the needs of today's innovation-based organizations. The Bachelor of Technology programs operate within the Faculty of Engineering's W. Booth School of Engineering Practice and Technology. This type of program is targeted to individuals whose technological interests are applications-oriented.

The programs being offered are of two kinds:

1. **A four-year degree program** (leading to both a Bachelor of Technology degree from McMaster and both an Advanced Diploma in Technology and a Business Management Certificate from Mohawk College) with entry directly from high school and
2. **A degree completion program** (leading to both a Bachelor of Technology degree from McMaster and a Business Management Certificate from Mohawk College) for graduates of the Mohawk College Advanced Diploma in Technology (or graduates of similar programs at other Colleges).

A major thrust of all of the programs is the inclusion of a significant component of management education in order to ensure that graduates are able to perform

supervisory and management responsibilities as they advance in their technical careers. The management component is designed to form a cohesive segment which complements the technical program content.

**For information concerning the Bachelor of Technology programs, please see the *Programs for the Bachelor of Technology (B.Tech.) Degree* in this section of this Calendar.**

## BACHELOR OF ENGINEERING PROGRAMS

A five-year program leading to a Bachelor of Engineering in Biomedical Engineering (B.Eng.BME) is offered in Integrated Biomedical Engineering and Health Sciences (IBEHS) Program.

Four-year programs are offered leading to the Bachelor of Engineering degree (B.Eng.) in the following fields of specialization:

- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Electrical Engineering
- Engineering Physics
- Materials Engineering
- Mechanical Engineering
- Mechatronics Engineering
- Software Engineering

Five-year programs, leading to the Bachelor of Engineering and Society degree (B.Eng.Soc), are offered in:

- Chemical Engineering and Society
- Civil Engineering and Society
- Computer Engineering and Society
- Engineering Physics and Society
- Electrical Engineering and Society
- Materials Engineering and Society
- Mechanical Engineering and Society
- Mechatronics Engineering and Society
- Software Engineering and Society

In addition, and in conjunction with the School of Business, five-year programs leading to the Bachelor of Engineering and Management degree (B.Eng.Mgt) are offered in:

- Chemical Engineering and Management
- Civil Engineering and Management
- Computer Engineering and Management
- Electrical Engineering and Management
- Engineering Physics and Management
- Materials Engineering and Management
- Mechanical Engineering and Management
- Mechatronics Engineering and Management
- Software Engineering and Management

A five-year program leading to the Bachelor of Engineering and Biosciences (B.Eng.BioSci) is offered in:

- Chemical Engineering and Bioengineering

In addition, and in conjunction with Faculty of Health Sciences, five-year programs leading to the Bachelor of Engineering and Biomedical (B.Eng.BME) are offered in:

- Chemical and Biomedical Engineering
- Civil and Biomedical Engineering
- Engineering Physics and Biomedical Engineering
- Electrical and Biomedical Engineering
- Materials and Biomedical Engineering
- Mechanical and Biomedical Engineering
- Mechatronics and Biomedical Engineering
- Software and Biomedical Engineering

All programs have limitations on enrolment. Students are admitted to the program following successful completion of Engineering I. Admission procedures and criteria can be obtained from the Office of the Associate Dean,

Academic. The B.Eng., B.Eng.Biosciences, B.Eng.Mgt., B.Eng.Society and B.Eng.BME programs are honours degree programs. McMaster baccalaureate degree programs in Engineering are accredited by the Canadian Engineering Accreditation Board (CEAB) of the Canadian Council of Professional Engineers. The B.Eng.BME programs will be applying for accreditation with the first graduating class.

At McMaster, Engineering students take a common Level I program comprised of Mathematics, Materials, Physics, Chemistry, Engineering Graphics, Introduction to Professional Engineering and Design, Computation and complementary studies electives. Integrated Biomedical Engineering & Health Sciences I students take a separate common Level I program comprised of Mathematics, Materials, Physics, Chemistry, Cellular and Molecular Biology, Introduction to Professional Engineering and Design, Computation and complementary studies electives. The specialized programs are entered at Level II. Students interested in the Engineering and Management programs must take ECON 1B03 as one of their complementary studies electives in Level I. Students interested in one of the Engineering and Society programs are advised to choose the six units complementary studies in Level I to be consistent with their chosen focus of the program. Students interested in one of the Engineering and Biomedical Engineering programs must take IBEHS approved technical electives. Programs offered by the Faculty of Engineering include five types of elective courses, which are governed by regulations, as follows:

**Complementary Studies Electives** are broadening courses with subject matter that deals with central issues, methodologies and thought processes of the humanities and social sciences.

In addition to ENGINEER 4A03, or equivalent, and ENGINEER 4B03, complementary studies electives are required in all Engineering programs; except IBEHS does not require ENGINEER 4B03.

The Associate Dean, Academic must authorize each student's complementary studies elective courses. An approved list is published each spring and is available from the Office of the Associate Dean, Academic. Engineering I students should refer to the Degrees and Programs section of this Calendar to determine which Level I Complementary Studies electives are possible (<http://www.eng.mcmaster.ca/documents/electives.pdf>).

**Technical Electives** are Engineering or Applied Science courses in subjects relevant to the particular program. A list is available in each Engineering Department office.

**Commerce Electives** are required in Level V of Engineering and Management programs.

**Engineering and Society Focus Electives** are courses offered by various departments throughout the University. These courses are selected in consultation with the Director of the Engineering and Society program, such that they form a proper sequence of the focus electives.

**IBEHS Technical Electives** are approved courses offered by the Integrated Biomedical Engineering & Health Sciences (IBEHS) program or various departments throughout the University in subjects relevant to the particular program. A list is available on [ibiomed.mcmaster.ca](http://ibiomed.mcmaster.ca).

#### **ENGINEERING CO-OP PROGRAM**

Undergraduate students in the Faculty of Engineering or registered in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program can enroll in a Co-op version of each program. Students enrolled in the former will be required to complete 12 months of industrial/practical experience prior to graduation. The 12 months experience may be acquired through a combination of three four-month experience terms, or a combination of a four month and eight month experience terms, or an experience term of 12 or 16 months duration. Students may enter the Co-op version of their program at any time up to the beginning of Term 2 of their next-to-last level of undergraduate studies. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0.

#### **ENGINEERING CO-OP FEES**

An Engineering Co-op fee will be charged for students registered in an Engineering Co-op Program and the Integrated Biomedical Engineering & Health Sciences (IBEHS) co-op program.

#### **EXCHANGE PROGRAMS**

Formal exchange programs with a number of universities in other countries are available for B.Eng. students wishing to attend a foreign university and receive credit at McMaster. For further information please see International Study in the General Academic Regulations section in this Calendar. Information concerning student exchanges can also be found in the Academic Facilities, Student Services and Organizations section of this Calendar under the heading International Student Services.

#### **MINOR**

In partnership with the DeGroote School of Business, the Faculty of Engineering offers a Minor in Innovation.

## **Academic Regulations**

#### **STUDENT ACADEMIC RESPONSIBILITY**

You are responsible for adhering to the statement on student academic responsibility found in the *General Academic Regulations* of this calendar.

#### **ACCESS TO COURSES**

All undergraduate courses at McMaster have an enrolment capacity. The University is committed to make every effort to accommodate students in required courses so that their program of study is not extended. Unless otherwise specified, registration is on a first-come basis and in some cases priority will be given to students from particular programs or Faculties. Students will be informed of their enrolment periods and are encouraged to enroll as soon as online enrolment is available to them in the Student Centre in Mosaic.

#### **STUDENT COMMUNICATION RESPONSIBILITY**

It is the student's responsibility to:

- maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- use the University provided e-mail address or maintain a valid forwarding e-mail address.
- regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.
- accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.

*Students enrolled in the Faculty of Engineering programs or Integrated Biomedical Engineering & Health Sciences (IBEHS) program, in addition to meeting the General Academic Regulations of the University, shall be subject to the following Faculty Regulations.*

#### **ENGINEERING I**

##### **ADMISSION TO LEVEL II PROGRAMS**

All Level I students who wish to be reviewed for admission to a Level II program in the Faculty of Engineering for the following Fall/Winter term must submit an Application of Admission to Level II through MOSAIC by the University stated deadline. Students rank up to twelve program choices. Rank ordering must be done very carefully because once admitted to a program, no further consideration is given to lower ranked choices.

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses before the start of the Level II program. Students must maintain a minimum Cumulative Grade Point Average (GPA) of 4.0. All Level II programs are limited enrollment and entry into a Level II program is competitive. The admission into each Level II program is determined by the Cumulative Grade Point Average (GPA) and order of ranked programs.

All McMaster University courses completed (including electives and upper year courses) are calculated into Cumulative Grade Point Average (GPA) up to the time of Level II program admission review. Grades earned in summer school, after program admission review, will not change student Level II program eligibility. A student in Engineering I with a Grade Point Average (GPA) less than 4.0 can no longer continue in the Faculty of Engineering.

Students must follow the program requirements of the Calendar in effect when they enter Level II. Admission to a B.Eng.Mgt. program is competitive and will be based on Cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0. Students seeking admission to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives. Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### **COMPUTER SCIENCE I**

To be eligible for Level II Computer Science a student requires an overall Grade Point Average (GPA) of 4.0 and must also have passed all non-elective Computer Science I courses. See the program listings under Programs for the B.A.Sc. Degree for specific information on admission requirements for each program.

A student in Computer Science I whose Grade Point Average (GPA) is less than 4.0 may no longer continue in the Faculty.

#### **INTEGRATED BIOMEDICAL ENGINEERING & HEALTH SCIENCES I**

All Level I students who wish to be reviewed for admission to a Level II program in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program in the following Fall/Winter term must submit an Application of Admission to Level II through MOSAIC by the University stated deadline. Students in the IBEHS program must rank both degree options in order of preference, and are permitted to rank up to twelve program choices in total. Rank ordering must be done very carefully because once admitted to a program, no further consideration is given to lower ranked choices.

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0. All Level II programs are limited enrollment and entry into a Level II program is competitive. The admission into each Level II program is determined by the Cumulative Grade Point Average (GPA) and order of ranked programs.

All McMaster University courses completed (including electives and upper year courses) are calculated into Cumulative Grade Point Average (GPA) up to the time of Level II program admission review. Grades earned in summer school, after program admission review, will not change student Level II program eligibility. A student in IBEHS I with a Grade Point Average (GPA) less than 4.0 can no longer continue in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program.

Students must follow the program requirements of the Calendar in effect when they enter Level II.

#### **BACHELOR OF TECHNOLOGY I**

To be eligible for any Level II Bachelor of Technology program, a student requires an overall Grade Point Average (GPA) of 3.5 or above and must have 24 units of Bachelor of Technology I courses. See the program listings under Programs for the Four-Year Bachelor of Technology degree for specific information on admission requirements for each program.

#### **SEQUENCE OF COURSES**

Courses must be taken in the sequence specified in the Calendar for the program. Students must register for all outstanding work of one level before attempting work for a higher level.

#### **REPEATED COURSES**

All failed courses must be repeated if they are required courses for the Engineering program or may be replaced if the courses are not explicitly required.

#### **LEVEL OF REGISTRATION**

A student is required to register in the lowest level for which more than six units of work is incomplete. Work of a higher level may be undertaken only with the permission of the Associate Dean of Engineering.

#### **REINSTATEMENT TO FACULTY OF ENGINEERING, OR INTEGRATED BIOMEDICAL ENGINEERING & HEALTH SCIENCES**

A student who is ineligible to continue in the Faculty of Engineering or Integrated Biomedical Engineering & Health Sciences or who May not continue at the university may normally not apply for reinstatement for one full academic year. Exceptions may be made when there are extenuating circumstances which are supported by documentation.

Students seeking reinstatement must complete the Reinstatement Request Form available at the Office of the Registrar or the Office of the Associate Dean of Engineering. The completed form and the \$100 fee must be submitted to the Office of the Registrar by June 30. The form must be accompanied by a written explanation of the reason for the student's previous unsatisfactory academic performance, reasons for reinstatement at this time (including documentation of what has been done to correct previous problems), reasons why the student would expect to succeed in the desired program if reinstated (i.e. what was the previous problem and what has been done to correct it), activities since last registered at McMaster including all academic work. **Reinstatement is not guaranteed.**

A student who is reinstated after being ineligible to continue at a given level must repeat all the courses of that level, unless specific course exemptions are granted explicitly in the letter of reinstatement. Students who are reinstated will be placed on academic probation, and calculation of their Cumulative Grade Point Average (GPA) will begin anew. If at any review after reinstatement the student's Cumulative Grade Point Average falls below 3.5, the student will be required to withdraw from the University for a period of at least 12 months.

#### **PROGRAM CHANGES**

All program changes must be made through the Office of the Associate Dean, Academic.

#### **TRANSFERRING TO GRADUATE WITH A THREE-YEAR B.A.SC. DEGREE FROM ONE OF THE B.ENG.BME BIOMEDICAL ENGINEERING STREAMS OF THE INTEGRATED BIOMEDICAL ENGINEERING AND HEALTH SCIENCES PROGRAM**

Students who successfully complete at least 90 units including all admission requirements and program-specific course requirements up to the end of Level III of one of the B.Eng.BME Biomedical Engineering streams of the Integrated Biomedical Engineering and Health Sciences Program, with a minimum Grade Point Average of 4.0 may request permission from the Office of the Associate Dean of Engineering (Academic) for transfer to graduate with the B.A.Sc. (exit) degree.

## **Level I Programs**

### **Bachelor of Applied Science**

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#### **COMPUTER SCIENCE I/COMPUTER SCIENCE I CO-OP (B.A.SC.)**

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*30 units total*

#### **REQUIREMENTS**

##### **15 UNITS**

- COMPSCI 1DM3 - Discrete Mathematics for Computer Science
- COMPSCI 1JC3 - Introduction to Computational Thinking

- COMPSCI 1MD3 - Introduction to Programming
- COMPSCI 1XC3 - Computer Science Practice and Experience: Development Basics
- COMPSCI 1XD3 - Computer Science Practice and Experience: Introduction to Software Design Using Web Programming

**9 UNITS**

- MATH 1B03 - Linear Algebra I
- MATH 1ZA3 - Engineering Mathematics I
- MATH 1ZB3 - Engineering Mathematics II-A

**6 UNITS**

- Electives

**1 COURSE**

- ENGINEER 1A00 or
- WHMIS 1A00 - Introduction to Health and Safety

## Bachelor of Engineering

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### ENGINEERING I/ENGINEERING I CO-OP

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37 units total

**REQUIREMENTS****3 UNITS**

- CHEM 1E03 - General Chemistry for Engineering I

**13 UNITS**

- ENGINEER 1P13 A/B - Integrated Cornerstone Design Projects in Engineering

**9 UNITS**

- MATH 1ZA3 - Engineering Mathematics I
- MATH 1ZB3 - Engineering Mathematics II-A
- MATH 1ZC3 - Engineering Mathematics II-B

**6 UNITS**

- PHYSICS 1D03 - Introductory Mechanics
- PHYSICS 1E03 - Waves, Electricity and Magnetic Fields

**6 UNITS**

- approved complementary studies electives.

(See *Elective Courses Available To Level I Students in Degrees, Programs and Courses.*)

**1 COURSE**

from

- WHMIS 1A00 - Introduction to Health and Safety
- or
- ENGINEER 1A00

## Bachelor of Engineering and Biomedical Engineering

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### INTEGRATED BIOMEDICAL ENGINEERING AND HEALTH SCIENCES (IBEHS) I/INTEGRATED BIOMEDICAL ENGINEERING AND HEALTH SCIENCES (IBEHS) I CO-OP

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**NOTES**

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EE0. IBEHS 2ECO will be added to the academic record for each 4 month work term.
2. Admission to Level II Engineering and Biomedical Engineering programs requires completion of all 34 units of required IBEHS I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the students Cumulative Grade Point Average. A student in IBEHS I whose Grade Point Average (GPA) is less than 4.0 can no longer continue in IBEHS.
3. Students enrolled in the Integrated Biomedical Engineering & Health

Sciences (IBEHS) program may take up to 8-units of research project or independent study courses. A full listing can be found on the IBEHS website.

4. Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

**REQUIREMENTS**

37 units total

**LEVEL I: 37 UNITS**10 units

- IBEHS 1P10 A/B - Health Solutions Design Projects I

3 units

- CHEM 1E03 - General Chemistry for Engineering I

6 units

- HTHSCI 1106 A/B - Cellular and Molecular Biology

9 units

- MATH 1ZA3 - Engineering Mathematics I
- MATH 1ZB3 - Engineering Mathematics II-A
- MATH 1ZC3 - Engineering Mathematics II-B

6 units

- PHYSICS 1D03 - Introductory Mechanics
- PHYSICS 1E03 - Waves, Electricity and Magnetic Fields

3 units

- Complementary Studies  
(See *Elective Courses Available To Level I Students*)

2 courses

- BIOSAFE 1BS0 - Biosafety Training
- WHMIS 1A00 - Introduction to Health and Safety

## Bachelor of Technology

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### B.TECH. 1

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#### AUTOMATION ENGINEERING TECHNOLOGY I CO-OP (B.TECH.)

30 units total

**REQUIREMENTS**18 units

- ENGTECH 1CH3 - Chemistry
- ENGTECH 1CP3 - C++ Programming
- ENGTECH 1EL3 - Electricity and Electronics I
- ENGTECH 1MC3 - Mathematics I
- ENGTECH 1MT3 - Mathematics II
- ENGTECH 1PH3 - Physics

6 units

- GENTECH 1BZ3 - Foundations of Business
- GENTECH 1PC3 - Professional Communications

6 units

- ENGTECH 1AC3 - Analytical Chemistry
- ENGTECH 1PR3 - Object-Oriented Programming

2 courses

- ENGINEER 1EE0 - Introduction to the Engineering Co-op Program
- WHMIS 1A00 - Introduction to Health and Safety

#### AUTOMOTIVE AND VEHICLE ENGINEERING TECHNOLOGY I CO-OP (B.TECH.)

30 units total

**REQUIREMENTS**18 units

- ENGTECH 1CH3 - Chemistry
- ENGTECH 1CP3 - C++ Programming
- ENGTECH 1EL3 - Electricity and Electronics I
- ENGTECH 1MC3 - Mathematics I



- ENGTECH 1MT3 - Mathematics II
- ENGTECH 1PH3 - Physics

6 units

- GENTECH 1BZ3 - Foundations of Business
- GENTECH 1PC3 - Professional Communications

6 units

- ENGTECH 1ME3 - Statics and Mechanics of Materials
- ENGTECH 1PR3 - Object-Oriented Programming

2 courses

- ENGINEER 1EE0 - Introduction to the Engineering Co-op Program
- WHMIS 1A00 - Introduction to Health and Safety

**BIOTECHNOLOGY I CO-OP (B.TECH.)**

30 units total

**REQUIREMENTS**18 units

- ENGTECH 1CH3 - Chemistry
- ENGTECH 1EL3 - Electricity and Electronics I
- ENGTECH 1MC3 - Mathematics I
- ENGTECH 1MT3 - Mathematics II
- ENGTECH 1PH3 - Physics
- ENGTECH 1PP3 - Python Programming

6 units

- GENTECH 1BZ3 - Foundations of Business
- GENTECH 1PC3 - Professional Communications

6 units

- ENGTECH 1AC3 - Analytical Chemistry
- ENGTECH 1BI3 - Biology

2 courses

- ENGINEER 1EE0 - Introduction to the Engineering Co-op Program
- WHMIS 1A00 - Introduction to Health and Safety

## Department of Chemical Engineering

Faculty of the Department of Chemical Engineering, as of January 15, 2020

CHAIR**Carlos Filipe**ASSOCIATE CHAIR GRADUATE**Thomas Adams II**ASSOCIATE CHAIR UNDERGRADUATE**Jake Nease**DISTINGUISHED UNIVERSITY PROFESSOR

**John L. Brash**/ B.Sc., Ph.D. (Glasgow), D.Hon.Caus. (Paris Nord), F.R.S.C., P.Eng. / Emeritus

**John F. MacGregor**/ B.Eng. (McMaster), M.S., Ph.D. (Wisconsin), FASA, P.Eng. F.C.A.E./Emeritus

**Shiping Zhu**/B.Eng. (Zhejiang), Ph.D. (McMaster), P.Eng., F.C.I.C., F.R.S.C.

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**Raja Ghosh**/B.S., M.S. (Jadavpur), D.Phil. (Oxford)/Canada Research Chair

**Todd Hoare**/B.Sc. (Queen's), Ph.D. (McMaster), P.Eng.

**Vladimir Mahalec**/Dipl. Ing. (Zagreb), Ph.D. (Houston)/Director, GMC Centre for Engineering Design

**Prashant Mhaskar**/B.Tech (IIT), M.S. (Louisiana State), Ph.D. (California-Los Angeles), P.Eng./Canada Research Chair

**Robert H. Pelton**/B.Sc., M.Sc. (Guelph), Ph.D. (Bristol)/Senior Canada Research Chair, F.R.S.C.

**Heather Sheardown**/B.Eng. (McMaster), Ph.D. (Toronto), P.Eng.

**Christopher L. E. Swartz**/B.Sc.Eng. (Cape Town), Ph.D. (Wisconsin), P.Eng./

ArceIorMittal Dofasco Chair in Process Automation and Information Technology  
**Michael Thompson**/B.Sc., B.Eng., M.Eng. (McMaster), Ph.D. (Waterloo), P.Eng.

ADJUNCT PROFESSORS

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**Lyndon W.J. Jones**/B.Sc. (Wales), Ph.D. (Aston)

**Marko D. Saban**/Dipl. Ing., M.Sc., Ph.D. (Belgrade)

**Guerino G. Sacripante**/B.Sc., Ph.D. (McGill)

**Wen-Jun Wang**/B.Eng, M.Eng., Ph.D. (Zhejiang)

**Yiliang Wu**/B.Sc. (Sichuan), M.Sc. (University of Science and Technology, China), Ph.D. (Tokyo Institute of Technology)

ASSOCIATE PROFESSORS

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**Kim Jones**/B.A.Sc. (Waterloo), M.Sc. (Guelph), Ph.D. (Toronto), L.E.L.

**David Latulippe**/B.Eng., M.A.Sc., (McMaster), Ph.D. (Pennsylvania State)

ADJUNCT ASSOCIATE PROFESSORS

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**Theodora Kourti**/Dipl. Eng. (Chemical)(Aristotle), Ph.D. (McMaster)

**Qiang Liu**/B.S, MS., (University of Science and Technology, China), Ph.D. (Laval)

**David McDonald**/B.Sc. (Toronto), M.Sc. (McMaster)

ASSISTANT PROFESSORS

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**Charles-Francois de Lannoy**/B.Sc. (McGill), Ph.D. (Duke)

**Drew Higgins**/B.A.Sc. (Waterloo), M.A.Sc. (Waterloo), Ph.D. (Waterloo)

**Zeinab Hosseinidoust**/B.Sc., M.Sc. (Sharif), Ph.D. (McGill)

**Kamil Khan**/B.S.E. (Princeton), M.Sc., Ph.D. (MIT)

**Vincent Leung**/ B.Eng Biosci., M.A.Sc., Ph.D. (McMaster)

**Jake Nease**/ B.Eng.Mgmt., PhD (McMaster)

**Li Xi**/B.S. (Zhejiang), Ph.D. (Wisconsin-Madison)

**Boyang Zhang**/B.Sc. (Georgia Institute of Technology), Ph.D. (University of Toronto)

ADJUNCT ASSISTANT PROFESSORS

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**Santiago Faucher**/B.Sc. (Queen's), Ph.D. (McMaster)

**Niels Smeets**/B.Sc., M.Sc., Ph.D. (Eindhoven)

**Danielle Zyngier**/B.Sc. (Rio de Janeiro), M.Sc. (Rio de Janeiro), Ph.D. (McMaster)

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**Yingful Li**/B.Sc. (Anhui University), M.Sc. (China Agriculture University), Ph.D. (Simon Fraser University)

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**Ishwar K. Puri**/B.Sc. (Delhi), M.S., Ph.D. (California-San Diego)

## Bachelor of Engineering

### CHEMICAL ENGINEERING, CHEMICAL ENGINEERING CO-OP (B.ENG.)

**ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0. Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives. Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

- Students may choose to follow a stream of recommended technical elective courses.
  - Process Systems Engineering (PSE) Stream:**  
**Required Courses:** CHEMENG 4H03, 4E03, 4G03, 4L02 (PSE laboratories completed). Other courses may be substituted with permission of the Department Chair.
  - Polymer Materials and Manufacturing (PMM) Stream:**  
**Required Courses:** CHEMENG 3Q03, 4B03, 4H03, 4L02 (PMM laboratories completed), CHEMENG 4X03. Other courses may be substituted with permission of the Department Chair.
  - Water-Energy Technologies (WET) Stream:**  
**Required Courses:** CHEMENG 4A03, 4M03, 4L02 (WET laboratories completed) and one of ENGINEER 4V04 or CIVENG 4V04. Other courses may be substituted with permission of the Department Chair.
- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4-month work term.

#### REQUIREMENTS

##### LEVEL II: 37 UNITS

###### 19 units

- CHEMENG 2D04 - Chemical Engineering Principles I
- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- CHEMENG 2F04 - Chemical Engineering Principles II
- CHEMENG 2G03 - Problem Solving and Technical Communication
- CHEMENG 2O04 - Fluid Mechanics

###### 3 units

- CHEM 1AA3 - Introductory Chemistry II

###### 6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

###### 3 units

- MATLS 3J03 - Statistical Methods for Materials Engineers

###### 6 units

- approved complementary studies electives

##### LEVEL III: 38 UNITS

###### 29 units

- CHEMENG 3A04 - Heat Transfer
- CHEMENG 3D04 - Chemical Engineering Thermodynamics
- CHEMENG 3G04 - Chemical Process Design and Simulation
- CHEMENG 3I03 - Data Acquisition and Analysis
- CHEMENG 3K04 - Introduction to Reactor Design
- CHEMENG 3L02 - Intermediate Laboratory Skills
- CHEMENG 3M04 - Mass Transfer and Stagewise Operations
- CHEMENG 3P04 - Process Control

###### 9 units total from the following two subsections

###### 3-6 units

from

- CHEM 2E03 - Introductory Organic Chemistry

or both

- CHEM 2O A3 - Organic Chemistry I and
- CHEM 2O B3 - Organic Chemistry II

###### 3-6 units

from

- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- CHEM 3I03 - Industrial Chemistry
- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry
- CHEMBIO 3BM3 - Implanted Biomaterials
- CHEMENG 3Q03 - Introduction to Polymer Science

##### LEVEL IV: 37-40 UNITS

###### 10 units

- CHEMENG 4L02 - Advanced Laboratory Skills
- CHEMENG 4N04 - Engineering Economics and Problem Solving
- CHEMENG 4W04 - Chemical Plant Design and Capstone Project

###### 3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

###### 15-16 units

from

- CHEMENG 3BK3 - Bio-Reaction Engineering
- CHEMENG 3BM3 - Bioseparations Engineering
- CHEMENG 4A03 - Energy Systems Engineering
- CHEMENG 4B03 - Polymer Reaction Engineering
- CHEMENG 4H03 - Big Data Methods and Modeling in Chemical and Materials Engineering
- CHEMENG 4E03 - Digital Computer Process Control
- CHEMENG 4G03 - Optimization in Chemical Engineering
- CHEMENG 4K03 - Reactor Design for Heterogeneous Systems
- CHEMENG 4M03 - Industrial Separation Processes
- CHEMENG 4T03 - Applications of Chemical Engineering in Medicine
- CHEMENG 4TA3 A/B - Engineering Practicum
- CHEMENG 4X03 - Polymer Processing
- CHEMENG 4Y04 A/B - Senior Independent Project
- CHEMENG 4Z03 - Interfacial Engineering
- ENGINEER 4EX3 A/B - Experiential Engineering Design

**Note:** Only two courses from List B (Chem Eng Sci/Math courses) can be taken over the course of the program

###### 3 units

- complementary studies electives

###### 6-8 units

- Level III or IV technical electives from approved List A (Interdisciplinary engineering courses) or permission of the Department of Chemical Engineering

## Bachelor of Engineering and Biomedical Engineering

### CHEMICAL AND BIOMEDICAL ENGINEERING, CHEMICAL AND BIOMEDICAL ENGINEERING CO-OP (B.ENG.BME)

#### ADMISSION TO LEVEL II IBEHS PROGRAMS

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0.

All students who successfully complete the first year of the program will have a space in one of the two degree options. As enrolment is limited in each of the two degree options (HESE or BME), where there is more demand than spaces, competition will be based on first-year academic achievement. Students seeking admission to the BME specialization will be admitted to one

of eight Level II Engineering programs (Chemical, Civil, Electrical, Engineering Physics, Materials, Mechanical, Mechatronics, or Software). Admission to a Level II Engineering program is guaranteed for all students who meet the general progress requirements. All engineering programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on GPA.

Students who do not meet the requirements to proceed to Level II in May will have a *Pending* flag put on their allocation. The *Pending* flag will be removed in August if the student completes the requirements over the summer.

### NOTES

- Students may choose to follow a stream of recommended technical elective courses.
  - Process Systems Engineering (PSE) Stream:**  
**Required Courses:** CHEMENG 4H03, 4E03, 4G03, 4L02 (PSE laboratories completed). Other courses may be substituted with permission of the Department Chair.
  - Polymer Materials and Manufacturing (PMM) Stream:**  
**Required Courses:** CHEMENG 3Q03, 4B03, 4H03, 4L02 (PMM laboratories completed), 4X03. Other courses may be substituted with permission of the Department Chair.
  - Water-Energy Technologies (WET) Stream:**  
**Required Courses:** CHEMENG 4A03, 4M03, 4L02 (WET laboratories completed) and one of ENGINEER 4V04 or CIVENG 4V04. Other courses may be substituted with permission of the Department Chair.
- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EE0. IBEHS 2ECO will be added to the academic record for each 4-month work term.
- Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to 8-units of research project or independent study courses. A full listing can be found on the IBEHS website.
- Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

### REQUIREMENTS

#### LEVEL II: 37 UNITS

##### 15 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2E03 - Inquiry II: Biochemistry
- HTHSCI 2F03 - Human Physiology and Anatomy I
- HTHSCI 2FF3 - Human Physiology and Anatomy II
- IBEHS 2P03 - Health Solutions Design Projects II

##### 22 units

- CHEMENG 2D04 - Chemical Engineering Principles I
- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- CHEMENG 2F04 - Chemical Engineering Principles II
- CHEMENG 2O04 - Fluid Mechanics
- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

#### LEVEL III: 39 UNITS

##### 3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I

##### 13 units

- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

##### 23 units

- CHEMENG 2G03 - Problem Solving and Technical Communication
- CHEMENG 3A04 - Heat Transfer
- CHEMENG 3D04 - Chemical Engineering Thermodynamics
- CHEMENG 3G04 - Chemical Process Design and Simulation
- CHEMENG 3K04 - Introduction to Reactor Design
- CHEMENG 3M04 - Mass Transfer and Stagewise Operations

#### LEVEL IV: 35-36 UNITS (2020-2021 ONLY)

##### 3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I

##### 17 units

- IBEHS 4B03 - Biomechanics
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

##### 9 units

- CHEMENG 3I03 - Data Acquisition and Analysis
- CHEMENG 3L02 - Intermediate Laboratory Skills
- CHEMENG 3P04 - Process Control

##### 3-4 units

- Approved IBEHS Technical Elective

##### 3 units

- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry

#### LEVEL IV: 35-36 UNITS (EFFECTIVE 2021-2022)

##### 17 units

- IBEHS 4B03 - Biomechanics
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

##### 9 units

- CHEMENG 3I03 - Data Acquisition and Analysis
- CHEMENG 3L02 - Intermediate Laboratory Skills
- CHEMENG 3P04 - Process Control

##### 3 units

from

- CHEMENG 3BK3 - Bio-Reaction Engineering
- CHEMENG 3BM3 - Bioseparations Engineering
- CHEMENG 4A03 - Energy Systems Engineering
- CHEMENG 4B03 - Polymer Reaction Engineering
- CHEMENG 4H03 - Big Data Methods and Modeling in Chemical and Materials Engineering
- CHEMENG 4K03 - Reactor Design for Heterogeneous Systems
- CHEMENG 4M03 - Industrial Separation Processes
- CHEMENG 4T03 - Applications of Chemical Engineering in Medicine
- CHEMENG 4TA3 A/B - Engineering Practicum
- CHEMENG 4X03 - Polymer Processing
- CHEMENG 4Z03 - Interfacial Engineering

##### 3-4 units

- Approved IBEHS Technical Elective

##### 3 units

- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry

#### LEVEL V: 36-38 UNITS

##### 9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

9 units

- CHEMENG 4L02 - Advanced Laboratory Skills
- CHEMENG 4N04 - Engineering Economics and Problem Solving
- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

9-10 units from

- CHEMENG 3BK3 - Bio-Reaction Engineering
- CHEMENG 3BM3 - Bioseparations Engineering
- CHEMENG 4A03 - Energy Systems Engineering
- CHEMENG 4B03 - Polymer Reaction Engineering
- CHEMENG 4E03 - Digital Computer Process Control
- CHEMENG 4H03 - Big Data Methods and Modeling in Chemical and Materials Engineering
- CHEMENG 4G03 - Optimization in Chemical Engineering
- CHEMENG 4K03 - Reactor Design for Heterogeneous Systems
- CHEMENG 4M03 - Industrial Separation Processes
- CHEMENG 4T03 - Applications of Chemical Engineering in Medicine
- CHEMENG 4TA3 A/B - Engineering Practicum
- CHEMENG 4X03 - Polymer Processing
- CHEMENG 4Y04 A/B - Senior Independent Project
- CHEMENG 4Z03 - Interfacial Engineering

3-4 units

- approved IBEHS Technical Elective

6 units

- Complementary Studies

## Bachelor of Engineering and Biosciences

### CHEMICAL ENGINEERING AND BIOENGINEERING, CHEMICAL ENGINEERING AND BIOENGINEERING CO-OP (B.ENG.BIOSCI.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTE

1. Students may choose to follow a stream of recommended technical elective courses.

- **Process Systems Engineering (PSE) Stream:**

**Required Courses:** CHEMENG 4H03, 4E03, 4G03, 4L02 (PSE laboratories completed). Other courses may be substituted with permission of the Department Chair.

- **Polymer Materials and Manufacturing (PMM) Stream:**

**Required Courses:** CHEMENG 3Q03, 4B03, 4H03, 4L02 (PMM laboratories completed), 4X03. Other courses may be substituted with permission of the Department Chair.

- **Water-Energy Technologies (WET) Stream:**

**Required Courses:** CHEMENG 4A03, 4M03, 4L02 (WET laboratories completed) and one of ENGINEER 4V04 or CIVENG 4V04. Other courses may be substituted with permission of the Department Chair.

2. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4-month work term.

#### REQUIREMENTS

##### LEVEL II: 40 UNITS

###### 19 units

- CHEMENG 2D04 - Chemical Engineering Principles I
- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- CHEMENG 2F04 - Chemical Engineering Principles II
- CHEMENG 2G03 - Problem Solving and Technical Communication
- CHEMENG 2O04 - Fluid Mechanics

###### 3 units

- CHEM 1AA3 - Introductory Chemistry II

###### 3 units

- BIOLOGY 1A03 - Cellular and Molecular Biology

###### 6 units

- HTHSCI 2L03 - Anatomy and Physiology I: Communication
- HTHSCI 2LL3 - Anatomy and Physiology II: Homeostasis

###### 6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

###### 3 units

- approved complementary studies electives

##### LEVEL III: 37-40 UNITS

###### 31 units

- BIOLOGY 2EE3 - Introduction to Microbiology and Biotechnology
- CHEMENG 3A04 - Heat Transfer
- CHEMENG 3D04 - Chemical Engineering Thermodynamics
- CHEMENG 3G04 - Chemical Process Design and Simulation
- CHEMENG 3I03 - Data Acquisition and Analysis
- CHEMENG 3K04 - Introduction to Reactor Design
- CHEMENG 3L02 - Intermediate Laboratory Skills
- CHEMENG 3M04 - Mass Transfer and Stagewise Operations
- CHEMENG 4T03 - Applications of Chemical Engineering in Medicine

###### 3-6 units

- CHEM 2E03 - Introductory Organic Chemistry

or both

- CHEM 20A3 - Organic Chemistry I
- CHEM 20B3 - Organic Chemistry II

###### 3 units

from

- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- BIOLOGY 2B03 - Cell Biology
- HTHSCI 2K03 - Cell Biology

##### LEVEL IV: 36-37 UNITS

###### 15 units

- CHEMENG 3BK3 - Bio-Reaction Engineering
- CHEMENG 3BM3 - Bioseparations Engineering
- CHEMENG 3P04 - Process Control
- CHEMENG 4L02 - Advanced Laboratory Skills
- IBEHS 2P03 - Health Solutions Design Projects II

###### 3 units

- BIOCHEM 3G03 - Proteins and Nucleic Acids

###### 3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

###### 6 units

from

- CHEM 3I03 - Industrial Chemistry
- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry



- CHEMBIO 3BM3 - Implanted Biomaterials
- CHEMENG 3Q03 - Introduction to Polymer Science

3 units

- MATLS 3J03 - Statistical Methods for Materials Engineers

3 units

- approved complementary studies electives

3 units

- approved technical electives from biosciences or bioengineering

#### LEVEL V: 36-39 UNITS

8 units

- CHEMENG 4N04 - Engineering Economics and Problem Solving
- CHEMENG 4W04 - Chemical Plant Design and Capstone Project

15-16 units

from

- CHEMENG 4A03 - Energy Systems Engineering
- CHEMENG 4B03 - Polymer Reaction Engineering
- CHEMENG 4E03 - Digital Computer Process Control
- CHEMENG 4G03 - Optimization in Chemical Engineering
- CHEMENG 4H03 - Big Data Methods and Modeling in Chemical and Materials Engineering
- CHEMENG 4K03 - Reactor Design for Heterogeneous Systems
- CHEMENG 4M03 - Industrial Separation Processes
- CHEMENG 4TA3 A/B - Engineering Practicum
- CHEMENG 4X03 - Polymer Processing
- CHEMENG 4Y04 A/B - Senior Independent Project
- CHEMENG 4Z03 - Interfacial Engineering
- ENGINEER 4EX3 A/B - Experiential Engineering Design

4 units

- CIVENG 4V04 - Biological Aspects of Wastewater Treatment

3-4 units

- approved technical electives from biosciences or bioengineering

3 units

- approved complementary studies electives

3-4 units

- Level III or IV technical electives from approved List A (Interdisciplinary engineering courses) or permission of the Department of Chemical Engineering

## Bachelor of Engineering and Management

### CHEMICAL ENGINEERING AND MANAGEMENT, CHEMICAL ENGINEERING AND MANAGEMENT CO-OP (B.ENG.MGT.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

1. Students may choose to follow a stream of recommended technical elective courses.

- **Process Systems Engineering (PSE) Stream:**

**Required Courses:** CHEMENG 4H03, 4E03, 4G03, 4L02 (PSE laboratories completed). Other courses may be substituted with permission of the Department Chair.

- **Polymer Materials and Manufacturing (PMM) Stream:**

**Required Courses:** CHEMENG 3Q03, 4B03, 4H03, 4L02 (PMM laboratories completed), 4X03. Other courses may be substituted with permission of the Department Chair.

- **Water-Energy Technologies (WET) Stream:**

**Required Courses:** CHEMENG 4A03, 4M03, 4L02 (WET laboratories completed) and one of ENGINEER 4V04 or CIVENG 4V04. Other courses may be substituted with permission of the Department Chair.

2. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

#### REQUIREMENTS

##### LEVEL II: 37 UNITS

19 units

- CHEMENG 2D04 - Chemical Engineering Principles I
- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- CHEMENG 2F04 - Chemical Engineering Principles II
- CHEMENG 2G03 - Problem Solving and Technical Communication
- CHEMENG 2O04 - Fluid Mechanics

3 units

- CHEM 1AA3 - Introductory Chemistry II

3 units

- COMMERCE 1AA3 - Introductory Financial Accounting

3 units

- ECON 1BB3 - Introductory Macroeconomics

3 units

- ENGMGT 2AA3 - Communication Skills

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

##### LEVEL III: 40 UNITS

25 units

- CHEMENG 3A04 - Heat Transfer
- CHEMENG 3D04 - Chemical Engineering Thermodynamics
- CHEMENG 3G04 - Chemical Process Design and Simulation
- CHEMENG 3I03 - Data Acquisition and Analysis
- CHEMENG 3K04 - Introduction to Reactor Design
- CHEMENG 3L02 - Intermediate Laboratory Skills
- CHEMENG 3M04 - Mass Transfer and Stagewise Operations

3 units

- approved complementary studies electives

12 units

- COMMERCE 1BA3 - Organizational Behaviour (or 2BA3)
- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2FA3 - Introduction to Finance
- COMMERCE 2MA3 - Introduction to Marketing

##### LEVEL IV: 34-37 UNITS

4 units

- CHEMENG 3P04 - Process Control

3 units

- MATLS 3J03 - Statistical Methods for Materials Engineers

6 units

from

- CHEMENG 3BK3 - Bio-Reaction Engineering
- CHEMENG 3BM3 - Bioseparations Engineering

- CHEMENG 4A03 - Energy Systems Engineering
- CHEMENG 4B03 - Polymer Reaction Engineering
- CHEMENG 4H03 - Big Data Methods and Modeling in Chemical and Materials Engineering
- CHEMENG 4K03 - Reactor Design for Heterogeneous Systems
- CHEMENG 4M03 - Industrial Separation Processes
- CHEMENG 4T03 - Applications of Chemical Engineering in Medicine
- CHEMENG 4TA3 A/B - Engineering Practicum
- CHEMENG 4X03 - Polymer Processing
- CHEMENG 4Z03 - Interfacial Engineering
- ENGINEER 4EX3 A/B - Experiential Engineering Design

**Note:** Only one course from List B (Chem Eng Sci/Math courses) can be taken over the course of the program.

#### 9 units

- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

#### 3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

#### 3-6 units

- CHEM 2E03 - Introductory Organic Chemistry

or both

- CHEM 2OA3 - Organic Chemistry I and
- CHEM 2OB3 - Organic Chemistry II

#### 3 units

from

- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- CHEM 3I03 - Industrial Chemistry
- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry
- CHEMBIO 3BM3 - Implanted Biomaterials
- CHEMENG 3Q03 - Introduction to Polymer Science

#### 3 units

- ENGNMGT 4A03 - Innovation Driven Project Development and Management

#### **LEVEL V: 37-40 UNITS**

#### 10 units

- CHEMENG 4L02 - Advanced Laboratory Skills
- CHEMENG 4N04 - Engineering Economics and Problem Solving
- CHEMENG 4W04 - Chemical Plant Design and Capstone Project

#### 6 units

- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 4PA3 - Business Policy: Strategic Management

#### 6-7 units

from

- CHEMENG 3BK3 - Bio-Reaction Engineering
- CHEMENG 3BM3 - Bioseparations Engineering
- CHEMENG 4A03 - Energy Systems Engineering
- CHEMENG 4B03 - Polymer Reaction Engineering
- CHEMENG 4H03 - Big Data Methods and Modeling in Chemical and Materials Engineering
- CHEMENG 4E03 - Digital Computer Process Control
- CHEMENG 4G03 - Optimization in Chemical Engineering
- CHEMENG 4K03 - Reactor Design for Heterogeneous Systems
- CHEMENG 4M03 - Industrial Separation Processes
- CHEMENG 4T03 - Applications of Chemical Engineering in Medicine
- CHEMENG 4TA3 A/B - Engineering Practicum
- CHEMENG 4X03 - Polymer Processing
- CHEMENG 4Y04 A/B - Senior Independent Project
- CHEMENG 4Z03 - Interfacial Engineering
- ENGINEER 4EX3 A/B - Experiential Engineering Design

**Note:** Only one course from List B (Chem Eng Sci/Math courses) can be taken

over the course of the program

#### 3 units

- ENGNMGT 5B03 - Engineering and Management Projects

#### 6 units

- Commerce electives selected from Level III or IV Commerce

#### 6-8 units

- Level III or IV technical electives from approved List A or permission of the Department of Chemical Engineering

## Bachelor of Engineering and Society

### CHEMICAL ENGINEERING AND SOCIETY, CHEMICAL ENGINEERING AND SOCIETY CO-OP (B.ENG.SOCIETY)

#### PROGRAM DIRECTOR, ENGINEERING & SOCIETY

C. Churchill (*Civil Engineering*) B.Eng., M.Eng. (*McMaster*)

#### **ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### **NOTES**

- Students may choose to follow a stream of recommended technical elective courses.
  - **Process Systems Engineering (PSE) Stream:**  
**Required Courses:** CHEMENG 4H03, 4E03, 4G03, 4L02 (PSE laboratories completed). Other courses may be substituted with permission of the Department Chair.
  - **Polymer Materials and Manufacturing (PMM) Stream:**  
**Required Courses:** CHEMENG 3Q03, 4B03, 4H03, 4L02 (PMM laboratories completed), 4X03. Other courses may be substituted with permission of the Department Chair.
  - **Water-Energy Technologies (WET) Stream:**  
**Required Courses:** CHEMENG 4A03, 4M03, 4L02 (WET laboratories completed), and one of ENGINEER 4V04 or CIVENG 4V04. Other courses may be substituted with permission of the Department Chair.
- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.
- A minimum of 18 units of focus elective courses is required for the program. This does not include the six units of complementary studies elective in Level I.

#### **REQUIREMENTS**

#### **LEVEL II: 37-40 UNITS**

#### 19 units

- CHEMENG 2D04 - Chemical Engineering Principles I
- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- CHEMENG 2F04 - Chemical Engineering Principles II
- CHEMENG 2G03 - Problem Solving and Technical Communication

- CHEMENG 2004 - Fluid Mechanics

3 units

- CHEM 1AA3 - Introductory Chemistry II

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

6 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I
- ENGSOCTY 2Y03 - Case Studies in History and Technology

3-6 units

- Engineering and Society focus electives

#### LEVEL III: 34-40 UNITS

25 units

- CHEMENG 3A04 - Heat Transfer
- CHEMENG 3D04 - Chemical Engineering Thermodynamics
- CHEMENG 3G04 - Chemical Process Design and Simulation
- CHEMENG 3I03 - Data Acquisition and Analysis
- CHEMENG 3K04 - Introduction to Reactor Design
- CHEMENG 3L02 - Intermediate Laboratory Skills
- CHEMENG 3M04 - Mass Transfer and Stagewise Operations

3-6 units

- CHEM 2E03 - Introductory Organic Chemistry

or both

- CHEM 20A3 - Organic Chemistry I and
- CHEM 20B3 - Organic Chemistry II

3 units

- ENGSOCTY 3Y03 - Technology and Society

3-6 units

- Engineering and Society focus electives

#### LEVEL IV: 34 UNITS

4 units

- CHEMENG 3P04 - Process Control

3 units

- MATLS 3J03 - Statistical Methods for Materials Engineers

9 units

from

- CHEMENG 3BK3 - Bio-Reaction Engineering
- CHEMENG 3BM3 - Bioseparations Engineering
- CHEMENG 4A03 - Energy Systems Engineering
- CHEMENG 4B03 - Polymer Reaction Engineering
- CHEMENG 4H03 - Big Data Methods and Modeling in Chemical and Materials Engineering
- CHEMENG 4K03 - Reactor Design for Heterogeneous Systems
- CHEMENG 4M03 - Industrial Separation Processes
- CHEMENG 4T03 - Applications of Chemical Engineering in Medicine
- CHEMENG 4TA3 A/B - Engineering Practicum
- CHEMENG 4X03 - Polymer Processing
- CHEMENG 4Z03 - Interfacial Engineering
- ENGINEER 4EX3 A/B - Experiential Engineering Design

**Note:** Only one course from List B (Chem Eng Sci/Math courses) can be taken over the course of the program

6 units

from

- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- CHEM 3I03 - Industrial Chemistry
- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry
- CHEMENG 3Q03 - Introduction to Polymer Science

6 units

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

6 units

- Engineering and Society focus electives

#### LEVEL V: 34-37 UNITS

10 units

- CHEMENG 4L02 - Advanced Laboratory Skills
- CHEMENG 4N04 - Engineering Economics and Problem Solving
- CHEMENG 4W04 - Chemical Plant Design and Capstone Project

6-7 units

from

- CHEMENG 3BK3 - Bio-Reaction Engineering
- CHEMENG 3BM3 - Bioseparations Engineering
- CHEMENG 4A03 - Energy Systems Engineering
- CHEMENG 4B03 - Polymer Reaction Engineering
- CHEMENG 4H03 - Big Data Methods and Modeling in Chemical and Materials Engineering
- CHEMENG 4E03 - Digital Computer Process Control
- CHEMENG 4G03 - Optimization in Chemical Engineering
- CHEMENG 4K03 - Reactor Design for Heterogeneous Systems
- CHEMENG 4M03 - Industrial Separation Processes
- CHEMENG 4T03 - Applications of Chemical Engineering in Medicine
- CHEMENG 4TA3 A/B - Engineering Practicum
- CHEMENG 4X03 - Polymer Processing
- CHEMENG 4Y04 A/B - Senior Independent Project
- CHEMENG 4Z03 - Interfacial Engineering
- ENGINEER 4EX3 A/B - Experiential Engineering Design

**Note:** Only one course from List B (Chem Eng Sci/Math courses) can be taken over the course of the program

6-8 units

- Level III or IV technical electives from approved List A (Interdisciplinary engineering courses) or permission of the Department of Chemical Engineering

3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

3 units

- ENGSOCTY 4Y03 - Society Capstone Design

6 units

- Engineering and Society focus electives

## Department of Civil Engineering

John Hodgins Engineering Building, Room 301, ext. 24287 or 24315

<http://www.eng.mcmaster.ca/civil/>

**Faculty of the Department of Civil Engineering, as of January 15, 2020**

#### CHAIR

**Michael J. Tait**

ASSOCIATE CHAIR GRADUATE

**Sarah Dickson**

ASSOCIATE CHAIR UNDERGRADUATE

**Cameron Churchill**

PROFESSORS

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**Paulin Coulibaly**/B.A.Sc., M.A.Sc. (*Nice*), Ph.D. (*Laval*), P.Eng.

**Wael El-Dakhkhni**/B.Sc. (*Ain Shams*), M.Sc., Ph.D. (*Drexel*), P.Eng./Martini, Mascarin and George Chair in Masonry Design

**Peijun Guo**/B.Sc., M.Sc., Ph.D. (*SWJTU*), Ph.D. (*Calgary*), P.Eng.

**Yiping Guo**/B.Sc. (*Zhejiang*), M.A.Sc., Ph.D. (*Toronto*), P.Eng.

**K.S. Sivakumaran**/B.Sc. (*Sri Lanka*), M.Eng. (*Asian Inst. Tech.*), Ph.D. (*Calgary*), P.Eng.

**Michael J. Tait**/B.E.Sc., Ph.D. (*Western Ontario*), P.Eng./Joe Ng-JNE

Consulting Chair in Design, Construction and Management of Infrastructure Renewal

ASSOCIATE PROFESSORS

**Sarah Dickson**/B.A.Sc., Ph.D. (*Waterloo*), P.Eng.

**Younggy Kim**/B.E., M.S. (*Korea*), Ph.D. (*Texas-Austin*), L.E.L.

**Saiedeh N. Razavi**/B.Sc. (*Sharif*), M.Sc. (*Tehran*), Ph.D. (*Waterloo*)/Chair in Heavy Construction

**Lydell Wiebe**/B.Sc. (*Toronto*), M.Sc. (*ROSE*), Ph.D. (*Toronto*), P.Eng.

#### ASSISTANT PROFESSORS

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**Cameron J. Churchill**/B.Eng., M.A.Sc. (*McMaster*), L.E.L.

**Mohamed Ezzeldin**/B.Sc., M.Sc. (*Ain Shams*), Ph.D. (*McMaster*)

**Sonia Hassini**/B. Eng. (*Tunis*), M. Eng. (*Waterloo*), Ph.D. (*McMaster*)

**Mohamed Hussein**/B.Sc., M.Sc. (*Ain Shams*), Ph.D. (*UBC*)

**Zhong (Zoe) Li**/B. Eng. (*Beijing Normal*), M.A.Sc., Ph.D., (*Regina*)

**Moataz Mohamed**/B.E. (*Egypt*), M.A.Sc. (*Rome*), Ph.D. (*Ulster*)

**SeonHong Na**/B.Sc., M.Sc. (*Seoul*), Ph.D. (*Columbia*)

**Cancan Yang**/B.Sc. (*Chongqing, China*), M.S., Ph.D. (*Buffalo*)

**Hao Yang**/B.Sc. (*China*), M.S., Ph.D. (*California-Irvine*)

**Benzhong (Robin) Zhao**/B.A.Sc. (*Waterloo*), M.Sc., Ph.D. (*M.I.T.*)

## Bachelor of Engineering

### CIVIL ENGINEERING, CIVIL ENGINEERING CO-OP (B.ENG.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

1. Students entering Level II will register in the Civil Engineering program following the requirements outlined below. Students entering Levels III and IV should follow the program requirements as specified in the Undergraduate Calendar of the year of their entry into Level II. Such students are advised to refer to their degree audit for the program for which they are registered in and to consult with the Department of Civil Engineering for further information.
2. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.
3. Before the end of Level III, students must complete a Civil Engineering electives form, and ensure that it has been reviewed by the Department before completing Level IV Registration.
4. To meet the capstone project requirement, all students in their final level must take CIVENG 4X06 A/B.

#### REQUIREMENTS

##### LEVEL II: 38 UNITS

##### 32 units

- CIVENG 2A03 - Surveying and Measurement for Transportation and Construction
- CIVENG 2B04 - Principles of Environmental Engineering
- CIVENG 2C04 - Structural Mechanics

- CIVENG 2E03 - Computer Applications in Civil Engineering
- CIVENG 2I03 - Communications in Civil Engineering
- CIVENG 2J04 - Principles of Geological and Geo-Environmental Engineering
- CIVENG 2Q04 - Fluid Mechanics
- CIVENG 2Q03 - Engineering Mechanics: Dynamics
- CIVENG 2P04 - Statics and Mechanics of Materials

##### 6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

##### LEVEL III: 40 UNITS

##### 33 units

- CIVENG 3A03 - Geotechnical Engineering I
- CIVENG 3B03 - Geotechnical Engineering II
- CIVENG 3C03 - Engineering Systems
- CIVENG 3G04 - Structural Analysis
- CIVENG 3J04 - Reinforced Concrete Design
- CIVENG 3K03 - Introduction to Transportation Engineering
- CIVENG 3L03 - Water Quality
- CIVENG 3M03 - Municipal Hydraulics
- CIVENG 3P04 - Civil Engineering Materials and Design
- CIVENG 3RR3 - Engineering Economics and Project Management

##### 4 units

- STATS 3J04 - Probability and Statistics for Civil Engineering

##### 3 units

- approved complementary studies electives

##### LEVEL IV: 39 UNITS

##### 3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

##### 4 units

- CIVENG 4N04 - Steel Structures

##### 3 units

- approved complementary studies electives

##### 6 units

- CIVENG 4X06 A/B - Design and Synthesis Project in Civil Engineering

##### 20 units

- from approved list of Level IV Civil Engineering technical electives.

##### 3 units

- ENGPYS 3ES3 - Introduction to Energy Systems

## Bachelor of Engineering and Biomedical Engineering

### CIVIL AND BIOMEDICAL ENGINEERING, CIVIL AND BIOMEDICAL ENGINEERING CO-OP (B.ENG.BME)

#### ADMISSION TO LEVEL II IBEHS PROGRAMS

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0.

All students who successfully complete the first year of the program will have a space in one of the two degree options. As enrolment is limited in each of the two degree options (HESE or BME), where there is more demand than spaces, competition will be based on first-year academic achievement. Students seeking admission to the BME specialization will be admitted to one of eight Level II Engineering programs (Chemical, Civil, Electrical, Engineering Physics, Materials, Mechanical, Mechatronics, or Software). Admission to a Level II Engineering program is guaranteed for all students who meet



the general progress requirements. All engineering programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on GPA.

Students who do not meet the requirements to proceed to Level II in May will have a *Pending* flag put on their allocation. The *Pending* flag will be removed in August if the student completes the requirements over the summer.

#### NOTES

- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EE0. IBEHS 2ECO will be added to the academic record for each 4 month work term.
- Students entering Level II will register in the Civil Engineering program following the requirements outlined below. Students entering Levels III, IV and V should follow the program requirements as specified in the Undergraduate Calendar of the year of their entry into Level II. Such students are advised to refer to their degree audit for the program for which they are registered in and to consult with the Department of Civil Engineering for further information.
- Before the end of Level IV, students must complete a Civil Engineering electives form, and ensure that it has been reviewed by the Department before completing Level V Registration.
- Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to 8-units of research project or independent study courses. A full listing can be found on the IBEHS website.
- Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

#### REQUIREMENTS

##### LEVEL II: 40 UNITS

###### 12 units

- HTHSCI 2E03 - Inquiry II: Biochemistry
- HTHSCI 2F03 - Human Physiology and Anatomy I
- HTHSCI 2FF3 - Human Physiology and Anatomy II
- IBEHS 2P03 - Health Solutions Design Projects II

###### 28 units

- CIVENG 2A03 - Surveying and Measurement for Transportation and Construction
- CIVENG 2B04 - Principles of Environmental Engineering
- CIVENG 2C04 - Structural Mechanics
- CIVENG 2J04 - Principles of Geological and Geo-Environmental Engineering
- CIVENG 2P04 - Statics and Mechanics of Materials
- CIVENG 2Q03 - Engineering Mechanics: Dynamics
- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

##### LEVEL III: 39 UNITS

###### 16 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

###### 20 units

- CIVENG 2E03 - Computer Applications in Civil Engineering
- CIVENG 2O04 - Fluid Mechanics
- CIVENG 3A03 - Geotechnical Engineering I
- CIVENG 3B03 - Geotechnical Engineering II
- CIVENG 3L03 - Water Quality
- CIVENG 3P04 - Civil Engineering Materials and Design

###### 3 units

- Complementary Studies

##### LEVEL IV: 35 UNITS (2020-2021 ONLY)

###### 17 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

###### 18 units

- CIVENG 3C03 - Engineering Systems
- CIVENG 3G04 - Structural Analysis
- CIVENG 3J04 - Reinforced Concrete Design
- CIVENG 3M03 - Municipal Hydraulics
- CIVENG 3P04 - Civil Engineering Materials and Design

##### LEVEL IV: 37 UNITS (EFFECTIVE 2021-2022)

###### 3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I

###### 20 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

###### 14 units

- CIVENG 3C03 - Engineering Systems
- CIVENG 3G04 - Structural Analysis
- CIVENG 3J04 - Reinforced Concrete Design
- CIVENG 3M03 - Municipal Hydraulics

##### LEVEL V: 39-40 UNITS (2020-2021 ONLY)

###### 9 units

- IBEHS 5A03
- IBEHS 5B06 A/B

###### 13 units

- CIVENG 3K03 - Introduction to Transportation Engineering
- CIVENG 4N04 - Steel Structures
- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- ENGPYS 3ES3 - Introduction to Energy Systems

###### 6-7 units

from

- approved IBEHS Technical Elective

###### 8 units

from

- approved list of Level IV Civil technical electives

###### 3 units

- Complementary Studies

##### LEVEL V: 39-40 UNITS (2021-2022 ONLY)

###### 3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I

###### 9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

###### 10 units

- CIVENG 3K03 - Introduction to Transportation Engineering
- CIVENG 4N04 - Steel Structures

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

6-7 units

from

- approved IBEHS Technical Electives

8 units

from

- approved list of Level IV Civil technical electives

3 units

- Complementary Studies

#### **LEVEL V: 36-37 UNITS (EFFECTIVE 2022-2023)**

9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

10 units

- CIVENG 3K03 - Introduction to Transportation Engineering
- CIVENG 4N04 - Steel Structures
- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

6-7 units

from

- approved IBEHS Technical Electives

8 units

from

- approved list of Level IV Civil technical electives

3 units

- Complementary Studies

## **Bachelor of Engineering and Management**

### **CIVIL ENGINEERING AND MANAGEMENT, CIVIL ENGINEERING AND MANAGEMENT CO-OP (B.ENG.MGT.)**

#### **ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### **NOTES**

1. Students entering Level II will register in the Civil Engineering program following the requirements outlined below. Students entering Levels III, IV and V should follow the program requirements as specified in the Undergraduate Calendar of the year of their entry into Level II. Such students are advised to refer to their degree audit for the program for which they are registered in and to consult with the Department of Civil Engineering for further information.
2. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each four month work term.
3. Before the end of Level IV, students must complete a Civil Engineering electives form, and ensure that it has been reviewed by the Department before completing Level V Registration.

4. To meet the capstone project requirement, all students in their final level must take CIVENG 4X06 A/B.

#### **REQUIREMENTS**

##### **LEVEL II: 38 UNITS**

23 units

- CIVENG 2A03 - Surveying and Measurement for Transportation and Construction
- CIVENG 2B04 - Principles of Environmental Engineering
- CIVENG 2C04 - Structural Mechanics
- CIVENG 2J04 - Principles of Geological and Geo-Environmental Engineering
- CIVENG 2O04 - Fluid Mechanics
- CIVENG 2P04 - Statics and Mechanics of Materials

6 units

- COMMERCE 1AA3 - Introductory Financial Accounting
- COMMERCE 2MA3 - Introduction to Marketing

3 units

- ENGNMGT 2AA3 - Communication Skills

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

##### **LEVEL III: 38 UNITS**

19 units

- CIVENG 2E03 - Computer Applications in Civil Engineering
- CIVENG 2Q03 - Engineering Mechanics: Dynamics
- CIVENG 3A03 - Geotechnical Engineering I
- CIVENG 3B03 - Geotechnical Engineering II
- CIVENG 3G04 - Structural Analysis
- CIVENG 3M03 - Municipal Hydraulics

9 units

- COMMERCE 1BA3 - Organizational Behaviour
- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2FA3 - Introduction to Finance

3 units

- ECON 1BB3 - Introductory Macroeconomics

4 units

- STATS 3J04 - Probability and Statistics for Civil Engineering

3 units

- approved complementary studies electives

##### **LEVEL IV: 39 UNITS**

17 units

- CIVENG 3C03 - Engineering Systems
- CIVENG 3J04 - Reinforced Concrete Design
- CIVENG 3K03 - Introduction to Transportation Engineering
- CIVENG 3L03 - Water Quality
- CIVENG 3P04 - Civil Engineering Materials and Design

3 units

- ENGPYS 3ES3 - Introduction to Energy Systems

12 units

- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

3 units

- ENGNMGT 4A03 - Innovation Driven Project Development and Management

4 units

- from approved list of Level IV Civil Engineering technical electives.

##### **LEVEL V: 37 UNITS**

3 units

- COMMERCE 4PA3 - Business Policy: Strategic Management

6 units

- Commerce electives selected from Level III or IV Commerce

3 units

- ENGNMGT 5B03 - Engineering and Management Projects

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

4 units

- CIVENG 4N04 - Steel Structures

6 units

- CIVENG 4X06 A/B - Design and Synthesis Project in Civil Engineering

12 units

- from approved list of Level IV Civil Engineering technical electives.

## Bachelor of Engineering and Society

### CIVIL ENGINEERING AND SOCIETY, CIVIL ENGINEERING AND SOCIETY CO-OP (B.ENG.SOCIETY)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

1. Students entering Level II will register in the Civil Engineering program following the requirements outlined below. Students entering Levels III, IV and V should follow the program requirements as specified in the Undergraduate Calendar of the year of their entry into Level II. Such students are advised to refer to their degree audit for the program for which they are registered in and to consult with the Department of Civil Engineering for further information.
2. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EEO. ENGINEER 2ECO will be added to the academic record for each 4 month work term.
3. Before the end of Level IV, students must complete a Civil Engineering electives form, and ensure that it has been reviewed by the Department before completing Level V Registration.
4. To meet the capstone project requirement, all students in their final level must take CIVENG 4X06 A/B.
5. A minimum of 18 units of focus elective courses is required for the program. (This does not include the six units of complementary studies elective in Level I.)

#### REQUIREMENTS

##### LEVEL II: 38 UNITS

23 units

- CIVENG 2A03 - Surveying and Measurement for Transportation and Construction
- CIVENG 2B04 - Principles of Environmental Engineering
- CIVENG 2C04 - Structural Mechanics
- CIVENG 2J04 - Principles of Geological and Geo-Environmental

## Engineering

- CIVENG 2004 - Fluid Mechanics
- CIVENG 2P04 - Statics and Mechanics of Materials

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

6 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I
- ENGSOCTY 2Y03 - Case Studies in History and Technology

3 units

- Engineering and Society focus electives

##### LEVEL III: 32-35 UNITS

19 units

- CIVENG 2E03 - Computer Applications in Civil Engineering
- CIVENG 2Q03 - Engineering Mechanics: Dynamics
- CIVENG 3A03 - Geotechnical Engineering I
- CIVENG 3B03 - Geotechnical Engineering II
- CIVENG 3G04 - Structural Analysis
- CIVENG 3M03 - Municipal Hydraulics

4 units

- STATS 3J04 - Probability and Statistics for Civil Engineering

3 units

- ENGSOCTY 3Y03 - Technology and Society

6-9 units

- from Engineering and Society focus electives

##### LEVEL IV: 35-38 UNITS

20 units

- CIVENG 3C03 - Engineering Systems
- CIVENG 3J04 - Reinforced Concrete Design
- CIVENG 3K03 - Introduction to Transportation Engineering
- CIVENG 3L03 - Water Quality
- CIVENG 3P04 - Civil Engineering Materials and Design
- CIVENG 3RR3 - Engineering Economics and Project Management

3 units

- ENGPYHS 3ES3 - Introduction to Energy Systems

6 units

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

6-9 units

- Engineering and Society focus electives

##### LEVEL V: 35 UNITS

6 units

- CIVENG 4X06 A/B - Design and Synthesis Project in Civil Engineering

4 units

- CIVENG 4N04 - Steel Structures

16 units

- from approved list of Level IV Civil Engineering technical electives

3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

3 units

- ENGSOCTY 4Y03 - Society Capstone Design

3 units

- Engineering and Society focus electives

## Department of Computing and Software

Faculty of the Department of Computing and Software as of January 15, 2020

CHAIR

**Mark S. Lawford**

PROFESSORS

**Antoine Deza**/M.Eng. (*Ecole Nationale des Ponts et Chaussées, Paris*), Ph.D. (*Tokyo Institute of Technology*), P.Eng.**Douglas G. Down**/B.A.Sc., M.A.Sc. (*Toronto*), Ph.D. (*Illinois-Urbana*), P.Eng.**William M. Farmer**/B.A. (*Notre Dame*), M.A., M.S., Ph.D. (*Wisconsin-Madison*), P.Eng.**Frantisek Franek**/M.Sc., R.N.Dr. (*Charles, Prague*), Ph.D. (*Toronto*), L.E.L.**Ryszard Janicki**/M.Sc. (*Warsaw*), Ph.D., D.Hab. (*Polish Acad. Sci.*)**Ridha Khedri**/Dipl.Eng. (*Tunis*), M.Sc., Ph.D. (*Laval*), P.Eng.**Mark S. Lawford**/B.Sc. (*Queen's*), M.A.Sc., Ph.D. (*Toronto*), P.Eng.**Ned Nedialkov**/B.Sc. (*Sofia, Bulgaria*), M.Sc., Ph.D. (*Toronto*), L.E.L.**Richard Paige**/B.Sc. (*McMaster*), M.Sc., Ph.D. (*Toronto*)**Rong Zheng**/B.S., M.S. (*Tsinghua*), Ph.D. (*Illinois-Urbana*), P. Eng

## ASSOCIATE PROFESSORS

**Christopher Anand**/B.Math. (*Waterloo*), M.Sc., Ph.D. (*McGill*), L.E.L.**Jacques Carrette**/B.Math. (*Waterloo*), M.Sc. (*Montreal*), Ph.D. (*Paris-Sud*), L.E.L.**Wenbo He**/B.S. (*Harbin*), M.S. (*Tsinghua*), Ph.D. (*Illinois-Urbana*)**Wolfram Kahl**/M.Sc. (*Oxford*), Dr.rer.nat. (*University of the German Armed Forces, Munich*)**George Karakostas**/Dipl. Eng. (*Patras*), M.S.A., Ph.D. (*Princeton*), P.Eng.**Ryan Leduc**/B.Eng. (*Victoria*), M.A.Sc., Ph.D. (*Toronto*), P.Eng.**Emil Sekerinski**/Dipl.Inf., Dr.rer.nat. (*Karlsruhe*)**Spencer Smith**/B.Eng.C.S., M.Eng., Ph.D., (*McMaster*), P.Eng.**Martin von Mohrenschildt**/Dipl.Math., Dr.Sc.Math. (*ETH-Zürich*), P.Eng.**Alan Wassying**/B.Sc., B.Sc., M.Sc., Ph.D. (*Witwatersrand*), P.Eng.

## ASSISTANT PROFESSORS

**Hassan Ashtiani**/B.Sc., M.Sc. (*Tehran*), Ph.D. (*Waterloo*)**Asgar Bokhari**/M.S.E.E. (*Oklahoma*), M.Sc., Ph.D. (*McMaster*), P.Eng.**Fei Chiang**/B.Sc. (*Toronto*), M.Math (*Waterloo*), Ph.D. (*Toronto*), L.E.L.**Reza Samavi**/B.Sc. (*Amirkabir*), M.Eng., Ph.D. (*Toronto*), P.Eng.

## NOTES

1. All programs in the Department of Computing and Software have limited enrolment.
2. For the purpose of admission to Level II B.A.Sc. programs, the three courses MATH 1A03, MATH 1AA3 and MATH 1B03 together are considered equivalent to MATH 1ZA3, MATH 1ZB3 and MATH 1ZC3.

For the Arts & Science and Computer Science (B.Arts.Sc.) program, see *Arts & Science Program*

For the Honours Economics and Computer Science (B.A.) program, see *Faculty of Social Sciences, Department of Economics*

For the Honours Mathematics and Computer Science (B.Sc.) program, see *Faculty of Science, Department of Mathematics and Statistics*

## Bachelor of Applied Science

### HONOURS COMPUTER SCIENCE AS A SECOND DEGREE (B.A.SC.)

## ADMISSION

Completion of a Bachelor's degree from a recognized university in a discipline other than Computer Science with a Grade Point Average of least 7.0 ; and completion of MATH 1ZA3, MATH 1ZB3 and a grade of at least C+ in COMPSCI 1MD3 or equivalent. As Second Degree candidates, applicants must first apply for admission to the University through the Enrolment Services (Admissions) indicating they wish to apply for the Honours Computer Science B.A.Sc. as a Second Degree program. For the purpose of admission to this program, the two courses MATH 1A03 and MATH 1AA3 together are considered as equivalent to MATH 1ZA3 and MATH 1ZB3.

## NOTE

If a student in the program has previously taken a required course (or its equivalent), it is not a requirement to repeat the course. However, if the credit from that course has been used toward completion of a previous degree, the student will be required to take another course with the required number of units. Admission to this program is at Level III.

## LEVEL III: 30 UNITS

## 27 units

- COMPSCI 2C03 - Data Structures and Algorithms
- COMPSCI 2DM3 - Discrete Mathematics with Applications I
- COMPSCI 2FA3 - Discrete Mathematics with Applications II
- COMPSCI 2GA3 - Computer Architecture
- COMPSCI 2ME3 - Introduction to Software Development
- COMPSCI 2S03 - Principles of Programming
- COMPSCI 2XA3 - Computer Science Practice and Experience: Software Development Skills
- COMPSCI 2XB3 - Computer Science Practice and Experience: Binding Theory to Practice
- COMPSCI 3I03 - Communication Skills

## 3 units

- Levels III, IV Computer Science, or other approved technical electives from List G (contact the *Department of Computing and Software*)

## LEVEL IV: 30 UNITS

## 27 units

- COMPSCI 3AC3 - Algorithms and Complexity
- COMPSCI 3DB3 - Databases
- COMPSCI 3MI3 - Principles of Programming Languages
- COMPSCI 3SD3 - Concurrent Systems
- COMPSCI 3SH3 - Computer Science Practice and Experience: Operating Systems
- COMPSCI 4C03 - Computer Networks and Security
- COMPSCI 4TB3 - Syntax-Based Tools and Compilers
- COMPSCI 4ZP6 A/B - Capstone Project

## 3 units

- Levels III, IV Computer Science, or other approved technical electives from List G (contact the *Department of Computing and Software*)

### HONOURS COMPUTER SCIENCE, HONOURS COMPUTER SCIENCE CO-OP (B.A.SC.)

## ADMISSION TO LEVEL II COMPUTER SCIENCE PROGRAMS

Admission to Level II Honours Computer Science requires completion of all non-elective Computer Science I courses with a minimum Grade Point Average (GPA) of 4.0.

## NOTES

1. This program has limited enrolment.
2. For the purpose of admission to Level II B.A.Sc. programs, the three courses MATH 1A03, MATH 1AA3 and MATH 1B03 together are considered equivalent to MATH 1ZA3, MATH 1ZB3, and MATH 1ZC3.

### REQUIREMENTS FOR STUDENTS WHO ENTER THE PROGRAM IN 2020-2021 OR EARLIER

## LEVEL II: 30 UNITS

## 24 units

- COMPSCI 2C03 - Data Structures and Algorithms
- COMPSCI 2DM3 - Discrete Mathematics with Applications I
- COMPSCI 2FA3 - Discrete Mathematics with Applications II
- COMPSCI 2GA3 - Computer Architecture
- COMPSCI 2ME3 - Introduction to Software Development
- COMPSCI 2S03 - Principles of Programming
- COMPSCI 2XA3 - Computer Science Practice and Experience: Software Development Skills



- COMPSCI 2XB3 - Computer Science Practice and Experience: Binding Theory to Practice

6 units

- Electives

#### LEVEL III: 30 UNITS

18 units

- COMPSCI 3AC3 - Algorithms and Complexity
- COMPSCI 3DB3 - Databases
- COMPSCI 3I03 - Communication Skills
- COMPSCI 3MI3 - Principles of Programming Languages
- COMPSCI 3SD3 - Concurrent Systems
- COMPSCI 3SH3 - Computer Science Practice and Experience: Operating Systems

6 units

from

- Levels III, IV Computer Science, or other approved technical electives from List G (contact the Department of Computing and Software)

6 units

- Electives

#### LEVEL IV: 30 UNITS

12 units

- COMPSCI 4C03 - Computer Networks and Security
- COMPSCI 4TB3 - Syntax-Based Tools and Compilers
- COMPSCI 4ZP6 A/B - Capstone Project

12 units

from

- Levels III, IV Computer Science, or other approved technical electives from List G (contact the Department of Computing and Software)
- SEP 4EP3 - New Enterprise Capstone Project

6 units

- Electives

#### REQUIREMENTS (EFFECTIVE 2021-2022)

##### LEVEL II: 30 UNITS

24 units

- COMPSCI 2AC3 - Automata and Computability
- COMPSCI 2C03 - Data Structures and Algorithms
- COMPSCI 2DB3 - Databases
- COMPSCI 2GA3 - Computer Architecture
- COMPSCI 2LC3 - Logical Reasoning for Computer Science
- COMPSCI 2ME3 - Introduction to Software Development
- COMPSCI 2SD3 - Concurrent Systems
- COMPSCI 2XC3 - Computer Science Practice and Experience: Algorithms and Software Design

6 units

- Electives

##### LEVEL III: 30 UNITS

18 units

- COMPSCI 3AC3 - Algorithms and Complexity
- COMPSCI 3I03 - Communication Skills
- COMPSCI 3MI3 - Principles of Programming Languages
- COMPSCI 3N03 - Computer Networks and Security
- COMPSCI 3SH3 - Computer Science Practice and Experience: Operating Systems
- COMPSCI 3TB3 - Syntax-Based Tools and Compilers

6 units

from

- Levels III, IV Computer Science, or other approved technical electives from List G (contact the *Department of Computing and Software*)

6 units

- Electives

#### LEVEL IV: 30 UNITS

6 units

- COMPSCI 4ZP6 A/B - Capstone Project

12 units

from

- Levels III, IV Computer Science, or other approved technical electives from List G (contact the *Department of Computing and Software*)
- SEP 4EP3 - New Enterprise Capstone Project

12 units

- Electives

## Bachelor of Engineering

### MECHATRONICS ENGINEERING, MECHATRONICS ENGINEERING CO-OP (B.ENG.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTE

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2EC0 will be added to the academic record for each 4 month work term.

#### REQUIREMENTS

##### LEVEL II: 37 UNITS

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

3 units

- ENGINEER 2B03 - Engineering Economics

6 units

- SFWRENG 2MD3 - Data Structures, Algorithms, and Language Concepts for Mechatronics
- SFWRENG 2MP3 - Programming for Mechatronics

8 units

- ENGPYHS 2A04 - Electricity and Magnetism
- ENGPYHS 2E04 - Analog and Digital Circuits

7 units

- MECHENG 2BA3 - Mechanical Engineering Measurements
- MECHENG 2QA4 - Engineering Mechanics: Kinetics and Dynamics

7 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- ENGINEER 2P04 - Engineering Mechanics

##### LEVEL III: 40 UNITS

9 units

- SFWRENG 3I03 - Communication Skills
- SFWRENG 3SH3 - Operating Systems
- SFWRENG 4X03 - Scientific Computation

19 units

- MECHTRON 3DX4 - Dynamic Models and Control of Physical Systems
- MECHTRON 3K04 - Software Development
- MECHTRON 3MX3 - Signals and Systems
- MECHTRON 3TA4 - Embedded Systems Design I
- MECHTRON 3TB4 - Embedded Systems Design II

3 units

- MECHENG 2DA3 - Mechanical Engineering Design Elements

3 units

- ENGPYHS 2NE3 - Thermal Systems Design

3 units

- ENGINEER 3N03 - Electronics and Instrumentation

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

**LEVEL IV: 37 UNITS**10 units

- MECHTRON 4AA4 - Real-Time Systems and Control Applications
- MECHTRON 4TB6 A/B - Mechatronics Capstone Design Project

6 units

- MECHENG 4H03 - Mechatronics
- MECHENG 4K03 - Robotics

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

6 units

- approved technical electives from List A (Contact the Department of Computing and Software.)

6 units

- approved technical electives from List B (Contact the Department of Computing and Software.)

6 units

- approved complementary studies electives

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**SOFTWARE ENGINEERING - EMBEDDED SYSTEMS,  
SOFTWARE ENGINEERING - EMBEDDED SYSTEMS CO-OP  
(B.ENG.)**


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Admission to level II Software Engineering - Embedded Systems and Software Engineering - Embedded Systems Co-op was last offered for the last time in September 2017.

**NOTE**

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

**REQUIREMENTS****LEVEL IV: 37 UNITS**13 units

- SFWRENG 4X03 - Scientific Computation
- SFWRENG 4AA4 - Real-Time Systems and Control Applications
- SFWRENG 4C03 - Computer Networks and Security
- SFWRENG 4HC3 - Human Computer Interfaces

6 units

- MECHTRON 4TB6 A/B - Mechatronics Capstone Design Project (See Note 1 above.)

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

3 units

- Approved technical electives from Lists E and F (Contact the Department of Computing and Software)

3 units

- approved technical electives from List C (contact the Department of Computing and Software)

6 units

- approved complementary studies electives

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**SOFTWARE ENGINEERING, SOFTWARE ENGINEERING CO-OP (B.ENG.)**


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**ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTE**

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

**REQUIREMENTS****LEVEL II: 35 UNITS**3 units

- MATH 2Z03 - Engineering Mathematics III

29 units

- SFWRENG 2AA4 - Software Design I - Introduction to Software Development
- SFWRENG 2C03 - Data Structures and Algorithms
- SFWRENG 2DA4 - Digital Systems and Interfacing
- SFWRENG 2DM3 - Discrete Mathematics with Applications I
- SFWRENG 2FA3 - Discrete Mathematics and Applications II
- SFWRENG 2GA3 - Computer Architecture
- SFWRENG 2S03 - Principles of Programming
- SFWRENG 2XA3 - Software Engineering Practice and Experience: Software Development Skills
- SFWRENG 2XB3 - Software Engineering Practice and Experience: Binding Theory to Practice

3 units

- approved complementary studies electives

**LEVEL III: 39 UNITS**33 units

- SFWRENG 3A04 - Software Design III - Large System Design
- SFWRENG 3BB4 - Software Design II - Concurrent System Design
- SFWRENG 3DB3 - Databases
- SFWRENG 3DX4 - Dynamic Systems and Control
- SFWRENG 3I03 - Communication Skills
- SFWRENG 3MX3 - Signals and Systems
- SFWRENG 3O03 - Linear Optimization
- SFWRENG 3RA3 - Software Requirements and Security Considerations
- SFWRENG 3S03 - Software Testing
- SFWRENG 3XA3 - Software Engineering Practice and Experience: Software Project Management

3 units

- ENGINEER 2B03 - Engineering Economics

3 units

- approved technical electives from List E (contact the Department of Computing and Software)

**LEVEL IV: 37 UNITS**3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- approved complementary studies electives

22 units

- SFWRENG 4AA4 - Real-Time Systems and Control Applications
- SFWRENG 4C03 - Computer Networks and Security
- SFWRENG 4E03 - Performance Analysis of Computer Systems
- SFWRENG 4G06 A/B - Software Design IV - Capstone Design Project
- SFWRENG 4HC3 - Human Computer Interfaces
- SFWRENG 4X03 - Scientific Computation

3 units

- approved technical electives from List E (contact the Department of Computing and Software)

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

3 units

from

- approved technical electives from List C (contact the Department of Computing and Software)

## Bachelor of Engineering and Biomedical Engineering

### MECHATRONICS AND BIOMEDICAL ENGINEERING, MECHATRONICS AND BIOMEDICAL ENGINEERING CO-OP (B.ENG.BME)

**ADMISSION TO LEVEL II IBEHS PROGRAMS**

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0.

All students who successfully complete the first year of the program will have a space in one of the two degree options. As enrolment is limited in each of the two degree options (HESE or BME), where there is more demand than spaces, competition will be based on first-year academic achievement.

Students seeking admission to the BME specialization will be admitted to one of eight Level II Engineering programs (Chemical, Civil, Electrical, Engineering Physics, Materials, Mechanical, Mechatronics, or Software). Admission to a Level II Engineering program is guaranteed for all students who meet the general progress requirements. All engineering programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on GPA.

Students who do not meet the requirements to proceed to Level II in May will have a *Pending* flag put on their allocation. The *Pending* flag will be removed in August if the student completes the requirements over the summer.

**NOTES**

- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EE0. IBEHS 2ECO will be added to the academic record for each 4 month work term.
- Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to eight units of research project

or independent study courses. A full listing can be found on the IBEHS website.

- Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

**REQUIREMENTS****LEVEL II: 36 UNITS**12 units

- HTHSCI 2E03 - Inquiry II: Biochemistry
- HTHSCI 2F03 - Human Physiology and Anatomy I
- HTHSCI 2FF3 - Human Physiology and Anatomy II
- IBEHS 2P03 - Health Solutions Design Projects II

24 units

- ENGINEER 2P04 - Engineering Mechanics
- ENGPHY 2A04 - Electricity and Magnetism
- ENGPHY 2E04 - Analog and Digital Circuits
- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV
- SFWRENG 2MD3 - Data Structures, Algorithms, and Language Concepts for Mechatronics
- SFWRENG 2MP3 - Programming for Mechatronics

**LEVEL III: 40 UNITS (2020-2021 ONLY)**16 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

24 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- ENGINEER 2P04 - Engineering Mechanics
- MECHENG 2BA3 - Mechanical Engineering Measurements
- MECHENG 2DA3 - Mechanical Engineering Design Elements
- MECHENG 2QA4 - Engineering Mechanics: Kinetics and Dynamics
- MECHTRON 3K04 - Software Development
- SFWRENG 3I03 - Communication Skills

**LEVEL III: 39 UNITS (EFFECTIVE 2021-2022)**16 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

23 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- ENGPHY 2NE3 - Thermal Systems Design
- MECHENG 2BA3 - Mechanical Engineering Measurements
- MECHENG 2DA3 - Mechanical Engineering Design Elements
- MECHENG 2QA4 - Engineering Mechanics: Kinetics and Dynamics
- MECHTRON 3K04 - Software Development
- SFWRENG 3I03 - Communication Skills

**LEVEL IV: 40 UNITS**3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I

20 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics

- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

8 units

- MECHTRON 3TA4 - Embedded Systems Design I
- MECHTRON 3TB4 - Embedded Systems Design II

3 units

- SFWRENG 3SH3 - Operating Systems

3 units

- approved IBEHS Technical Elective

3 units

- Complementary Studies

**LEVEL V: 37-38 UNITS**9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

16 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- MECHENG 4H03 - Mechatronics
- MECHENG 4K03 - Robotics
- MECHTRON 4AA4 - Real-Time Systems and Control Applications
- SFWRENG 4X03 - Scientific Computation

3-4 units

- approved IBEHS Technical Elective

3 units

- Complementary Studies

3 units

- approved technical electives from List A (Contact the Department of Computing and Software)

3 units

- approved technical electives from List B (Contact the Department of Computing and Software)

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## SOFTWARE AND BIOMEDICAL ENGINEERING, SOFTWARE AND BIOMEDICAL ENGINEERING CO-OP (B.ENG.BME)

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**ADMISSION TO LEVEL II IBEHS PROGRAMS**

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0.

All students who successfully complete the first year of the program will have a space in one of the two degree options. As enrolment is limited in each of the two degree options (HESE or BME), where there is more demand than spaces, competition will be based on first-year academic achievement.

Students seeking admission to the BME specialization will be admitted to one of eight Level II Engineering programs (Chemical, Civil, Electrical, Engineering Physics, Materials, Mechanical, Mechatronics, or Software). Admission to a Level II Engineering program is guaranteed for all students who meet the general progress requirements. All engineering programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on GPA.

Students who do not meet the requirements to proceed to Level II in May will have a *Pending* flag put on their allocation. The *Pending* flag will be removed in August if the student completes the requirements over the summer.

**NOTES**

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EEO. IBEHS 2ECO will be added to the academic record for each four-month work term.
2. Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to eight units of research project or independent study courses. A full listing can be found on the IBEHS website.
3. Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

**REQUIREMENTS****LEVEL II: 37 UNITS**12 units

- HTHSCI 2E03 - Inquiry II: Biochemistry
- HTHSCI 2F03 - Human Physiology and Anatomy I
- HTHSCI 2FF3 - Human Physiology and Anatomy II
- IBEHS 2P03 - Health Solutions Design Projects II

25 units

- MATH 2Z03 - Engineering Mathematics III
- SFWRENG 2AA4 - Software Design I - Introduction to Software Development
- SFWRENG 2C03 - Data Structures and Algorithms
- SFWRENG 2DM3 - Discrete Mathematics with Applications I
- SFWRENG 2FA3 - Discrete Mathematics and Applications II
- SFWRENG 2S03 - Principles of Programming
- SFWRENG 2XA3 - Software Engineering Practice and Experience: Software Development Skills
- SFWRENG 2XB3 - Software Engineering Practice and Experience: Binding Theory to Practice

**LEVEL III: 35 UNITS**16 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

19 units

- SFWRENG 2DA4 - Digital Systems and Interfacing
- SFWRENG 3DB3 - Databases
- SFWRENG 3I03 - Communication Skills
- SFWRENG 3O03 - Linear Optimization
- SFWRENG 3XA3 - Software Engineering Practice and Experience: Software Project Management
- SFWRENG 2GA3 - Computer Architecture

**LEVEL IV: 40 UNITS**3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I

20 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

14 units

- SFWRENG 3A04 - Software Design III - Large System Design



- SFWRENG 3BB4 - Software Design II - Concurrent System Design
- SFWRENG 3RA3 - Software Requirements and Security Considerations
- SFWRENG 3S03 - Software Testing

3 units

- approved IBEHS Technical Elective

#### LEVEL V: 40 UNITS

9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

19 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- SFWRENG 4AA4 - Real-Time Systems and Control Applications
- SFWRENG 4C03 - Computer Networks and Security
- SFWRENG 4E03 - Performance Analysis of Computer Systems
- SFWRENG 4HC3 - Human Computer Interfaces
- SFWRENG 4X03 - Scientific Computation

3 units

- approved technical electives from *List E* (Contact the Department of Computing and Software)

3 units

- approved IBEHS Technical Elective

6 units

- Complementary Studies

## Bachelor of Engineering and Management

### MECHATRONICS ENGINEERING AND MANAGEMENT, MECHATRONICS ENGINEERING AND MANAGEMENT CO- OP (B.ENG.MGT.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0.

#### REQUIREMENTS

##### LEVEL II: 40 UNITS

6 units

- SFWRENG 2MD3 - Data Structures, Algorithms, and Language Concepts for Mechatronics
- SFWRENG 2MP3 - Programming for Mechatronics

8 units

- ENGPYHS 2A04 - Electricity and Magnetism
- ENGPYHS 2E04 - Analog and Digital Circuits

7 units

- MECHENG 2BA3 - Mechanical Engineering Measurements
- MECHENG 2QA4 - Engineering Mechanics: Kinetics and Dynamics

7 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- ENGINEER 2P04 - Engineering Mechanics

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

3 units

- COMMERCE 2MA3 - Introduction to Marketing

3 units

- ENGNMGT 2AA3 - Communication Skills

#### LEVEL III: 35 UNITS

11 units

- MECHTRON 3DX4 - Dynamic Models and Control of Physical Systems
- MECHTRON 3K04 - Software Development
- MECHTRON 3MX3 - Signals and Systems

3 units

- SFWRENG 3SH3 - Operating Systems

3 units

- ENGPYHS 2NE3 - Thermal Systems Design

3 units

- MECHENG 2DA3 - Mechanical Engineering Design Elements

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

3 units

- ECON 1BB3 - Introductory Macroeconomics

9 units

- COMMERCE 2FA3 - Introduction to Finance
- COMMERCE 1AA3 - Introductory Financial Accounting
- COMMERCE 1BA3 - Organizational Behaviour

#### LEVEL IV: 39 UNITS

12 units

- MECHTRON 3TA4 - Embedded Systems Design I
- MECHTRON 3TB4 - Embedded Systems Design II
- MECHTRON 4AA4 - Real-Time Systems and Control Applications

3 units

- SFWRENG 4X03 - Scientific Computation

3 units

- MECHENG 4H03 - Mechatronics

3 units

- ENGINEER 3N03 - Electronics and Instrumentation

3 units

- ENGNMGT 4A03 - Innovation Driven Project Development and Management

12 units

- COMMERCE 3MC3 - Applied Marketing Management
- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2BC3 - Human Resource Management and Labour Relations

3 units

- approved technical electives from List A (Contact the Department of Computing and Software.)

#### LEVEL V: 36 UNITS (2020-2021 ONLY)

6 units

- MECHTRON 4TB6 A/B - Mechatronics Capstone Design Project

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- MECHENG 4K03 - Robotics

6 units

- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

3 units

- approved complementary studies electives

3 units

- approved technical electives from List A (Contact the Department of Computing and Software.)

3 units

- approved technical electives from List B (Contact the Department of Computing and Software.)

3 units

- ENGNMGT 5B03 - Engineering and Management Projects

6 units

- Commerce electives selected from Level III or IV Commerce,

**LEVEL V: 36 UNITS (EFFECTIVE 2021-2022)**6 units

- MECHTRON 4TB6 A/B - Mechatronics Capstone Design Project

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- MECHENG 4K03 - Robotics

6 units

- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

3 units

- approved complementary studies electives

6 units

- approved technical electives from List B (Contact the Department of Computing and Software.)

3 units

- ENGNMGT 5B03 - Engineering and Management Projects

6 units

- Commerce electives selected from Level III or IV Commerce

## **SOFTWARE ENGINEERING AND MANAGEMENT, SOFTWARE ENGINEERING AND MANAGEMENT CO-OP (B.ENG.MGT.)**

**ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTES**

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

**REQUIREMENTS****LEVEL II: 35 UNITS**3 units

- COMMERCE 2MA3 - Introduction to Marketing

3 units

- ENGNMGT 2AA3 - Communication Skills

3 units

- MATH 2Z03 - Engineering Mathematics III

26 units

- SFWRENG 2AA4 - Software Design I - Introduction to Software Development
- SFWRENG 2C03 - Data Structures and Algorithms
- SFWRENG 2DA4 - Digital Systems and Interfacing
- SFWRENG 2DM3 - Discrete Mathematics with Applications I
- SFWRENG 2FA3 - Discrete Mathematics and Applications II
- SFWRENG 2S03 - Principles of Programming
- SFWRENG 2XA3 - Software Engineering Practice and Experience: Software Development Skills
- SFWRENG 2XB3 - Software Engineering Practice and Experience: Binding Theory to Practice

**LEVEL III: 39 UNITS**9 units

- COMMERCE 1AA3 - Introductory Financial Accounting
- COMMERCE 1BA3 - Organizational Behaviour
- COMMERCE 2FA3 - Introduction to Finance

3 units

- ECON 1BB3 - Introductory Macroeconomics

27 units

- SFWRENG 2GA3 - Computer Architecture
- SFWRENG 3A04 - Software Design III - Large System Design
- SFWRENG 3BB4 - Software Design II - Concurrent System Design
- SFWRENG 3DB3 - Databases
- SFWRENG 3DX4 - Dynamic Systems and Control
- SFWRENG 3MX3 - Signals and Systems
- SFWRENG 3RA3 - Software Requirements and Security Considerations
- SFWRENG 3XA3 - Software Engineering Practice and Experience: Software Project Management

**LEVEL IV: 34 UNITS**12 units

- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management

10 units

- SFWRENG 3S03 - Software Testing
- SFWRENG 4AA4 - Real-Time Systems and Control Applications
- SFWRENG 4HC3 - Human Computer Interfaces

3 units

- ENGNMGT 4A03 - Innovation Driven Project Development and Management

3 units

- approved technical electives from List E (Contact the Department of Computing and Software)

3 units

- approved complementary studies electives

3 units

- Commerce electives selected from Level III or IV Commerce

**LEVEL V: 36 UNITS**6 units

- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

3 units

- ENGNMGT 5B03 - Engineering and Management Projects

12 units

- SFWRENG 4C03 - Computer Networks and Security
- SFWRENG 4G06 A/B - Software Design IV - Capstone Design Project
- SFWRENG 4X03 - Scientific Computation

3 units

- approved technical electives from List E (Contact the Department of Computing and Software)

3 units

- Commerce electives selected from Level III or IV Commerce

3 units

- approved technical electives from List C (contact the Department of Computing and Software)

## Bachelor of Engineering and Society

### MECHATRONICS ENGINEERING AND SOCIETY, MECHATRONICS ENGINEERING AND SOCIETY CO-OP (B.ENG.SOCIETY)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

#### REQUIREMENTS

##### LEVEL II: 37 UNITS

6 units

- SFWRENG 2MD3 - Data Structures, Algorithms, and Language Concepts for Mechatronics
- SFWRENG 2MP3 - Programming for Mechatronics

8 units

- ENGPYS 2A04 - Electricity and Magnetism
- ENGPYS 2E04 - Analog and Digital Circuits

7 units

- MECHENG 2BA3 - Mechanical Engineering Measurements
- MECHENG 2QA4 - Engineering Mechanics: Kinetics and Dynamics

7 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- ENGINEER 2P04 - Engineering Mechanics

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2Z23 - Engineering Mathematics IV

3 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I

##### LEVEL III: 35 UNITS

11 units

- MECHTRON 3DX4 - Dynamic Models and Control of Physical Systems
- MECHTRON 3K04 - Software Development
- MECHTRON 3MX3 - Signals and Systems

3 units

- SFWRENG 3SH3 - Operating Systems

3 units

- ENGPYS 2NE3 - Thermal Systems Design

3 units

- MECHENG 2DA3 - Mechanical Engineering Design Elements

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

6 units

- ENGSOCTY 2Y03 - Case Studies in History and Technology
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

6 units

- Engineering and Society focus electives

##### LEVEL IV: 36-39 UNITS

12 units

- MECHTRON 3TA4 - Embedded Systems Design I
- MECHTRON 3TB4 - Embedded Systems Design II
- MECHTRON 4AA4 - Real-Time Systems and Control Applications

3 units

- SFWRENG 4X03 - Scientific Computation

6 units

- MECHENG 4H03 - Mechatronics
- MECHENG 4K03 - Robotics

6 units

- ENGINEER 2B03 - Engineering Economics
- ENGINEER 3N03 - Electronics and Instrumentation

6 units

- ENGSOCTY 3Y03 - Technology and Society
- ENGSOCTY 3X03 - Inquiry in an Engineering Context II

3-6 units

- Engineering and Society focus electives

##### LEVEL V: 30-33 UNITS (2020-2021 ONLY)

6 units

- MECHTRON 4TB6 A/B - Mechatronics Capstone Design Project

6 units

- approved technical electives from List A (Contact the Department of Computing and Software.)

6 units

- approved technical electives from List B (Contact the Department of Computing and Software.)

3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

3 units

- ENGSOCTY 4Y03 - Society Capstone Design

6-9 units

- Engineering and Society focus electives

##### LEVEL V: 30-33 UNITS (EFFECTIVE 2021-2022)

6 units

- MECHTRON 4TB6 A/B - Mechatronics Capstone Design Project

3 units

- approved technical electives from List A (Contact the Department of Computing and Software.)

6 units

- approved technical electives from List B (Contact the Department of Computing and Software.)

3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

3 units

- ENGSOCTY 4Y03 - Society Capstone Design

9-12 units

- Engineering and Society focus electives

## **SOFTWARE ENGINEERING AND SOCIETY, SOFTWARE ENGINEERING AND SOCIETY CO-OP (B.ENG.SOCIETY)**

### **ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

### **NOTES**

1. A minimum of 18 units of focus elective courses is required for the program. (This does not include the 6 units of complementary studies elective in Level I.)
2. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0.

### **REQUIREMENTS**

#### **LEVEL II: 34 UNITS**

3 units

- MATH 2Z03 - Engineering Mathematics III

22 units

- SFWRENG 2AA4 - Software Design I - Introduction to Software Development
- SFWRENG 2C03 - Data Structures and Algorithms
- SFWRENG 2DM3 - Discrete Mathematics with Applications I
- SFWRENG 2FA3 - Discrete Mathematics and Applications II
- SFWRENG 2S03 - Principles of Programming
- SFWRENG 2XA3 - Software Engineering Practice and Experience: Software Development Skills
- SFWRENG 2XB3 - Software Engineering Practice and Experience: Binding Theory to Practice

6 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I
- ENGSOCTY 2Y03 - Case Studies in History and Technology

3 units

- Engineering and Society focus electives

#### **LEVEL III: 36-39 UNITS**

3 units

- ENGINEER 2B03 - Engineering Economics

24 units

- SFWRENG 2DA4 - Digital Systems and Interfacing
- SFWRENG 2GA3 - Computer Architecture
- SFWRENG 3BB4 - Software Design II - Concurrent System Design
- SFWRENG 3DX4 - Dynamic Systems and Control
- SFWRENG 3I03 - Communication Skills
- SFWRENG 3MX3 - Signals and Systems
- SFWRENG 3XA3 - Software Engineering Practice and Experience:

Software Project Management

3 units

- approved technical electives from List C (contact the Department of Computing and Software)

3 units

- ENGSOCTY 3Y03 - Technology and Society

3-6 units

- Engineering and Society focus electives

#### **LEVEL IV: 38 UNITS**

20 units

- SFWRENG 3A04 - Software Design III - Large System Design
- SFWRENG 3DB3 - Databases
- SFWRENG 3003 - Linear Optimization
- SFWRENG 3RA3 - Software Requirements and Security Considerations
- SFWRENG 3S03 - Software Testing
- SFWRENG 4AA4 - Real-Time Systems and Control Applications

6 units

- approved technical electives from List E (contact the Department of Computing and Software)

6 units

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

6 units

- Engineering and Society focus electives

#### **LEVEL V: 36-39 UNITS**

18 units

- SFWRENG 4C03 - Computer Networks and Security
- SFWRENG 4E03 - Performance Analysis of Computer Systems
- SFWRENG 4G06 A/B - Software Design IV - Capstone Design Project
- SFWRENG 4HC3 - Human Computer Interfaces
- SFWRENG 4X03 - Scientific Computation

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

3 units

- approved technical electives from List D (contact the Department of Computing and Software)

3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

3 units

- ENGSOCTY 4Y03 - Society Capstone Design

6-9 units

- Engineering and Society focus electives

## **Minor(s):**

### **MINOR IN COMPUTER SCIENCE**

#### **REQUIREMENTS**

**24 UNITS**

- Computer Science courses (at most 6 units from Level 1)

## **Department of Electrical and Computer Engineering**

**Faculty as of January 15, 2020**

CHAIR

**Timothy Davidson**

ASSOCIATE CHAIR (UNDERGRADUATE PROGRAMS)

**Shahram Shirani**

ASSOCIATE CHAIR (GRADUATE STUDIES)



**Ian Bruce**

DISTINGUISHED UNIVERSITY PROFESSOR

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**H. deBruin**/B.Eng., M.Eng., Ph.D (McMaster), P.Eng.

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**T. Kirubarajan**/B.A., M.A. (Cambridge), M.S., Ph.D. (Connecticut)/ NSERC/General Dynamics Mission Systems-Canada Industrial Research Chair in Target Tracking and Information Fusion

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**X. Li**/B.S. (Shandong), M.S. (Wuhan Research Institute of Posts and Telecommunications), Ph.D. (Northern Jiaotong), P.Eng.

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**N. Nikolova**/Dipl. Ing. (Technical University of Varna), Ph.D. (University of Electrocommunications, Tokyo), P.Eng., FCAE, FIEEE

**M. Noseworthy**/B.Sc., M.Sc., Ph.D. (Guelph), P.Eng.

**S. Shirani**/B.Sc. (Isfahan University of Technology), M.Sc. (Amirkabir University of Technology), Ph.D. (British Columbia), P.Eng./L.R. Wilson/Bell Canada Enterprises Chair in Data Communications

**S. Siropour**/B.Sc., M.Sc. (Sharif University of Technology, Iran), Ph.D. (British Columbia), P.Eng.

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**T. D. Todd**/B.A.Sc., M.A.Sc., Ph.D. (Waterloo), P.Eng.

**X. Wu**/B.Sc. (Wuhan, China), Ph.D. (Calgary), FIEEE

**D. Zhao**/B.S. (Northern Jiaotong, Beijing), Ph.D. (Waterloo), P.Eng.

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**T.R. Field**/B.A. (Cambridge), D. Phil. (Oxford), FlntP, FIMA

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**A. Jeremic**/Dipl. Ing. (Belgrade), M.Sc., Ph.D. (Illinois-Chicago)

**J.K. Zhang**/B.S., M.S., Ph.D. (Xidian)

## ADJUNCT ASSOCIATE PROFESSORS

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**H. Yang**/B.S. (Southeast University, China), M.S., Ph.D. (Michigan)

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**A. Baronian**/B.A. (Belgrade), M.Sc., Ph.D. (Toronto)

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**O. Marinov**/M.Sc., Ph.D. (Technical University, Sofia)

**A. Sathyan**/B.S. (Bharathiar University), M.S. (Coimbatore Institute of Technology), Ph.D. (Illinois Institute of Technology)

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## ASSOCIATE MEMBERS

**Q. Fang**/(Engineering Physics), B.S. (Nankai University), M.S., Ph.D. (East Carolina University)

**V. Galea**/(Rehabilitation Sciences),B.Sc., M.Sc. (Waterloo), Ph.D. (McMaster)

**S. Habibi**/(Mechanical Engineering),B.Sc. (Dundee), Ph.D. (Cambridge)

**G. Hasey**/(Psychiatry and Behavioural Neurosciences), M.D. (Alberta), M.Sc. (Toronto)

**T. Mondal**/(Pediatrics),MBBS (Calcutta), MD (VSS Medical College)

**R. Zheng**/(Computing and Software), B.S, M.S. (Tsinghua), Ph.D. (Illinois-Urbana)

**Bachelor of Engineering****COMPUTER ENGINEERING, COMPUTER ENGINEERING CO-OP (B.ENG.)****ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTE**

- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EEO. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

**REQUIREMENTS****LEVEL II: 39 UNITS****16 units**

- COMPENG 2D14 - Logic Design
- COMPENG 2DX4 - Microprocessor Systems Project
- COMPENG 2SH4 - Principles of Programming
- COMPENG 2SI4 - Data Structures, Algorithms and Discrete Mathematics

17 units

- ELECENG 2CI5 - Introduction to Electrical Engineering
- ELECENG 2CJ4 - Circuits and Systems
- ELECENG 2EI5 - Electronic Devices and Circuits I
- ELECENG 2FL3 - Applied Electromagnetics

3 units

- MATH 2Z03 - Engineering Mathematics III

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

**LEVEL III: 40 UNITS**12 units

- COMPENG 3DQ5 - Digital Systems Design
- COMPENG 3DY4 - Computer Systems Integration Project
- SFWRENG 3SH3 - Operating Systems

18 units

- ELECENG 3CL4 - Introduction to Control Systems
- ELECENG 3EJ4 - Electronic Devices and Circuits II
- ELECENG 3TP3 - Signal & Systems
- ELECENG 3TQ3 - Advanced Probability and Random Processes
- ELECENG 3TR4 - Communication Systems

4 units

- SFWRENG 3K04 - Software Development

3 units

- ENGINEER 2B03 - Engineering Economics

3 units

- approved complementary studies electives

**LEVEL IV: 37-39 UNITS**16 units

- COMPENG 4DK4 - Computer Communication Networks
- COMPENG 4DM4 - Computer Architecture
- COMPENG 4DN4 - Advanced Internet Communications
- COMPENG 4DS4 - Embedded Systems

6 units

- ELECENG 4O16 A/B - Engineering Design

3 units

- approved complementary studies electives

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- COMPENG 3SK3 - Computer-Aided Engineering

3-4 units

- technical electives from an approved list of Computer Engineering or Electrical Engineering Level III or IV

3-4 units

- approved Level III or IV technical electives of the Faculty of Engineering (excluding ELECENG and COMPENG)

**ELECTRICAL AND BIOMEDICAL ENGINEERING, ELECTRICAL AND BIOMEDICAL ENGINEERING CO-OP (B.ENG.)**

Admission to level II Electrical and Biomedical Engineering and Electrical and Biomedical Engineering Co-op was last offered in September 2017.

**REQUIREMENTS****LEVEL IV: 36-39 UNITS**4 units

- COMPENG 4TL4 - Digital Signal Processing

14 units

- ELECENG 3TR4 - Communication Systems
- ELECENG 4BC3 - Modelling of Biological Systems
- ELECENG 4BD4 - Biomedical Instrumentation
- IBEHS 4D03 - Introduction to Medical Imaging

6 units

- ELECENG 4B16 A/B - Biomedical Design Project

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- approved complementary studies electives

6-9 units

- technical electives from an approved list of Level III or IV courses

**ELECTRICAL ENGINEERING, ELECTRICAL ENGINEERING CO-OP (B.ENG.)****ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTE**

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

**REQUIREMENTS****LEVEL II: 40 UNITS**18 units

- ELECENG 2CI5 - Introduction to Electrical Engineering
- ELECENG 2CJ4 - Circuits and Systems
- ELECENG 2EI5 - Electronic Devices and Circuits I
- ELECENG 2FH4 - Electromagnetics I

16 units

- COMPENG 2DI4 - Logic Design
- COMPENG 2DX4 - Microprocessor Systems Project
- COMPENG 2SH4 - Principles of Programming
- COMPENG 2SI4 - Data Structures, Algorithms and Discrete Mathematics

3 units

- MATH 2Z03 - Engineering Mathematics III

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

**LEVEL III: 39 UNITS**4 units

- ELECENG 3EY4 - Electrical Systems Integration Project

3 units

- ENGINEER 2B03 - Engineering Economics

26 units

- ELECENG 3CL4 - Introduction to Control Systems
- ELECENG 3EJ4 - Electronic Devices and Circuits II
- ELECENG 3FK4 - Electromagnetics II
- ELECENG 3PI4 - Energy Conversion
- ELECENG 3TP3 - Signal & Systems
- ELECENG 3TQ3 - Advanced Probability and Random Processes
- ELECENG 3TR4 - Communication Systems

6 units

- approved complementary studies electives

**LEVEL IV: 37-40 UNITS**6 units

- ELECENG 40I6 A/B - Engineering Design

16 units

from

- COMPENG 4DK4 - Computer Communication Networks
- COMPENG 4DM4 - Computer Architecture
- COMPENG 4DN4 - Advanced Internet Communications
- COMPENG 4DS4 - Embedded Systems
- COMPENG 4TL4 - Digital Signal Processing
- ELECENG 4BE4 - Medical Robotics
- ELECENG 4CL4 - Control System Design
- ELECENG 4EM4 - Photonic Devices and Systems
- ELECENG 4FJ4 - Devices and Antennas for Wireless Systems
- ELECENG 4PK4 - Power Electronics
- ELECENG 4PM4 - Electrical Power Systems
- ELECENG 4PN4 - Electric Motor Drives
- ELECENG 4PP4 - Smart and Micro Grids
- ELECENG 4TK4 - Digital Communications Systems
- ELECENG 4TM4 - Digital Communications II
- IBEHS 4F04 - Biomedical Instrumentation and Measurement

3 units

- COMPENG 3SK3 - Computer-Aided Engineering

6-8 units

- technical electives from the approved list of Computer Engineering or Electrical Engineering Level III or IV courses

3-4 units

- approved Level III or IV technical electives of the Faculty of Engineering (excluding ELECENG and COMPENG)

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

## Bachelor of Engineering and Biomedical Engineering

### ELECTRICAL AND BIOMEDICAL ENGINEERING, ELECTRICAL AND BIOMEDICAL ENGINEERING CO-OP (B.ENG.BME)

#### ADMISSION TO LEVEL II IBEHS PROGRAMS

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0.

All students who successfully complete the first year of the program will have a space in one of the two degree options. As enrolment is limited in each of the two degree options (HESE or BME), where there is more demand than spaces, competition will be based on first-year academic achievement. Students seeking admission to the BME specialization will be admitted to one of eight Level II Engineering programs (Chemical, Civil, Electrical, Engineering Physics, Materials, Mechanical, Mechatronics, or Software). Admission to a Level II Engineering program is guaranteed for all students who meet the general progress requirements. All engineering programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on GPA.

Students who do not meet the requirements to proceed to Level II in May will have a *Pending* flag put on their allocation. The *Pending* flag will be removed in August if the student completes the requirements over the summer.

**NOTES**

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EEO. IBEHS 2ECO will be added to the academic record for each four month work term.
2. Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to eight units of research project or independent study courses. A full listing can be found on the IBEHS website.
3. Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

**REQUIREMENTS****LEVEL II: 36 UNITS**12 units

- HTHSCI 2E03 - Inquiry II: Biochemistry
- HTHSCI 2F03 - Human Physiology and Anatomy I
- HTHSCI 2FF3 - Human Physiology and Anatomy II
- IBEHS 2P03 - Health Solutions Design Projects II

24 units

- COMPENG 2SH4 - Principles of Programming
- COMPENG 2SI4 - Data Structures, Algorithms and Discrete Mathematics
- ELECENG 2CI5 - Introduction to Electrical Engineering
- ELECENG 2CJ4 - Circuits and Systems
- ELECENG 2FH4 - Electromagnetics I
- MATH 2Z03 - Engineering Mathematics III

**LEVEL III: 36 UNITS**16 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

20 units

- COMPENG 2DI4 - Logic Design
- COMPENG 2DX4 - Microprocessor Systems Project
- ELECENG 2EI5 - Electronic Devices and Circuits I
- ELECENG 3FK4 - Electromagnetics II
- ELECENG 3TQ3 - Advanced Probability and Random Processes

**LEVEL IV: 37 UNITS**3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I

20 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

11 units

- COMPENG 3SK3 - Computer-Aided Engineering
- ELECENG 3EJ4 - Electronic Devices and Circuits II
- ELECENG 3TR4 - Communication Systems

3 units

- approved IBEHS Technical Elective

**LEVEL V: 35-38 UNITS**9 units

- IBEHS 4QZ3 - Modelling of Biological Systems

- IBEHS 5P06 A/B - Biomedical Capstone Design Project

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

8 units

from

- COMPENG 4DK4 - Computer Communication Networks
- COMPENG 4DM4 - Computer Architecture
- COMPENG 4DN4 - Advanced Internet Communications
- COMPENG 4DS4 - Embedded Systems
- COMPENG 4TL4 - Digital Signal Processing
- ELECENG 4BE4 - Medical Robotics
- ELECENG 4EM4 - Photonic Devices and Systems
- ELECENG 4FJ4 - Devices and Antennas for Wireless Systems
- ELECENG 4PK4 - Power Electronics
- ELECENG 4PM4 - Electrical Power Systems
- ELECENG 4PN4 - Electric Motor Drives
- ELECENG 4PP4 - Smart and Micro Grids
- ELECENG 4TK4 - Digital Communications Systems
- ELECENG 4TM4 - Digital Communications II

3-4 units

- approved IBEHS Technical Elective

6-8 units

- technical elective from an approved list of Electrical Engineering Level III or IV courses

6 units

- Complementary Studies

## Bachelor of Engineering and Management

### COMPUTER ENGINEERING AND MANAGEMENT, COMPUTER ENGINEERING AND MANAGEMENT CO-OP (B.ENG.MGT.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

#### REQUIREMENTS

##### LEVEL II: 35 UNITS

3 units

- COMMERCE 1AA3 - Introductory Financial Accounting (or 2AA3)

8 units

- COMPENG 2SH4 - Principles of Programming
- COMPENG 2SI4 - Data Structures, Algorithms and Discrete Mathematics

3 units

- ECON 1BB3 - Introductory Macroeconomics

9 units

- ELECENG 2CI5 - Introduction to Electrical Engineering
- ELECENG 2CJ4 - Circuits and Systems

3 units

- ENGNMGT 2AA3 - Communication Skills

3 units

- MATH 2Z03 - Engineering Mathematics III

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

3 units

- approved complementary studies electives

##### LEVEL III: 38 UNITS

12 units

- COMMERCE 1BA3 - Organizational Behaviour (or 2BA3)
- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2FA3 - Introduction to Finance
- COMMERCE 2MA3 - Introduction to Marketing

14 units

- ELECENG 2EI5 - Electronic Devices and Circuits I
- ELECENG 2FL3 - Applied Electromagnetics
- ELECENG 3TP3 - Signal & Systems
- ELECENG 3TQ3 - Advanced Probability and Random Processes

8 units

- COMPENG 2DI4 - Logic Design
- COMPENG 2DX4 - Microprocessor Systems Project

4 units

- SFWRENG 3K04 - Software Development

##### LEVEL IV: 39 UNITS

9 units

- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management

9 units

- COMPENG 3DQ5 - Digital Systems Design
- COMPENG 3DY4 - Computer Systems Integration Project

12 units

- ELECENG 3CL4 - Introduction to Control Systems
- ELECENG 3EJ4 - Electronic Devices and Circuits II
- ELECENG 3TR4 - Communication Systems

3 units

- ENGNMGT 4A03 - Innovation Driven Project Development and Management

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- SFWRENG 3SH3 - Operating Systems

##### LEVEL V: 40 UNITS

6 units

- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

16 units

- COMPENG 4DK4 - Computer Communication Networks
- COMPENG 4DM4 - Computer Architecture
- COMPENG 4DN4 - Advanced Internet Communications
- COMPENG 4DS4 - Embedded Systems

6 units

- ELECENG 4OI6 A/B - Engineering Design

3 units

- COMPENG 3SK3 - Computer-Aided Engineering

3 units



- ENGNMGT 5B03 - Engineering and Management Projects
- 6 units

- Commerce electives selected from Level III or IV Commerce

## **ELECTRICAL ENGINEERING AND MANAGEMENT, ELECTRICAL ENGINEERING AND MANAGEMENT CO-OP (B.ENG.MGT.)**

### **ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

### **NOTES**

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each four month work term.

### **REQUIREMENTS**

#### **LEVEL II: 36 UNITS**

##### 3 units

- COMMERCE 1AA3 - Introductory Financial Accounting

##### 3 units

- ECON 1BB3 - Introductory Macroeconomics

##### 12 units

- COMPENG 2DX4 - Microprocessor Systems Project
- COMPENG 2SH4 - Principles of Programming
- COMPENG 2SI4 - Data Structures, Algorithms and Discrete Mathematics

##### 9 units

- ELECENG 2CI5 - Introduction to Electrical Engineering
- ELECENG 2CJ4 - Circuits and Systems

##### 3 units

- ENGNMGT 2AA3 - Communication Skills

##### 3 units

- MATH 2Z03 - Engineering Mathematics III

##### 3 units

- STATS 3Y03 - Probability and Statistics for Engineering

#### **LEVEL III: 38 UNITS**

##### 12 units

- COMMERCE 1BA3 - Organizational Behaviour
- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2FA3 - Introduction to Finance
- COMMERCE 2MA3 - Introduction to Marketing

##### 7 units

- COMPENG 2DI4 - Logic Design
- COMPENG 3SK3 - Computer-Aided Engineering

##### 19 units

- ELECENG 2EI5 - Electronic Devices and Circuits I
- ELECENG 2FH4 - Electromagnetics I
- ELECENG 3EY4 - Electrical Systems Integration Project
- ELECENG 3TP3 - Signal & Systems

- ELECENG 3TQ3 - Advanced Probability and Random Processes

#### **LEVEL IV: 38 UNITS**

##### 9 units

- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management

##### 20 units

- ELECENG 3CL4 - Introduction to Control Systems
- ELECENG 3EJ4 - Electronic Devices and Circuits II
- ELECENG 3FK4 - Electromagnetics II
- ELECENG 3PI4 - Energy Conversion
- ELECENG 3TR4 - Communication Systems

##### 3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

##### 3 units

- ENGNMGT 4A03 - Innovation Driven Project Development and Management

##### 3 units

- Commerce electives selected from Level III or IV Commerce

#### **LEVEL V: 40 UNITS**

##### 6 units

- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

##### 15-16 units

from

- COMPENG 3DQ5 - Digital Systems Design
- COMPENG 4DK4 - Computer Communication Networks
- COMPENG 4DM4 - Computer Architecture
- COMPENG 4DN4 - Advanced Internet Communications
- COMPENG 4DS4 - Embedded Systems
- COMPENG 4TL4 - Digital Signal Processing
- ELECENG 4BB3 - Cellular Bioelectricity
- ELECENG 4BE4 - Medical Robotics
- ELECENG 4CL4 - Control System Design
- ELECENG 4EM4 - Photonic Devices and Systems
- ELECENG 4FJ4 - Devices and Antennas for Wireless Systems
- ELECENG 4PK4 - Power Electronics
- ELECENG 4PM4 - Electrical Power Systems
- ELECENG 4PN4 - Electric Motor Drives
- ELECENG 4PP4 - Smart and Micro Grids
- ELECENG 4TK4 - Digital Communications Systems
- ELECENG 4TM4 - Digital Communications II
- IBEHS 4F04 - Biomedical Instrumentation and Measurement

##### 6 units

- ELECENG 4OI6 A/B - Engineering Design

##### 3 units

- approved complementary studies electives

##### 3 units

- ENGNMGT 5B03 - Engineering and Management Projects

##### 3 units

- Commerce electives selected from Level III or IV Commerce

##### 3 units

- approved Level III or IV technical electives of the Faculty of Engineering (excluding ELECENG and COMPENG)

## Bachelor of Engineering and Society

### COMPUTER ENGINEERING AND SOCIETY, COMPUTER ENGINEERING AND SOCIETY CO-OP (B.ENG.SOCIETY)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

1. A minimum of 18 units of focus elective courses is required for the program. (This does not include the six units of complementary studies elective in Level I.)
2. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

#### REQUIREMENTS

##### LEVEL II: 39 UNITS

###### 12 units

- COMPENG 2DI4 - Logic Design
- COMPENG 2SH4 - Principles of Programming
- COMPENG 2SI4 - Data Structures, Algorithms and Discrete Mathematics

###### 12 units

- ELECENG 2CI5 - Introduction to Electrical Engineering
- ELECENG 2CJ4 - Circuits and Systems
- ELECENG 2FL3 - Applied Electromagnetics

###### 3 units

- MATH 2Z03 - Engineering Mathematics III

###### 3 units

- STATS 3Y03 - Probability and Statistics for Engineering

###### 6 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I
- ENGSOCTY 2Y03 - Case Studies in History and Technology

###### 3 units

- Engineering and Society focus electives

##### LEVEL III: 34 UNITS

###### 7 units

- COMPENG 2DX4 - Microprocessor Systems Project
- SFWRENG 3SH3 - Operating Systems

###### 11 units

- ELECENG 2EI5 - Electronic Devices and Circuits I
- ELECENG 3TP3 - Signal & Systems
- ELECENG 3TQ3 - Advanced Probability and Random Processes

###### 4 units

- SFWRENG 3K04 - Software Development

###### 6 units

- ENGSOCTY 3Y03 - Technology and Society
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

###### 6 units

- Engineering and Society focus electives

##### LEVEL IV: 33-36 UNITS

###### 9 units

- COMPENG 3DQ5 - Digital Systems Design
- COMPENG 3DY4 - Computer Systems Integration Project

###### 12 units

- ELECENG 3CL4 - Introduction to Control Systems
- ELECENG 3EJ4 - Electronic Devices and Circuits II
- ELECENG 3TR4 - Communication Systems

###### 3 units

- ENGINEER 2B03 - Engineering Economics

###### 3 units

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II

###### 6-9 units

- Engineering and Society focus electives

##### LEVEL V: 37-38 UNITS

###### 16 units

- COMPENG 4DK4 - Computer Communication Networks
- COMPENG 4DM4 - Computer Architecture
- COMPENG 4DN4 - Advanced Internet Communications
- COMPENG 4DS4 - Embedded Systems

###### 6 units

- ELECENG 4OI6 A/B - Engineering Design

###### 3 units

- COMPENG 3SK3 - Computer-Aided Engineering

###### 3-4 units

- technical electives from an approved list of Computer Engineering or Electrical Engineering Level III or IV

###### 3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

###### 3 units

- ENGSOCTY 4Y03 - Society Capstone Design

###### 3 units

- Engineering and Society focus electives

### ELECTRICAL ENGINEERING AND SOCIETY, ELECTRICAL ENGINEERING AND SOCIETY CO-OP (B.ENG.SOCIETY)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

1. A minimum of 18 units of focus elective courses is required for the program. (This does not include the six units of complementary studies elective in Level I.)
2. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month

work term.

## REQUIREMENTS

### LEVEL II: 40 UNITS

#### 16 units

- COMPENG 2DI4 - Logic Design
- COMPENG 2DX4 - Microprocessor Systems Project
- COMPENG 2SH4 - Principles of Programming
- COMPENG 2SI4 - Data Structures, Algorithms and Discrete Mathematics

#### 9 units

- ELECENG 2CI5 - Introduction to Electrical Engineering
- ELECENG 2CJ4 - Circuits and Systems

#### 3 units

- MATH 2Z03 - Engineering Mathematics III

#### 6 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I
- ENGSOCTY 2Y03 - Case Studies in History and Technology

#### 3 units

- Engineering and Society focus electives

#### 3 units

- STATS 3Y03 - Probability and Statistics for Engineering

### LEVEL III: 31-34 UNITS

#### 3 units

- COMPENG 3SK3 - Computer-Aided Engineering

#### 19 units

- ELECENG 2EI5 - Electronic Devices and Circuits I
- ELECENG 2FH4 - Electromagnetics I
- ELECENG 3EY4 - Electrical Systems Integration Project
- ELECENG 3TP3 - Signal & Systems
- ELECENG 3TQ3 - Advanced Probability and Random Processes

#### 6 units

- ENGSOCTY 3Y03 - Technology and Society
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

#### 3-6 units

- Engineering and Society focus electives

### LEVEL IV: 35-39 UNITS

#### 20 units

- ELECENG 3CL4 - Introduction to Control Systems
- ELECENG 3EJ4 - Electronic Devices and Circuits II
- ELECENG 3FK4 - Electromagnetics II
- ELECENG 3PI4 - Energy Conversion
- ELECENG 3TR4 - Communication Systems

#### 3 units

- ENGINEER 2B03 - Engineering Economics

#### 3 units

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II

#### 6-9 units

- Engineering and Society focus electives

#### 3-4 units

- approved Level III or IV technical electives of the Faculty of Engineering (excluding ELECENG and COMPENG)

### LEVEL V: 37-39 UNITS

#### 6 units

- ELECENG 4OI6 A/B - Engineering Design

#### 15-17 units

from

- COMPENG 3DQ5 - Digital Systems Design
- COMPENG 4DK4 - Computer Communication Networks
- COMPENG 4DM4 - Computer Architecture
- COMPENG 4DN4 - Advanced Internet Communications
- COMPENG 4DS4 - Embedded Systems
- COMPENG 4TL4 - Digital Signal Processing

- ELECENG 4BB3 - Cellular Bioelectricity
- ELECENG 4BE4 - Medical Robotics
- ELECENG 4CL4 - Control System Design
- ELECENG 4EM4 - Photonic Devices and Systems
- ELECENG 4FJ4 - Devices and Antennas for Wireless Systems
- ELECENG 4PK4 - Power Electronics
- ELECENG 4PM4 - Electrical Power Systems
- ELECENG 4PN4 - Electric Motor Drives
- ELECENG 4PP4 - Smart and Micro Grids
- ELECENG 4TK4 - Digital Communications Systems
- ELECENG 4TM4 - Digital Communications II
- IBEHS 4F04 - Biomedical Instrumentation and Measurement

#### 3-4 units

- technical electives from the approved list of Computer Engineering or Electrical Engineering Level III or IV courses

#### 3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

#### 3 units

- ENGSOCTY 4Y03 - Society Capstone Design

#### 6 units

- Engineering and Society focus electives

## Department of Engineering Physics

Faculty of the Department of Engineering Physics, as of January 15, 2020

### CHAIR

**Ray R. LaPierre**

ASSOCIATE CHAIR, UNDERGRADUATE

**Ayse Turak**

ASSOCIATE CHAIR, GRADUATE

**Chang-qing Xu**

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**Qiyin Fang**/B.S. (*Nankai*), M.S., Ph.D. (*East Carolina*), L.E.L.

**Harold K. Haugen**/B.Sc. (*Acadia*), M.Eng. (*McMaster*), Ph.D. (*Aarhus*), L.E.L.

**Adrian H. Kitai**/B.Eng. (*McMaster*), Ph.D. (*Cornell*), P.Eng.

**Rafael N. Kleiman**/SB (*M.I.T.*), M.Sc., Ph.D. (*Cornell*)

**Andrew P. Knights**/B.Sc. (*DeMontfort*), Ph.D. (*East Anglia*)

**Ray R. LaPierre**/B.Sc. (*Dalhousie*), M.Eng., Ph.D. (*McMaster*), P.Eng.

**John C. Luxat**/B.Sc., M.Sc. (*Cape Town*), Ph.D. (*Windsor*), P.Eng.

**Peter Mascher**/M.Eng., Ph.D. (*Technical University of Graz*), P.Eng.

**Shinya Nagasaki**/B.Eng., M.Eng., Ph.D. (*Tokyo*)

**David R. Novog**/B.Sc. Eng. (*Manitoba*), M.Eng., Ph.D. (*McMaster*), P.Eng.

**John S. Preston**/B.Eng. (*McMaster*), M.Sc., Ph.D. (*Toronto*), P.Eng.

**Chang-qing Xu**/B.Sc., M.Sc. (*University of Science and Technology of China*),

D.Eng. (*Tokyo*), L.E.L.

### INDUSTRY PROFESSORS

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**Victor G. Snell**/B.Sc. (*Manitoba*), M.Sc., Ph.D. (*Toronto*)

**Thambiayah Nitheanandan**/B.Sc. (*Faisalabad, Pakistan*), M.Sc.,

Ph.D. (*Manitoba*)

### ADJUNCT PROFESSORS

**Pavel Cheben**/M.Sc. (*Slovak Technical University*), Ph.D. (*Complutense University of Madrid*)

**David P. Jackson**/B.Sc., M.A., M.A.Sc., Ph.D. (*Toronto*), L.E.L.

**Woo Young Kim**/B.S., M.E. (*Purdue*)

**Laurence Leung**/B.A.Sc., M.A.Sc., Ph.D. (*Ottawa*)

**Jeremy Penczer**/B.Sc. (*St. Francis Xavier*), M.Sc., Ph.D. (*Guelph*)

**Benjamin Rouben**/B.Sc. (*McGill*), Ph.D. (*M.I.T.*)

**Peter Vilks**/B.Sc. (*Dalhousie*), M.Sc., Ph.D. (*McMaster*)

ASSOCIATE PROFESSOR

**Leyla Soleymani**/B.Eng. (*McGill*), M.S. (*Southern California*), Ph.D. (*Toronto*)

**Ayşe Turak**/B.Sc. (*Queen's*), Ph.D. (*Toronto*)

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**Jonathan Bradley**/B.Eng., M.A.Sc. (*McMaster*), Ph.D. (*University of Twente*)

**Ryan B. Lewis**/B.Sc. (*Dalhousie*), M.A.Sc., Ph.D. (*British Columbia*)

**Matthew Minnick**/B.Eng., Ph.D. (*McMaster*), P.Eng.

ADJUNCT ASSISTANT PROFESSOR

**Simon Day**/B.Sc. (*St. Mary's*), M.Eng., Ph.D. (*McMaster*)

ASSOCIATE MEMBERS

**M. Jamal Deen**/(*Electrical and Computer Engineering*) B.Sc. (*Guyana*), M.Sc., Ph.D. (*Case Western Reserve*)

**Joseph E. Hayward**/(*Radiology*) B.Eng., M.Eng., Ph.D. (*McMaster*)

**Marilyn F. Lightstone**/(*Mechanical Engineering*) B.Sc. (*Queen's*), M.A.Sc., Ph.D. (*Waterloo*), P.Eng.

**Ishwar K. Puri**/(*Mechanical Engineering*) B.Sc. (*Delhi*), M.S., Ph.D. (*California-San Diego*)

**Kalaichelvi Saravanamuttu**/(*Chemistry*) B.Sc., Ph.D. (*McGill*)

## Bachelor of Engineering

### ENGINEERING PHYSICS, ENGINEERING PHYSICS CO-OP (B.ENG.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

- Approved electives for a total of 42-45 units:
  - Students must take at least 6 units of Approved complementary studies electives (in addition to the 6 units taken in Engineering 1)
  - Students must take at least 3 units of Approved Engineering technical electives outside of Engineering Physics
  - Students must take at least 17 units of Approved technical electives from the Engineering Physics course offerings
  - Remaining units: Students may take any approved Engineering or Science technical elective (including Engineering Physics)
- While 2 units worth of the 4U\*2 courses are required at a minimum, these courses are also part of the Approved Engineering Physics technical electives and students may take an unlimited number of these courses to fulfill their elective requirements in any year.
- Approved technical electives are available in a list on the Engineering Physics website. Subject to Chair approval, students may replace Engineering Physics technical electives with approved Science or Engineering courses. Also subject to Chair approval, courses not appearing on the technical elective list may qualify as acceptable technical electives. Students are free to choose their technical electives according to their own interests, but may consider the following course recommendations for a program of study. Further detail on program

specializations and course recommendations is available on the Engineering Physics website. Students are responsible for ensuring that they fulfill the prerequisites for each course.

- Nanotech Engineering (Nano- and Micro-Devices):** ENGPYHS 3F03, 3PN4, 4MD3, 4UM2, 4Z03, MATLS 4H03, MECH ENG 4E03
- Nanotech Engineering (Photonics):** ENGPYHS 3E04, 3F03, 3PD3, 3PN4, 4S03, 4UP2, 4Z03, ELECENG 3FK4 and 4EM4
- Nanotech Engineering (Solar):** ENGPYHS 3E04, 3ES3, 3F03, 3PN4, 4MD3, 4X03, 4UM3, 4Z03, MATLS 4Q03
- Nuclear Engineering:** ENGPYHS 3D03, 3ES3, 3O04, 4D03, 4NE3, 4P03, 4PP3, 4UN2
- Biomedical Engineering:** ENGPYHS 3E04, 3F03, 3PN4, 4I03, 4S03, 4UB2, 4Z03, ELECENG 4BD4, MECHENG 4E03
- Smart Systems Engineering:** ENGPYHS 3F03, 3PN4, 4US2, SFWRENG 2MP3, 2MD3, MECHENG 4R03, ELECENG 4CL4, and 6-8 units from ELECENG 3FK4, 3TR4, MECHENG 4E03, 4H03
- Quantum Computing:** ENGPYHS 4QC3, COMPENG 2SH4, 2SI4, MATH 2R03, 3C03, 3D03, 3QC3, PHYSICS 3MM3, 3QI3, 4F03
- Interdisciplinary Engineering:** ENGPYHS 3D03, 3E04, 3O04, 3ES3, 3F03, 3PN4, 4MD3, 4P03 and 4S03

- Students in a Co-op program must complete ENGINEER 1EE0 in addition to the academic requirements specified in this calendar. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

#### REQUIREMENTS

##### LEVEL II: 34-35 UNITS

###### 22 units

- ENGPYHS 2A04 - Electricity and Magnetism
- ENGPYHS 2CM4 - Computational Multiphysics
- ENGPYHS 2E04 - Analog and Digital Circuits
- ENGPYHS 2NE3 - Thermal Systems Design
- ENGPYHS 2P04 - Computational Mechanics
- ENGPYHS 2QM3 - Introduction to Quantum Mechanics

###### 6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

###### 6-7 units

- approved electives (see Note 1)

##### LEVEL III: 39-40 UNITS

###### 27 units

- ENGPYHS 3BA4 - Electronics I: Circuits with Non-Linear and Active Components
- ENGPYHS 3BB4 - Electronics II: Embedding and Programming a Micro-Controller
- ENGPYHS 3EC4 - Professional Communication and Project Management
- ENGPYHS 3L04 - Engineering Metrology: Fundamentals and Applications
- ENGPYHS 3NM4 - Numerical Methods for Engineering
- ENGPYHS 3SM3 - Statistical Mechanics
- ENGPYHS 3W04 - Signals and Systems for Engineering

###### 3 units

- ENGINEER 2B03 - Engineering Economics

###### 9-10 units

- approved electives (see Note 1)

##### LEVEL IV: 38-39 UNITS

###### 3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

###### 6 units

- ENGPYHS 4A06 A/B - Engineering Physics Design and Synthesis Project

###### 2 units

from

- ENGPYHS 4UB2 - Modern and Applied Physics Laboratory: Biomedical
- ENGPYHS 4UM2 - Modern and Applied Physics Laboratory: Nano- and



Micro-devices

- ENGPYHS 4UN2 - Modern and Applied Physics Laboratory: Nuclear Labs
- ENGPYHS 4UP2 - Modern and Applied Physics Laboratory: Photonics
- ENGPYHS 4US2 - Modern and Applied Physics Laboratory: Smart Systems

(See *Note 2* above.)

27-28 units

- approved electives (See *Note 1* above.)

## Bachelor of Engineering and Biomedical Engineering

### ENGINEERING PHYSICS AND BIOMEDICAL ENGINEERING, ENGINEERING PHYSICS AND BIOMEDICAL ENGINEERING CO-OP (B.ENG.BME)

#### ADMISSION TO LEVEL II IBEHS PROGRAMS

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0.

All students who successfully complete the first year of the program will have a space in one of the two degree options. As enrolment is limited in each of the two degree options (HESE or BME), where there is more demand than spaces, competition will be based on first-year academic achievement.

Students seeking admission to the BME specialization will be admitted to one of eight Level II Engineering programs (Chemical, Civil, Electrical, Engineering Physics, Materials, Mechanical, Mechatronics, or Software). Admission to a Level II Engineering program is guaranteed for all students who meet the general progress requirements. All engineering programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on GPA.

Students who do not meet the requirements to proceed to Level II in May will have a *Pending* flag put on their allocation. The *Pending* flag will be removed in August if the student completes the requirements over the summer.

#### NOTES

- Approved technical electives for a total of 21-24 units:
  - Students must take at least 3 units of Approved Engineering technical electives outside of Engineering Physics
  - Students must take at least 6 units of Approved technical electives from the Engineering Physics course offerings
  - Remaining units: Students may take any approved Engineering or Science technical elective (including Engineering Physics)
- While two units worth of the 4U\*2 courses are required at a minimum, these courses are also part of the Approved Engineering Physics technical electives and students may take an unlimited number of these courses to fulfill their elective requirements in any year.
- Approved technical electives are available in a list on the Engineering Physics website. Subject to Chair approval, students may replace Engineering Physics technical electives with approved Engineering courses. Also subject to Chair approval, courses not appearing on the technical elective list may qualify as acceptable technical electives. Students are free to choose their technical electives according to their own interests, but may consider the following course recommendations for a program of study. Further detail on program specializations and course recommendations is available on the Engineering Physics website. Students are responsible for ensuring that they fulfill the prerequisites for each course.
  - **Nanotech Engineering (Nano- and Micro-Devices):** ENGPYHS 3F03, 3PN4, 4MD3, 4UM2, 4Z03, MATLS 4H03, MECHENG 4E03

- **Nanotech Engineering (Photonics):** ENGPYHS 3E04, 3F03, 3PD3, 3PN4, 4S03, 4UP2, 4Z03, ELECENG 3FK4 and 4EM4
  - **Nanotech Engineering (Solar):** ENGPYHS 3E04, 3ES3, 3F03, 3PN4, 4MD3, 4X03, 4UM3, 4Z03, MATLS 4Q03
  - **Nuclear Engineering:** ENGPYHS 3D03, 3ES3, 3O04, 4D03, 4NE3, 4P03, 4PP3, 4UN2
  - **Biomedical Engineering:** ENGPYHS 3E04, 3F03, 3PN4, 4I03, 4S03, 4UB2, 4Z03, MECHENG 4E03
  - **Smart Systems Engineering:** ENGPYHS 3F03, 3PN4, 4US2, SFWRENG 2MP3, 2MD3, MECHENG 4R03, ELECENG 4CL4, and 6-8 units from ELECENG 3FK4, 3TR4, MECHENG 4E03, 4H03
  - **Quantum Computing:** ENGPYHS 4QC3, COMPENG 2SH4, 2SI4, MATH 2R03, 3C03, 3D03, 3QC3, PHYSICS 3MM3, 3QI3, 4F03
  - **Interdisciplinary Engineering:** ENGPYHS 3D03, 3E04, 3O04, 3ES3, 3F03, 3PN4, 4MD3, 4P03 and 4S03
- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EE0. IBEHS 2EC0 will be added to the academic record for each four month work term.
  - Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to eight units of research project or independent study courses. A full listing can be found on the IBEHS website.
  - Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

#### REQUIREMENTS

##### LEVEL II: 40 UNITS

###### 12 units

- HTHSCI 2E03 - Inquiry II: Biochemistry
- HTHSCI 2F03 - Human Physiology and Anatomy I
- HTHSCI 2FF3 - Human Physiology and Anatomy II
- IBEHS 2P03 - Health Solutions Design Projects II

###### 28 units

- ENGPYHS 2A04 - Electricity and Magnetism
- ENGPYHS 2CM4 - Computational Multiphysics
- ENGPYHS 2E04 - Analog and Digital Circuits
- ENGPYHS 2NE3 - Thermal Systems Design
- ENGPYHS 2P04 - Computational Mechanics
- ENGPYHS 2QM3 - Introduction to Quantum Mechanics
- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

##### LEVEL III: 35 UNITS

###### 16 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

###### 19 units

- ENGPYHS 3BA4 - Electronics I: Circuits with Non-Linear and Active Components
- ENGPYHS 3BB4 - Electronics II: Embedding and Programming a Micro-Controller
- ENGPYHS 3L04 - Engineering Metrology: Fundamentals and Applications
- ENGPYHS 3NM4 - Numerical Methods for Engineering
- ENGPYHS 3SM3 - Statistical Mechanics

##### LEVEL IV: 36-38 UNITS (2020-2021 ONLY)

###### 3 units

from

- CHEM 2E03 - Introductory Organic Chemistry

- CHEM 20A3 - Organic Chemistry I

17 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

4 units

- ENGPYHS 3L04 - Engineering Metrology: Fundamentals and Applications

9-10 units

- approved technical electives (see *Note 1* above.)

3-4 units

- approved IBEHS technical electives

#### LEVEL IV: 36-38 UNITS (EFFECTIVE 2021-2022)

3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 20A3 - Organic Chemistry I

17 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

4 units

- ENGPYHS 3EC4 - Professional Communication and Project Management

9-10 units

- approved technical electives (see *Note 1* above.)

3-4 units

- approved IBEHS technical electives

#### LEVEL V: 37-39 UNITS (2020-2021 ONLY)

9 units

- IBEHS 5A03
- IBEHS 5B06 A/B

7 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- ENGPYHS 4U02 A/B

(**Note:** Students must take ENGPYHS 4U02 twice (*totalling four (4) units*), in order to fulfill degree requirements. Students must select two unique topics, one topic must be the biomedical section; the same topic cannot be repeated.)

3-4 units

- approved IBEHS Technical Elective

12-13 units

- approved technical electives (see *Note 1*)

6 units

- Complementary Studies

#### LEVEL V: 36-38 UNITS (2021-2022 ONLY)

9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

2 units

from

- ENGPYHS 4UB2 - Modern and Applied Physics Laboratory: Biomedical
- ENGPYHS 4UM2 - Modern and Applied Physics Laboratory: Nano- and Micro-devices
- ENGPYHS 4UN2 - Modern and Applied Physics Laboratory: Nuclear Labs
- ENGPYHS 4UP2 - Modern and Applied Physics Laboratory: Photonics
- ENGPYHS 4US2 - Modern and Applied Physics Laboratory: Smart

Systems

(See *Note 2* above.)

7 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- ENGPYHS 3EC4 - Professional Communication and Project Management

3-4 units

- approved IBEHS Technical Elective

9-10 units

- approved technical electives (see *Note 1* above.)

6 units

- Complementary Studies

#### LEVEL V: 35-37 UNITS (EFFECTIVE 2022-2023)

9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

2 units

from

- ENGPYHS 4UB2 - Modern and Applied Physics Laboratory: Biomedical
- ENGPYHS 4UM2 - Modern and Applied Physics Laboratory: Nano- and Micro-devices
- ENGPYHS 4UN2 - Modern and Applied Physics Laboratory: Nuclear Labs
- ENGPYHS 4UP2 - Modern and Applied Physics Laboratory: Photonics
- ENGPYHS 4US2 - Modern and Applied Physics Laboratory: Smart Systems

(See *Note 2* above.)

3-4 units

- approved IBEHS Technical Elective

12-13 units

- approved technical electives (see *Note 1* above.)

6 units

- Complementary Studies

## Bachelor of Engineering and Management

### ENGINEERING PHYSICS AND MANAGEMENT, ENGINEERING PHYSICS AND MANAGEMENT CO-OP (B.ENG.MGT.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives. Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

1. Approved technical electives for a total of 33-36 units:

- Students must take at least 3 units of Approved Engineering technical electives outside of Engineering Physics
- Students must take at least 17 units of Approved technical electives from the Engineering Physics course offerings

- Remaining units: Students may take any approved Engineering or Science technical elective (including Engineering Physics)
2. While two units worth of the 4U\*2 courses are required at a minimum, these courses are also part of the Approved Engineering Physics technical electives and students may take an unlimited number of these courses to fulfill their elective requirements in any year.
  3. Approved technical electives are available in a list on the Engineering Physics website. Subject to Chair approval, students may replace Engineering Physics technical electives with approved Engineering courses. Also subject to Chair approval, courses not appearing on the technical elective list may qualify as acceptable technical electives. Students are free to choose their technical electives according to their own interests, but may consider the following course recommendations for a program of study. Further detail on program specializations and course recommendations is available on the Engineering Physics website. Students are responsible for ensuring that they fulfill the prerequisites for each course.
    - **Nanotech Engineering (Nano- and Micro-Devices):** ENGPYS 3F03, 3PN4, 4MD3, 4UM2, 4Z03, MATLS 4H03, MECHENG 4E03
    - **Nanotech Engineering (Photonics):** ENGPYS 3E04, 3F03, 3PD3, 3PN4, 4S03, 4UP2, 4Z03, ELECENG 3FK4 and 4EM4
    - **Nanotech Engineering (Solar):** ENGPYS 3E04, 3ES3, 3F03, 3PN4, 4MD3, 4X03, 4UM3, 4Z03, MATLS 4Q03
    - **Nuclear Engineering:** ENGPYS 3D03, 3ES3, 3004, 4D03, 4NE3, 4P03, 4PP3, 4UN2
    - **Biomedical Engineering:** ENGPYS 3E04, 3F03, 3PN4, 4I03, 4S03, 4UB2, 4Z03, MECHENG 4E03
    - **Smart Systems Engineering:** ENGPYS 3F03, 3PN4, 4US2, SFWRENG 2MP3, 2MD3, MECHENG 4R03, ELECENG 4CL4, and 6-8 units from ELECENG 3FK4, 3TR4, MECHENG 4E03, 4H03
    - **Quantum Computing:** ENGPYS 4QC3, COMPENG 2SH4, 2SI4, MATH 2R03, 3C03, 3D03, 3QC3, PHYSICS 3MM3, 3QI3, 4F03
    - **Interdisciplinary Engineering:** ENGPYS 3D03, 3E04, 3004, 3ES3, 3F03, 3PN4, 4MD3, 4P03 and 4S03
  4. Students in a Co-op program must complete ENGINEER 1EE0 in addition to the academic requirements specified in this calendar. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

### REQUIREMENTS

#### LEVEL II: 37 UNITS

##### 6 units

- COMMERCE 1AA3 - Introductory Financial Accounting
- COMMERCE 2MA3 - Introduction to Marketing

##### 3 units

- ENGNMGT 2AA3 - Communication Skills

##### 22 units

- ENGPYS 2A04 - Electricity and Magnetism
- ENGPYS 2CM4 - Computational Multiphysics
- ENGPYS 2E04 - Analog and Digital Circuits
- ENGPYS 2NE3 - Thermal Systems Design
- ENGPYS 2P04 - Computational Mechanics
- ENGPYS 2QM3 - Introduction to Quantum Mechanics

##### 6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

#### LEVEL III: 38-39 UNITS

##### 9 units

- COMMERCE 1BA3 - Organizational Behaviour
- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2FA3 - Introduction to Finance

##### 3 units

- ECON 1BB3 - Introductory Macroeconomics

##### 23 units

- ENGPYS 3BA4 - Electronics I: Circuits with Non-Linear and Active Components
- ENGPYS 3BB4 - Electronics II: Embedding and Programming a Micro-Controller
- ENGPYS 3L04 - Engineering Metrology: Fundamentals and Applications
- ENGPYS 3NM4 - Numerical Methods for Engineering
- ENGPYS 3SM3 - Statistical Mechanics
- ENGPYS 3W04 - Signals and Systems for Engineering

##### 3-4 units

- approved technical electives (see Note 1)

#### LEVEL IV: 37-38 UNITS

##### 12 units

- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

##### 3 units

- ENGNMGT 4A03 - Innovation Driven Project Development and Management

##### 6 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- ENGPYS 3EC4 - Professional Communication and Project Management

##### 15-16 units

- approved technical electives (see Note 1)

#### LEVEL V: 35-36 UNITS

##### 3 units

- COMMERCE 4PA3 - Business Policy: Strategic Management

##### 3 units

- ENGNMGT 5B03 - Engineering and Management Projects

##### 7 units

- ENGPYS 4A06 A/B - Engineering Physics Design and Synthesis Project

##### 2 units

from

- ENGPYS 4UB2 - Modern and Applied Physics Laboratory: Biomedical
- ENGPYS 4UM2 - Modern and Applied Physics Laboratory: Nano- and Micro-devices
- ENGPYS 4UN2 - Modern and Applied Physics Laboratory: Nuclear Labs
- ENGPYS 4UP2 - Modern and Applied Physics Laboratory: Photonics
- ENGPYS 4US2 - Modern and Applied Physics Laboratory: Smart Systems

(See Note 2 above.)

##### 6 units

- Commerce electives selected from Level III or IV Commerce

##### 15-16 units

- approved technical electives (see Note 1)

## Bachelor of Engineering and Society

### ENGINEERING PHYSICS AND SOCIETY, ENGINEERING PHYSICS AND SOCIETY CO-OP (B.ENG.SOCIETY)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average. Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0. Students admitted to a B.Eng.Society program are required to submit a

statement indicating the educational objectives for the focus electives. Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

- Approved technical electives for a total of 33-36 units:
  - Students must take at least 3 units of Approved Engineering technical electives outside of Engineering Physics
  - Students must take at least 17 units of Approved technical electives from the Engineering Physics course offerings
  - Remaining units: Students may take any approved Engineering or Science technical elective (including Engineering Physics)
- While two units worth of the 4U\*2 courses are required at a minimum, these courses are also part of the Approved Engineering Physics technical electives and students may take an unlimited number of these courses to fulfill their elective requirements in any year.
- Approved technical electives are available in a list on the Engineering Physics website. Subject to Chair approval, students may replace Engineering Physics technical electives with approved Engineering courses. Also subject to Chair approval, courses not appearing on the technical elective list may qualify as acceptable technical electives. Students are free to choose their technical electives according to their own interests, but may consider the following course recommendations for a program of study. Further detail on program specializations and course recommendations is available on the Engineering Physics website. Students are responsible for ensuring that they fulfill the prerequisites for each course.
  - Nanotech Engineering (Nano- and Micro-Devices):** ENGPYS 3F03, 3PN4, 4MD3, 4UM2, 4Z03, MATLS 4H03, MECHENG 4E03
  - Nanotech Engineering (Photonics):** ENGPYS 3E04, 3F03, 3PD3, 3PN4, 4S03, 4UP2, 4Z03, ELECENG 3FK4 and 4EM4
  - Nanotech Engineering (Solar):** ENGPYS 3E04, 3ES3, 3F03, 3PN4, 4MD3, 4X03, 4UM3, 4Z03, MATLS 4Q03
  - Nuclear Engineering:** ENGPYS 3D03, 3ES3, 3O04, 4D03, 4NE3, 4P03, 4PP3, 4UN2
  - Biomedical Engineering:** ENGPYS 3E04, 3F03, 3PN4, 4I03, 4S03, 4UB2, 4Z03, MECHENG 4E03
  - Smart Systems Engineering:** ENGPYS 3F03, 3PN4, 4US2, SFWRENG 2MP3, 2MD3, MECHENG 4R03, ELECENG 4CL4, and 6-8 units from ELECENG 3FK4, 3TR4, MECHENG 4E03, 4H03
  - Quantum Computing:** ENGPYS 4QC3, COMPENG 2SH4, 2SI4, MATH 2R03, 3C03, 3D03, 3QC3, PHYSICS 3MM3, 3QI3, 4F03
  - Interdisciplinary Engineering:** ENGPYS 3D03, 3E04, 3O04, 3ES3, 3F03, 3PN4, 4MD3, 4P03 and 4S03
- Students in a Co-op program must complete ENGINEER 1EE0 in addition to the academic requirements specified in this calendar. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

#### REQUIREMENTS

##### LEVEL II: 37 UNITS

##### 22 units

- ENGPYS 2A04 - Electricity and Magnetism
- ENGPYS 2CM4 - Computational Multiphysics
- ENGPYS 2E04 - Analog and Digital Circuits
- ENGPYS 2NE3 - Thermal Systems Design
- ENGPYS 2P04 - Computational Mechanics
- ENGPYS 2QM3 - Introduction to Quantum Mechanics

##### 6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

##### 6 units

- ENSOCTY 2X03 - Inquiry in an Engineering Context I

- ENSOCTY 2Y03 - Case Studies in History and Technology

##### 3 units

- Engineering and Society focus electives

##### LEVEL III: 35-36 UNITS

##### 23 units

- ENGPYS 3BA4 - Electronics I: Circuits with Non-Linear and Active Components
- ENGPYS 3BB4 - Electronics II: Embedding and Programming a Micro-Controller
- ENGPYS 3L04 - Engineering Metrology: Fundamentals and Applications
- ENGPYS 3NM4 - Numerical Methods for Engineering
- ENGPYS 3SM3 - Statistical Mechanics
- ENGPYS 3W04 - Signals and Systems for Engineering

##### 3 units

- ENSOCTY 3Y03 - Technology and Society

##### 6 units

- Engineering and Society focus electives

##### 3-4 units

- approved technical electives (see *Note 1*)

##### LEVEL IV: 34-35 UNITS

##### 7 units

- ENGINEER 2B03 - Engineering Economics
- ENGPYS 3EC4 - Professional Communication and Project Management

##### 12-13 units

- approved technical electives (see *Note 1*)

##### 6 units

- ENSOCTY 3X03 - Inquiry in an Engineering Context II
- ENSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

##### 9 units

- Engineering and Society focus electives

##### LEVEL V: 32-33 UNITS

##### 3 units

- ENSOCTY 4X03 A/B - Inquiry in an Engineering Context III

##### 6 units

- ENGPYS 4A06 A/B - Engineering Physics Design and Synthesis Project

##### 2 units

from

- ENGPYS 4UB2 - Modern and Applied Physics Laboratory: Biomedical
- ENGPYS 4UM2 - Modern and Applied Physics Laboratory: Nano- and Micro-devices
- ENGPYS 4UN2 - Modern and Applied Physics Laboratory: Nuclear Labs
- ENGPYS 4UP2 - Modern and Applied Physics Laboratory: Photonics
- ENGPYS 4US2 - Modern and Applied Physics Laboratory: Smart Systems

(See *Note 2* above.)

##### 3 units

- ENSOCTY 4Y03 - Society Capstone Design

##### 18-19 units

- approved technical electives (see *Note 1*)

## Engineering & Management Program

John Hodgins Engineering Building, Room A214-C, ext. 27009

<http://www.eng.mcmaster.ca/engandmgmt/>

The Engineering & Management Programs are described in the Faculty of Engineering sections in this Calendar. These programs are administered jointly by the DeGroote School of Business and the Faculty of Engineering and lead to the B.Eng.Mgt. degree.



## Engineering & Society Program

John Hodgins Engineering Building, Room A214-C, ext. 27679

<https://www.eng.mcmaster.ca/engineering-and-society-program>

The Engineering & Society Programs are described in the Faculty of Engineering section in this Calendar. These programs lead to the B.Eng.Society degree.

## Integrated Biomedical Engineering and Health Sciences Program (IBEHS)

Michael G. DeGroot Centre for Learning, Room 3513, ext. 28347

<http://ibiomed.mcmaster.ca/>

**Faculty as of January 15, 2020**

### CO-DIRECTORS

**Hubert de Bruin**/B.Eng., M.Eng., Ph.D. (*McMaster*), P.Eng.

**Michelle L. MacDonald**/B.Sc., Ph.D. (*McMaster*)

### ASSOCIATE DIRECTOR

**Colin McDonald**/B.Sc., Ph.D. (*Western Ontario*), P.Eng.

### PROGRAM MANAGER

**Alexa Béhar-Bannelier**/B.Com. (Honours) (*McMaster*)

The Integrated Biomedical Engineering and Health Sciences (IBEHS) Programs are offered jointly by the Faculty of Engineering and the Faculty of Health Sciences. These programs lead to the B.Eng.BME or a B.H.Sc. (Honours) degree.

At McMaster, IBEHS students take a common Level I program comprising Mathematics, Materials, Physics, Chemistry, Cellular and Molecular Biology, Graphics Design, Introduction to Professional Engineering and Design, Computation and complementary studies electives. The specialized programs are entered at Level II.

All Level I students who wish to be reviewed for admission to a Level II program in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program for the following Fall/Winter term must submit an Application of Admission to Level II through MOSAIC by the University stated deadline. Students in the IBEHS program must rank both degree options in order of preference, and are permitted to rank up to twelve program choices in total. Rank ordering must be done very carefully because once admitted to a program, no further consideration is given to lower ranked choices.

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0. All Level II programs are limited enrollment and entry into a Level II program is competitive. The admission into each Level II program is determined by the Cumulative Grade Point Average (GPA) and order of ranked programs. All McMaster University courses completed (including electives and upper year courses) are calculated into Cumulative Grade Point Average (GPA) up to the time of Level II program admission review. Grades earned in summer school, after program admission review, will not change student Level II program eligibility. A student in IBEHS I with a Grade Point Average (GPA) less than 4.0 can no longer continue in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program.

Students must follow the program requirements of the Calendar in effect when they enter Level II.

Courses offered by the IBEHS program include two types of elective courses, which are governed by regulations, as follows:

- **Complementary Studies Electives** are broadening courses with subject matter that deals with central issues, methodologies and thought processes of the humanities and social sciences. In addition to

ENGINEER 4A03, or equivalent, complementary studies electives are required in the IBEHS program.

- **IBEHS Technical Electives** are approved courses offered by the Integrated Biomedical Engineering & Health Sciences program or various departments throughout the University in subjects relevant to the particular program. A list is available on the program website.

### TRANSFERRING TO GRADUATE WITH A THREE-YEAR B.H.SC. DEGREE FROM THE B.H.SC. (HONOURS) HEALTH, ENGINEERING SCIENCE AND ENTREPRENEURSHIP (HESE) STREAM OF THE INTEGRATED BIOMEDICAL ENGINEERING AND HEALTH SCIENCES PROGRAM

Students who successfully complete at least 90 units including all admission requirements and program-specific course requirements up to the end of Level III of the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) stream of the Integrated Biomedical Engineering and Health Sciences Program, with a minimum Grade Point Average of 4.0 may request permission from the Integrated Biomedical Engineering and Health Sciences office for transfer to graduate with the B.H.Sc. (exit) degree.

### TRANSFERRING TO GRADUATE WITH A THREE-YEAR B.A.SC. DEGREE FROM ONE OF THE B.ENG.BME BIOMEDICAL ENGINEERING STREAMS OF THE INTEGRATED BIOMEDICAL ENGINEERING AND HEALTH SCIENCES PROGRAM

Students who successfully complete at least 90 units including all admission requirements and program-specific course requirements up to the end of Level III of one of the B.Eng.BME Biomedical Engineering streams of the Integrated Biomedical Engineering and Health Sciences Program, with a minimum Grade Point Average of 4.0 may request permission from the Office of the Associate Dean of Engineering (Academic) for transfer to graduate with the B.A.Sc. (exit) degree.

### IBEHS I:

- Integrated Biomedical Engineering and Health Sciences (IBEHS) I/  
Integrated Biomedical Engineering and Health Sciences (IBEHS) I Co-op

### LEVEL II PROGRAM(S) LEADING TO THE B.ENG.BME DEGREE INCLUDE:

- Chemical and Biomedical Engineering, Chemical and Biomedical Engineering Co-Op (B.Eng.BME)
- Civil and Biomedical Engineering, Civil and Biomedical Engineering Co-Op (B.Eng.BME)
- Electrical and Biomedical Engineering, Electrical and Biomedical Engineering Co-Op (B.Eng.BME)
- Engineering Physics and Biomedical Engineering, Engineering Physics and Biomedical Engineering Co-Op (B.Eng.BME)
- Materials and Biomedical Engineering, Materials and Biomedical Engineering Co-Op (B.Eng.BME)
- Mechanical and Biomedical Engineering, Mechanical and Biomedical Engineering Co-Op (B.Eng.BME)
- Mechatronics and Biomedical Engineering, Mechatronics and Biomedical Engineering Co-Op (B.Eng.BME)
- Software and Biomedical Engineering, Software and Biomedical Engineering Co-Op (B.Eng.BME)

### LEVEL II PROGRAM(S) LEADING TO THE B.H.SC. (HONOURS) DEGREE INCLUDE:

- Health, Engineering Science and Entrepreneurship (HESE) Specialization;  
Health, Engineering Science and Entrepreneurship (HESE) Specialization Co-Op (B.H.Sc.(Honours))

## Department of Materials Science and Engineering

**Faculty of the Department of Materials Science and Engineering, as of January 15, 2020**

### CHAIR

**Hatem Zurob**

GRADUATE ASSOCIATE CHAIR**Joey Kish**UNDERGRADUATE ASSOCIATE CHAIR**André Phillion**DISTINGUISHED UNIVERSITY PROFESSOR**David S. Wilkinson**/B.A.Sc. (Toronto), Ph.D. (Cambridge), F.R.S.C, F.C.A.E., F.C.I.M., F.A.Cer.S., P.Eng.PROFESSORS**Gianluigi Botton**/B.Eng.Phys., Ph.D. (Ecole Polytechnique), F.R.S.C. /Canada Research Chair in Microscopy of Nanoscale Materials**Joey Kish**/B.Eng., Ph.D. (McMaster), P.Eng.**Adrian Kitai**/B.Sc. (McMaster), Ph.D. (Cornell), P.Eng.**Dmitri V. Malakhov**/B.Sc. (Moscow), M.Sc., Ph.D. (Novosibirsk, Russia), L.E.L.**Joseph R. McDermid**/B.Sc. (Hons.) (Queen's), M. Eng., Ph.D. (McGill) P.Eng./NSERC/Stelco Inc. Industrial Research Chair in Advanced Coated Steels**Marek Niewczas**/M.Sc., Ph.D. (Krakow), P.Eng.**Gu Xu**/M.Sc., Ph.D. (Pittsburgh), D.E.S. (Columbia), F.C.A.E., P.Eng.**Igor Zhitomirsky**/M.Sc. (State University, Kalinin), Ph.D. (Karpov Institute, Moscow), P.Eng. /Distinguished Engineering Professor**Hatem S. Zurob**/B.Eng., Ph.D. (McMaster) P.Eng.ADJUNCT PROFESSORS**Mansoor Barati**/M.Sc. (Isfahan), Ph.D. (McMaster)**Yves Brechet**/D.E.A. (Ecole Polytechnique), Ph.D. (Grenoble)**Kenneth S. Coley**/B.Sc. (Strathclyde), Ph.D., D.I.C. (Imperial College, London), F.C.I.M., P.Eng.**Michael Greenwood**/B.Sc. (Dalhousie), M.A.Sc., Ph.D. (McMaster)**Jidong Kang**/B.Sc. (Nanchang, Hong Kong), M.A.Sc. (Xi'an Jiaotong), Ph.D. (Tianjin)**Sorin Lazar**/Ph.D. (Delft)**Stanely Sun**/B.Sc., M.A.Sc.(Beijing), Ph.D. (McMaster)**S.V. Subramanian**/B.Sc. (Banaras), M.Met., Ph.D. (Sheffield)**Colin Scott**/B. Sc. (Edinburgh), Ph.D (Glasgow)**Y. (Norman) Zhou**/B.A.Sc., M.A.Sc. (Tsinghua), Ph.D. (Toronto), P.Eng.ASSOCIATE PROFESSORS**Nabil Bassim**/B. Sc. (South Florida), M. Sc., Ph.D. (Florida)**Kathryn Grandfield**/B.Eng., M.A.Sc. (McMaster), Ph.D. (Uppsala)**André Phillion**/B.Eng (McMaster), M.A.Sc., Ph.D. (British Columbia), P.Eng.ASSISTANT PROFESSORS**Neslihan Dogan**/B.Sc. (Yildiz Technical), Ph.D. (Swinburne), P.Eng. /Stelco Research Chair on Sustainable Steel Production**Oleg Rubel**/M.Sc. Ph.D., (Zaporizhzhya Technical University), P.Eng.**Kyla Sask**/B.Sc.(Hons.)(Queen's), Ph.D. (McMaster)ASSOCIATE MEMBERS**Adam P. Hitchcock**/(Chemistry) B.Sc. (McMaster), Ph.D. (British Columbia), F.C.I.C.**Mukesh Jain**/(Mechanical Engineering) B.E.(IIS), M.A.Sc. (Windsor), Ph.D. (Washington)**Ishwar K. Puri**/B.Sc. (Delhi), M.S., Ph.D. (California-San Diego)

## Bachelor of Engineering

### MATERIALS ENGINEERING, MATERIALS ENGINEERING CO-OP (B.ENG.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based

on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives. Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

1. The Department of Materials Science and Engineering offers a common core with five streams of study in Levels III and IV. Students may complete the required units as listed in the calendar in Levels III and IV by choosing a course selection according to the following elective streams:

- Biomaterials
- Data Analytics & Computational Materials
- Materials Generalist
- Materials for Manufacturing & Infrastructure
- Smart Materials & Devices

A list of approved technical electives for each stream is available on the Department of Materials Science and Engineering website. Note that a course in a stream may not be taught when the enrollment is (expected to be) too low.

2. Students entering Level II should register in the Materials Science and Engineering program and follow the requirements outlined below. Students entering Levels III, IV or V should follow the program requirements as specified in the Undergraduate Calendar of the year of their entry into Level II. Such students are advised to refer to their degree audit for the program in which they are registered and to consult with the Department of Materials Science and Engineering for further information.

3. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EEO. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

#### REQUIREMENTS FOR STUDENTS WHO ENTER THE PROGRAM IN 2020-2021 OR LATER

##### LEVEL II: 36 UNITS

###### 8 units

- CHEMENG 2004 - Fluid Mechanics
- ENGINEER 2P04 - Engineering Mechanics

###### 19 units

- MATLS 2B03 - Introduction to the Thermodynamics of Materials
- MATLS 2D03 - Thermodynamics of Alloys and Phase Diagrams
- MATLS 2H04 A/B - Integrated Materials Engineering Laboratory
- MATLS 2Q03 - Electronic Properties of Materials
- MATLS 2X03 - Crystalline Structure of Materials
- MATLS 3M03 - Mechanical Behaviour of Materials

###### 6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

###### 3 units

- approved complementary studies electives

##### LEVEL III: 37-40 UNITS

###### 3 units

- ENGINEER 2B03 - Engineering Economics

###### 8 units

- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- CHEMENG 3A04 - Heat Transfer

###### 17 units

- MATLS 3B03 - Manufacturing Engineering of Multifunctional and Biomedical Materials
- MATLS 3E04 - Mass Transfer

- MATLS 3F03 - High-Temperature Materials Production
- MATLS 3J03 - Statistical Methods for Materials Engineers
- MATLS 3T04 - Phase Transformations

9-12 units

- approved Level III or IV technical electives from approved List A or List B from approved List A or List B

**LEVEL IV: 35-39 UNITS**7 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- ENGINEER 4T04 - Materials Selection in Design and Manufacturing

9 units

- MATLS 4I03 - Sustainable Manufacturing Processes
- MATLS 4Z06 A/B - Materials Engineering Capstone

4 units

from

- MATLS 4LA2 - Heat-Treatable Al Alloys
- MATLS 4LB2 - Synthesis and Characterization of Biomedical Coatings
- MATLS 4LF2 - Synthesis, Properties and Application of Thin Films
- MATLS 4LS2 - Physical Metallurgy of Steels

3 units

- approved complementary studies electives

9-10 units

- approved Level III or IV technical electives

3-4 units

- approved Level III or IV technical electives from approved List B (Interdisciplinary engineering courses)

**REQUIREMENTS FOR STUDENTS WHO ENTERED THE PROGRAM PRIOR TO 2020-2021****LEVEL II: 36 UNITS**4 units

- CHEMENG 2004 - Fluid Mechanics

7 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- ENGINEER 2P04 - Engineering Mechanics

16 units

- MATLS 2B03 - Introduction to the Thermodynamics of Materials
- MATLS 2D03 - Thermodynamics of Alloys and Phase Diagrams
- MATLS 2H04 A/B - Integrated Materials Engineering Laboratory
- MATLS 2Q03 - Electronic Properties of Materials
- MATLS 2X03 - Crystalline Structure of Materials

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

3 units

- approved complementary studies electives

**LEVEL III: 36-39 UNITS**3 units

- ENGINEER 2B03 - Engineering Economics

24 units

- CHEMENG 3A04 - Heat Transfer
- MATLS 3B03 - Manufacturing Engineering of Multifunctional and Biomedical Materials
- MATLS 3E04 - Mass Transfer
- MATLS 3F03 - High-Temperature Materials Production
- MATLS 3J03 - Statistical Methods for Materials Engineers
- MATLS 3M03 - Mechanical Behaviour of Materials
- MATLS 3T04 - Phase Transformations

9-12 units

from

- MATLS 3C03 - Applied Thermodynamics
- Approved Level III or IV technical electives

**LEVEL IV: 35-39 UNITS**16 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- ENGINEER 4T04 - Materials Selection in Design and Manufacturing
- MATLS 4I03 - Sustainable Manufacturing Processes
- MATLS 4Z06 A/B - Materials Engineering Capstone

4 units

from

- MATLS 4LA2 - Heat-Treatable Al Alloys
- MATLS 4LB2 - Synthesis and Characterization of Biomedical Coatings
- MATLS 4LF2 - Synthesis, Properties and Application of Thin Films
- MATLS 4LS2 - Physical Metallurgy of Steels

3 units

- Approved complementary studies electives

12-16 units

from

- ENGINEER 3MF3 - Materials Fabrication
- Approved Level III or IV technical electives

## Bachelor of Engineering and Biomedical Engineering

### MATERIALS AND BIOMEDICAL ENGINEERING, MATERIALS AND BIOMEDICAL ENGINEERING CO-OP (B.ENG.BME)

**ADMISSION TO LEVEL II IBEHS PROGRAMS**

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0.

All students who successfully complete the first year of the program will have a space in one of the two degree options. As enrolment is limited in each of the two degree options (HESE or BME), where there is more demand than spaces, competition will be based on first-year academic achievement. Students seeking admission to the BME specialization will be admitted to one of eight Level II Engineering programs (Chemical, Civil, Electrical, Engineering Physics, Materials, Mechanical, Mechatronics, or Software). Admission to a Level II Engineering program is guaranteed for all students who meet the general progress requirements. All engineering programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on GPA. Students who do not meet the requirements to proceed to Level II in May will have a *Pending* flag put on their allocation. The *Pending* flag will be removed in August if the student completes the requirements over the summer.

**NOTES**

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EE0. IBEHS 2EC0 will be added to the academic record for each four month work term.
2. Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to eight units of research project or independent study courses. A full listing can be found on the IBEHS website.
3. Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

**REQUIREMENTS****LEVEL II: 39 UNITS**9 units

- CHEM 1AA3 - Introductory Chemistry II

- HTHSCI 2E03 - Inquiry II: Biochemistry
- IBEHS 2P03 - Health Solutions Design Projects II

27 units

- CHEMENG 2004 - Fluid Mechanics
- ENGINEER 2P04 - Engineering Mechanics
- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV
- MATLS 2B03 - Introduction to the Thermodynamics of Materials
- MATLS 2D03 - Thermodynamics of Alloys and Phase Diagrams
- MATLS 2H04 A/B - Integrated Materials Engineering Laboratory
- MATLS 2X03 - Crystalline Structure of Materials

3 units

- Complementary Studies

**LEVEL III: 39 UNITS (2020-2021 ONLY)**16 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

17 units

- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- MATLS 2Q03 - Electronic Properties of Materials
- MATLS 3B03 - Manufacturing Engineering of Multifunctional and Biomedical Materials
- MATLS 3E04 - Mass Transfer
- MATLS 3M03 - Mechanical Behaviour of Materials

6 units

- Complementary Studies

**LEVEL III: 39 UNITS (EFFECTIVE 2021-2022)**19 units

- HTHSCI 2F03 - Human Physiology and Anatomy I
- HTHSCI 2FF3 - Human Physiology and Anatomy II
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

17 units

- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- MATLS 2Q03 - Electronic Properties of Materials
- MATLS 3B03 - Manufacturing Engineering of Multifunctional and Biomedical Materials
- MATLS 3E04 - Mass Transfer
- MATLS 3M03 - Mechanical Behaviour of Materials

3 units**LEVEL IV: 35 UNITS (2020-21 ONLY)**20 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

15 units

- CHEMENG 3A04 - Heat Transfer
- MATLS 3B03 - Manufacturing Engineering of Multifunctional and

Biomedical Materials

- MATLS 3E04 - Mass Transfer
- MATLS 3T04 - Phase Transformations

**LEVEL IV: 37-38 UNITS (EFFECTIVE 2021-2022)**3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 20A3 - Organic Chemistry I

20 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

11 units

- CHEMENG 3A04 - Heat Transfer
- MATLS 3F03 - High-Temperature Materials Production
- MATLS 3T04 - Phase Transformations

3-4 units

- approved Level III or IV tech elective

**LEVEL V: 38-40 UNITS**3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 20A3 - Organic Chemistry I

9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

10 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- ENGINEER 4T04 - Materials Selection in Design and Manufacturing
- MATLS 4I03 - Sustainable Manufacturing Processes

4 units

from

- MATLS 4LA2 - Heat-Treatable Al Alloys
- MATLS 4LB2 - Synthesis and Characterization of Biomedical Coatings
- MATLS 4LF2 - Synthesis, Properties and Application of Thin Films
- MATLS 4LS2 - Physical Metallurgy of Steels

6-7 units

- approved IBEHS Technical Elective

6-7 units

- approved Level III or IV tech elective

**LEVEL V: 35-39 UNITS (EFFECTIVE 2022-2023)**9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

10 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- ENGINEER 4T04 - Materials Selection in Design and Manufacturing
- MATLS 4I03 - Sustainable Manufacturing Processes

4 units

from

- MATLS 4LA2 - Heat-Treatable Al Alloys
- MATLS 4LB2 - Synthesis and Characterization of Biomedical Coatings
- MATLS 4LF2 - Synthesis, Properties and Application of Thin Films
- MATLS 4LS2 - Physical Metallurgy of Steels

6-8 units

- approved IBEHS Technical Elective

6-8 units



- approved Level III or IV tech elective

## Bachelor of Engineering and Management

### MATERIALS ENGINEERING AND MANAGEMENT, MATERIALS ENGINEERING AND MANAGEMENT CO-OP (B.ENG.MGT.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

1. The Department of Materials Science and Engineering offers a common core with five streams of study in Levels III and IV. Students may complete the required units as listed in the calendar in Levels III and IV by choosing a course selection according to the following elective streams:

- Biomaterials
- Data Analytics & Computational Materials
- Materials Generalist
- Materials for Manufacturing & Infrastructure
- Smart Materials & Devices

A list of approved technical electives for each stream is available on the Department of Materials Science and Engineering website. Note that a course in a stream may not be taught when the enrollment is (expected to be) too low.

2. Students entering Level II should register in the Materials Science and Engineering program and follow the requirements outlined below. Students entering Levels III, IV or V should follow the program requirements as specified in the Undergraduate Calendar of the year of their entry into Level II. Such students are advised to refer to their degree audit for the program in which they are registered and to consult with the Department of Materials Science and Engineering for further information.

3. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EEO. ENGINEER 2ECO will be added to the academic record for each four month work term.

#### REQUIREMENTS FOR STUDENTS WHO ENTER THE PROGRAM IN 2020-2021 OR LATER

##### LEVEL II: 36 UNITS

###### 8 units

- CHEMENG 2004 - Fluid Mechanics
- ENGINEER 2P04 - Engineering Mechanics

###### 3 units

- COMMERCE 2MA3 - Introduction to Marketing

###### 3 units

- ECON 1BB3 - Introductory Macroeconomics

###### 3 units

- ENGNMGT 2AA3 - Communication Skills

###### 6 units

- MATH 2Z03 - Engineering Mathematics III

- MATH 2ZZ3 - Engineering Mathematics IV

###### 13 units

- MATLS 2B03 - Introduction to the Thermodynamics of Materials
- MATLS 2D03 - Thermodynamics of Alloys and Phase Diagrams
- MATLS 2H04 A/B
- MATLS 2X03 - Crystalline Structure of Materials

##### LEVEL III: 36 UNITS

###### 12 units

- COMMERCE 1AA3 - Introductory Financial Accounting (or 2AA3)
- COMMERCE 1BA3 - Organizational Behaviour (or 2BA3)
- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 2FA3 - Introduction to Finance

###### 8 units

- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- CHEMENG 3A04 - Heat Transfer

###### 16 units

- MATLS 2Q03 - Electronic Properties of Materials
- MATLS 3B03 - Manufacturing Engineering of Multifunctional and Biomedical Materials
- MATLS 3E04 - Mass Transfer
- MATLS 3F03 - High-Temperature Materials Production
- MATLS 3M03 - Mechanical Behaviour of Materials

##### LEVEL IV: 34-37 UNITS

###### 9 units

- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management

###### 3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

###### 3 units

- ENGNMGT 4A03 - Innovation Driven Project Development and Management

###### 7 units

- MATLS 3J03 - Statistical Methods for Materials Engineers
- MATLS 3T04 - Phase Transformations

###### 6-8 units

- approved Level III or IV technical electives from approved List A or List B

###### 3-4 units

- approved Level III or IV technical electives from approved List B (Interdisciplinary engineering courses)

###### 3 units

- Commerce electives selected from Level III or IV Commerce

##### LEVEL V: 35-37 UNITS

###### 6 units

- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

###### 13 units

- ENGINEER 4T04 - Materials Selection in Design and Manufacturing
- MATLS 4I03 - Sustainable Manufacturing Processes
- MATLS 4Z06 A/B - Materials Engineering Capstone

###### 4 units

from

- MATLS 4LA2 - Heat-Treatable Al Alloys
- MATLS 4LB2 - Synthesis and Characterization of Biomedical Coatings
- MATLS 4LF2 - Synthesis, Properties and Application of Thin Films
- MATLS 4LS2 - Physical Metallurgy of Steels

###### 3 units

- ENGNMGT 5B03 - Engineering and Management Projects

###### 3 units

- Commerce electives selected from Level III or IV Commerce

6-8 units

- Approved Level III or IV technical electives from approved List A or List B

**REQUIREMENTS FOR STUDENTS WHO ENTERED THE PROGRAM PRIOR TO 2020-2021****LEVEL II: 32 UNITS**4 units

- CHEMENG 2004 - Fluid Mechanics

3 units

- COMMERCE 2MA3 - Introduction to Marketing

3 units

- ECON 1BB3 - Introductory Macroeconomics

3 units

- ENGNMGT 2AA3 - Communication Skills

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

13 units

- MATLS 2B03 - Introduction to the Thermodynamics of Materials
- MATLS 2D03 - Thermodynamics of Alloys and Phase Diagrams
- MATLS 2H04 A/B - Integrated Materials Engineering Laboratory
- MATLS 2X03 - Crystalline Structure of Materials

**LEVEL III: 35-37 UNITS**9 units

- COMMERCE 1AA3 - Introductory Financial Accounting (or 2AA3)
- COMMERCE 1BA3 - Organizational Behaviour (or 2BA3)
- COMMERCE 2FA3 - Introduction to Finance

7 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- ENGINEER 2P04 - Engineering Mechanics

13 units

- MATLS 2Q03 - Electronic Properties of Materials
- MATLS 3B03 - Manufacturing Engineering of Multifunctional and Biomedical Materials
- MATLS 3E04 - Mass Transfer
- MATLS 3M03 - Mechanical Behaviour of Materials

6-8 units

from

- MATLS 3C03 - Applied Thermodynamics
- approved Level III or IV technical electives

**LEVEL IV: 38-40 UNITS**4 units

- CHEMENG 3A04 - Heat Transfer

12 units

- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- ENGNMGT 4A03 - Innovation Driven Project Development and Management

10 units

- MATLS 3J03 - Statistical Methods for Materials Engineers
- MATLS 3M03 - Mechanical Behaviour of Materials
- MATLS 3T04 - Phase Transformations

6-8 units

- approved Level III or IV technical electives

**LEVEL V: 35-36 UNITS**6 units

- COMMERCE 4QA3 - Operations Modelling and Analysis

- COMMERCE 4QX3 - Special Topics in Operations Management

13 units

- ENGINEER 4T04 - Materials Selection in Design and Manufacturing
- MATLS 4I03 - Sustainable Manufacturing Processes
- MATLS 4Z06 A/B - Materials Engineering Capstone

4 units

from

- MATLS 4LA2 - Heat-Treatable Al Alloys
- MATLS 4LB2 - Synthesis and Characterization of Biomedical Coatings
- MATLS 4LF2 - Synthesis, Properties and Application of Thin Films
- MATLS 4LS2 - Physical Metallurgy of Steels

3 units

- ENGNMGT 5B03 - Engineering and Management Projects

3 units

- Commerce electives selected from Level III or IV Commerce

3-4 units

from

- ENGINEER 3MF3 - Materials Fabrication
- Approved Level III or IV technical electives

## Bachelor of Engineering and Society

### MATERIALS ENGINEERING AND SOCIETY, MATERIALS ENGINEERING AND SOCIETY CO-OP (B.ENG.SOCIETY)

**ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTES**

1. The Department of Materials Science and Engineering offers a common core with five streams of study in Levels III and IV. Students may complete the required units as listed in the calendar in Levels III and IV by choosing a course selection according to the following elective streams:

- Biomaterials
- Data Analytics & Computational Materials
- Materials Generalist
- Materials for Manufacturing & Infrastructure
- Smart Materials & Devices

A list of approved technical electives for each stream is available on the Department of Materials Science and Engineering website. Note that a course in a stream may not be taught when the enrollment is (expected to be) too low.

2. Students entering Level II should register in the Materials Science and Engineering program and follow the requirements outlined below. Students entering Levels III, IV or V should follow the program requirements as specified in the Undergraduate Calendar of the year of their entry into Level II. Such students are advised to refer to their degree audit for the program in which they are registered and to consult with the Department of Materials Science and Engineering for further information.
3. A minimum of 18 units of focus elective courses is required for the

Engineering and Society program. (This does not include the six units of complementary studies elective in Level I.)

4. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

### REQUIREMENTS FOR STUDENTS WHO ENTER THE PROGRAM IN 2020-2021 OR LATER

#### LEVEL II: 36 UNITS

##### 8 units

- CHEMENG 2004 - Fluid Mechanics
- ENGINEER 2P04 - Engineering Mechanics

##### 13 units

- MATLS 2B03 - Introduction to the Thermodynamics of Materials
- MATLS 2D03 - Thermodynamics of Alloys and Phase Diagrams
- MATLS 2H04 A/B - Integrated Materials Engineering Laboratory
- MATLS 2X03 - Crystalline Structure of Materials

##### 6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

##### 6 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I
- ENGSOCTY 2Y03 - Case Studies in History and Technology

##### 3 units

- Engineering and Society focus electives

#### LEVEL III: 33-36

##### 8 units

- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- CHEMENG 3A04 - Heat Transfer

##### 16 units

- MATLS 2Q03 - Electronic Properties of Materials
- MATLS 3B03 - Manufacturing Engineering of Multifunctional and Biomedical Materials
- MATLS 3E04 - Mass Transfer
- MATLS 3F03 - High-Temperature Materials Production
- MATLS 3M03 - Mechanical Behaviour of Materials

##### 3 units

- ENGSOCTY 3Y03 - Technology and Society

##### 6-9 units

- Engineering and Society focus electives

#### LEVEL IV: 31-37 UNITS

##### 3 units

- ENGINEER 2B03 - Engineering Economics

##### 7 units

- MATLS 3J03 - Statistical Methods for Materials Engineers
- MATLS 3T04 - Phase Transformations

##### 6-8 units

- approved Level III or IV technical electives from approved List A or List B

##### 3-4 units

- approved Level III or IV technical electives from approved List B (Interdisciplinary engineering courses)

##### 6 units

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

##### 6-9 units

- Engineering and Society focus electives

#### LEVEL V: 32-37 UNITS

##### 13 units

- ENGINEER 4T04 - Materials Selection in Design and Manufacturing
- MATLS 4I03 - Sustainable Manufacturing Processes

- MATLS 4Z06 A/B - Materials Engineering Capstone

##### 4 units

from

- MATLS 4LA2 - Heat-Treatable Al Alloys
- MATLS 4LB2 - Synthesis and Characterization of Biomedical Coatings
- MATLS 4LF2 - Synthesis, Properties and Application of Thin Films
- MATLS 4LS2 - Physical Metallurgy of Steels

##### 3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

##### 3 units

- ENGSOCTY 4Y03 - Society Capstone Design

##### 3-6 units

- Engineering and Society focus electives

### REQUIREMENTS FOR STUDENTS WHO ENTERED THE PROGRAM PRIOR TO 2020-2021

#### LEVEL II: 35 UNITS

##### 4 units

- CHEMENG 2004 - Fluid Mechanics

##### 13 units

- MATLS 2B03 - Introduction to the Thermodynamics of Materials
- MATLS 2D03 - Thermodynamics of Alloys and Phase Diagrams
- MATLS 2H04 A/B - Integrated Materials Engineering Laboratory
- MATLS 2X03 - Crystalline Structure of Materials

##### 6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

##### 6 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I
- ENGSOCTY 2Y03 - Case Studies in History and Technology

##### 6 units

- Engineering and Society focus electives

#### LEVEL III: 32-37

##### 7 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- ENGINEER 2P04 - Engineering Mechanics

##### 13 units

- MATLS 2Q03 - Electronic Properties of Materials
- MATLS 3B03 - Manufacturing Engineering of Multifunctional and Biomedical Materials
- MATLS 3E04 - Mass Transfer
- MATLS 3F03 - High-Temperature Materials Production

##### 6-8 units

from

- MATLS 3C03 - Applied Thermodynamics
- approved Level III or IV technical electives

##### 3 units

- ENGSOCTY 3Y03 - Technology and Society

##### 3-6 units

- Engineering and Society focus electives

#### LEVEL IV: 32-37 UNITS

##### 3 units

- ENGINEER 2B03 - Engineering Economics

##### 4 units

- CHEMENG 3A04 - Heat Transfer

##### 10 units

- MATLS 3J03 - Statistical Methods for Materials Engineers
- MATLS 3M03 - Mechanical Behaviour of Materials
- MATLS 3T04 - Phase Transformations

##### 6-8 units

- approved Level III or IV technical electives

##### 6 units

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

3-6 units

- Engineering and Society focus electives

**LEVEL V: 32-36 UNITS**

13 units

- ENGINEER 4T04 - Materials Selection in Design and Manufacturing
- MATLS 4I03 - Sustainable Manufacturing Processes
- MATLS 4Z06 A/B - Materials Engineering Capstone

4 units

from

- MATLS 4LA2 - Heat-Treatable Al Alloys
- MATLS 4LB2 - Synthesis and Characterization of Biomedical Coatings
- MATLS 4LF2 - Synthesis, Properties and Application of Thin Films
- MATLS 4LS2 - Physical Metallurgy of Steels

3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

3 units

- ENGSOCTY 4Y03 - Society Capstone Design

6-9 units

- Engineering and Society focus electives

3-4 units

from

- ENGINEER 3MF3 - Materials Fabrication
- approved Level III or IV technical electives

## Department of Mechanical Engineering

Faculty of the Department of Mechanical Engineering, as of January 15, 2020

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**Marilyn Lightstone**

ASSOCIATE CHAIR (UNDERGRADUATE PROGRAMS)

**Gregory Wohl**

ASSOCIATE CHAIR (GRADUATE STUDIES)

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## Bachelor of Engineering

### MECHANICAL ENGINEERING, MECHANICAL ENGINEERING CO-OP (B.ENG.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

- Level IV Mechanical Engineering students must choose one of the following option areas and complete sufficient units of the listed required courses and technical electives.
- PROGRAM OPTION COMPULSORY COURSES:
  - General:** five of any approved technical electives
  - Mechanics and Design:** two approved technical electives; plus three of CHEMENG 4T03, ENGINEER 4T04, MATLS 4T03, MECHENG 4B03, 4BB3, 4CC3, 4E03, 4H03, 4I03, 4K03, 4L03, 4N03, 4T03, 4X04, 4Y03, 4Z03
  - Manufacturing:** two approved technical electives; plus three of CHEMENG 4X03, ENGINEER 4J03, 4T04, MATLS 4T03, MECHENG 4B03, 4C03, 4D03, 4E03, 4H03, 4K03, 4N03, 4T03, 4X04, 4Y03, 4Z03
  - Thermofluids and Energy Systems:** two approved technical electives; plus MECHENG 4S03; plus two of CHEMENG 4X03, ENGPYS 3D03, 4D03, 4NE3, 4P03, MECHENG 4AA3, 4I03, 4J03, 4N03, 4O04, 4T03, 4U03, 4W03, 4X04, 4Y03
  - Approved Technical Electives:** any of the required program option courses listed above, plus CIVENG 3K03, COMMERCE 4QA3, ENGINEER 3N03, 4EX3
- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

#### REQUIREMENTS

##### LEVEL II: 40 UNITS

###### 3 units

- ENGINEER 2B03 - Engineering Economics

###### 6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

###### 31 units

- MECHENG 2A03 - Design Communication
- MECHENG 2B03 - Mechanical Engineering Measurements
- MECHENG 2C04 - Mechanical Engineering Design I
- MECHENG 2D03 - Mechanical Engineering Design Elements
- MECHENG 2P04 - Statics and Mechanics of Materials
- MECHENG 2Q04 - Engineering Mechanics: Kinetics and Dynamics
- MECHENG 2W04 - Thermodynamics
- MECHENG 3A03 - Engineering Mechanics

- MECHENG 3C03 - Manufacturing Engineering

##### LEVEL III: 37 UNITS

###### 3 units

- ENGINEER 2MM3 - Electrical Circuits and Power

###### 3 units

- MATLS 3M03 - Mechanical Behaviour of Materials

###### 3 units

- MATH 3I03 - Partial Differential Equations for Engineering

###### 25 units

- MECHENG 3E05 - Mechanical Engineering Design II
- MECHENG 3F04 - Modelling and Numerical Solutions
- MECHENG 3M03 A/B - Composite Laboratory
- MECHENG 3O04 - Fluid Mechanics
- MECHENG 3R03 - Heat Transfer
- MECHENG 4Q03 - Mechanical Vibrations
- MECHENG 4R03 - Control Systems

###### 3 units

- STATS 3Y03 - Probability and Statistics for Engineering

##### LEVEL IV: 36-37 UNITS

###### 3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

###### 6 units

- approved complementary studies electives

###### 12 units

- MECHENG 4M06 A/B - Project
- MECHENG 4P03 A/B - Composite Laboratory
- MECHENG 4V03 - Thermo-Fluids Systems Design and Analysis

###### 15-16 units

- Program option courses or approved technical electives. (See *Note 1* above.)

## Bachelor of Engineering and Biomedical Engineering

### MECHANICAL AND BIOMEDICAL ENGINEERING, MECHANICAL AND BIOMEDICAL ENGINEERING CO-OP (B.ENG.BME)

#### ADMISSION TO LEVEL II IBEHS PROGRAMS

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0.

All students who successfully complete the first year of the program will have a space in one of the two degree options. As enrolment is limited in each of the two degree options (HESE or BME), where there is more demand than spaces, competition will be based on first-year academic achievement. Students seeking admission to the BME specialization will be admitted to one of eight Level II Engineering programs (Chemical, Civil, Electrical, Engineering Physics, Materials, Mechanical, Mechatronics, or Software). Admission to a Level II Engineering program is guaranteed for all students who meet the general progress requirements. All engineering programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on GPA. Students who do not meet the requirements to proceed to Level II in May will have a *Pending* flag put on their allocation. The *Pending* flag will be removed in August if the student completes the requirements over the summer.

**NOTES**

- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EE0. IBEHS 2ECO will be added to the academic record for each four month work term.
- Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to eight units of research project or independent study courses. A full listing can be found on the IBEHS website.
- Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

**REQUIREMENTS****LEVEL II: 39 UNITS**12 units

- HTHSCI 2E03 - Inquiry II: Biochemistry
- HTHSCI 2F03 - Human Physiology and Anatomy I
- HTHSCI 2FF3 - Human Physiology and Anatomy II
- IBEHS 2P03 - Health Solutions Design Projects II

27 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV
- MECHENG 2A03 - Design Communication
- MECHENG 2B03 - Mechanical Engineering Measurements
- MECHENG 2P04 - Statics and Mechanics of Materials
- MECHENG 2Q04 - Engineering Mechanics: Kinetics and Dynamics
- MECHENG 2W04 - Thermodynamics
- MECHENG 3A03 - Engineering Mechanics

**LEVEL III: 38 UNITS**16 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

22 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- MATH 3I03 - Partial Differential Equations for Engineering
- MECHENG 2D03 - Mechanical Engineering Design Elements
- MECHENG 3C03 - Manufacturing Engineering
- MECHENG 3M03 A/B - Composite Laboratory
- MECHENG 3O04 - Fluid Mechanics
- MECHENG 3R03 - Heat Transfer

**LEVEL IV: 38-39 UNITS**3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I

20 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

12 units

- MATLS 3M03 - Mechanical Behaviour of Materials
- MECHENG 3E05 - Mechanical Engineering Design II
- MECHENG 3F04 - Modelling and Numerical Solutions

3-4 units

- approved IBEHS Technical Elective

**LEVEL V: 36-37 UNITS (2020-2021 ONLY)**9 units

- IBEHS 5A03
- IBEHS 5B06 A/B

12 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- MECHENG 4P03 A/B - Composite Laboratory
- MECHENG 4Q03 - Mechanical Vibrations
- MECHENG 4V03 - Thermo-Fluids Systems Design and Analysis

3 units

- approved IBEHS Technical Elective

6-7 units

- program option courses or approved technical electives

6 units

- Complementary Studies

**LEVEL V: 39-40 UNITS (2021-2022 ONLY)**9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

15 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- MECHENG 4P03 A/B - Composite Laboratory
- MECHENG 4Q03 - Mechanical Vibrations
- MECHENG 4V03 - Thermo-Fluids Systems Design and Analysis

3-4 units

- approved IBEHS Technical Elective

6 units

- program option courses or approved technical electives

6 units

- Complementary Studies

**LEVEL V: 36-38 UNITS (EFFECTIVE 2022-2023)**9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

12 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- MECHENG 4P03 A/B - Composite Laboratory
- MECHENG 4Q03 - Mechanical Vibrations
- MECHENG 4V03 - Thermo-Fluids Systems Design and Analysis

3-4 units

- approved IBEHS Technical Elective

6-7 units

- program option courses or approved technical electives

6 units

- Complementary Studies

## Bachelor of Engineering and Management

### MECHANICAL ENGINEERING AND MANAGEMENT, MECHANICAL ENGINEERING AND MANAGEMENT CO-OP (B.ENG.MGT.)

**ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0. Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives. Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

### NOTES

- Level IV and Level V Mechanical Engineering and Management students must choose one of the following option areas and complete sufficient units of the listed required courses and technical electives.
- PROGRAM OPTION COMPULSORY COURSES:
  - General:** four of any approved technical electives
  - Mechanics and Design:** one approved technical elective plus three of CHEMENG 4T03, ENGINEER 4T04, MATLS 4T03, MECHENG 4B03, 4BB3, 4CC3, 4E03, 4H03, 4I03, 4K03, 4L03, 4N03, 4T03, 4X04, 4Y03, 4Z03
  - Manufacturing:** one approved technical elective plus three of CHEMENG 4X03, ENGINEER 4J03, 4T04, MATLS 4T03, MECHENG 4B03, 4C03, 4D03, 4E03, 4H03, 4K03, 4N03, 4T03, 4X04, 4Y03, 4Z03
  - Thermofluids and Energy Systems:** one approved technical elective; plus MECHENG 4S03; plus two of CHEMENG 4X03, ENGPYS 3D03, 4D03, 4NE3, 4P03, MECHENG 4AA3, 4I03, 4J03, 4N03, 4O04, 4T03, 4U03, 4W03, 4X04, 4Y03
  - Approved Technical Electives:** any of the required program option courses listed above, plus CIVENG 3K03, ENGINEER 3N03, 4EX3
- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EEO. ENGINEER 2ECO will be added to the academic record for each four month work term.

### REQUIREMENTS

- MATLS 3M03 - Mechanical Behaviour of Materials

#### LEVEL II: 39 UNITS

##### 9 units

- COMMERCE 1AA3 - Introductory Financial Accounting
- COMMERCE 1BA3 - Organizational Behaviour
- COMMERCE 2MA3 - Introduction to Marketing

##### 3 units

- ECON 1BB3 - Introductory Macroeconomics

##### 6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2Z23 - Engineering Mathematics IV

##### 18 units

- MECHENG 2A03 - Design Communication
- MECHENG 2C04 - Mechanical Engineering Design I
- MECHENG 2D03 - Mechanical Engineering Design Elements
- MECHENG 2P04 - Statics and Mechanics of Materials
- MECHENG 2W04 - Thermodynamics

##### 3 units

- ENGMGT 2AA3 - Communication Skills

#### LEVEL III: 40 UNITS (2020-2021 ONLY)

##### 3 units

- COMMERCE 2FA3 - Introduction to Finance

##### 3 units

- ENGINEER 2MM3 - Electrical Circuits and Power

##### 3 units

- MATH 3I03 - Partial Differential Equations for Engineering

##### 3 units

- MATLS 3M03 - Mechanical Behaviour of Materials

##### 25 units

- MECHENG 2B03 - Mechanical Engineering Measurements
- MECHENG 2C04 - Mechanical Engineering Design I
- MECHENG 2Q04 - Engineering Mechanics: Kinetics and Dynamics
- MECHENG 3A03 - Engineering Mechanics
- MECHENG 3F04 - Modelling and Numerical Solutions
- MECHENG 3O04 - Fluid Mechanics
- MECHENG 3R03 - Heat Transfer

##### 3 units

- STATS 3Y03 - Probability and Statistics for Engineering

#### LEVEL III: 39 UNITS (EFFECTIVE 2021-2022)

##### 3 units

- COMMERCE 2FA3 - Introduction to Finance

##### 3 units

- ENGINEER 2MM3 - Electrical Circuits and Power

##### 3 units

- MATH 3I03 - Partial Differential Equations for Engineering

##### 3 units

##### 24 units

- MECHENG 2B03 - Mechanical Engineering Measurements
- MECHENG 2Q04 - Engineering Mechanics: Kinetics and Dynamics
- MECHENG 3A03 - Engineering Mechanics
- MECHENG 3C03 - Manufacturing Engineering
- MECHENG 3F04 - Modelling and Numerical Solutions
- MECHENG 3O04 - Fluid Mechanics
- MECHENG 3R03 - Heat Transfer

##### 3 units

- STATS 3Y03 - Probability and Statistics for Engineering

#### LEVEL IV: 38 UNITS

##### 12 units

- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management

##### 3 units

- ENGMGT 4A03 - Innovation Driven Project Development and Management

##### 17 units

- MECHENG 3E05 - Mechanical Engineering Design II
- MECHENG 3M03 A/B - Composite Laboratory
- MECHENG 4Q03 - Mechanical Vibrations
- MECHENG 4R03 - Control Systems
- MECHENG 4V03 - Thermo-Fluids Systems Design and Analysis

##### 6 units

- List B Program Option Courses or approved technical electives (See *Note 1* above.)

#### LEVEL V: 36-37 UNITS

##### 6 units

- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

##### 6 units

- Commerce electives selected from Level III or IV Commerce

##### 3 units

- ENGMGT 5B03 - Engineering and Management Projects

##### 3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

##### 3 units

- approved complementary studies electives

##### 9 units

- MECHENG 4M06 A/B - Project
- MECHENG 4P03 A/B - Composite Laboratory

##### 6-7 units

- Program Option Courses or approved technical electives.  
(See *Note 1* above.)

## Bachelor of Engineering and Society

### MECHANICAL ENGINEERING AND SOCIETY, MECHANICAL ENGINEERING AND SOCIETY CO-OP (B.ENG.SOCIETY)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

- Level IV and Level V Mechanical Engineering and Society students must choose one of the following option areas and complete sufficient units of the listed required courses and technical electives.
- PROGRAM OPTION COMPULSORY COURSES:
  - **General:** five of any approved technical electives
  - **Mechanics and Design:** two approved technical electives; plus three of CHEMENG 4T03, ENGINEER 4T04, MATLS 4T03, MECHENG 4B03, 4BB3, 4CC3, 4E03, 4H03, 4I03, 4K03, 4L03, 4N03, 4T03, 4X04, 4Y03, 4Z03
  - **Manufacturing:** two approved technical electives; plus three of CHEMENG 4X03, ENGINEER 4J03, 4T04, MATLS 4T03, MECHENG 4B03, 4C03, 4D03, 4E03, 4H03, 4K03, 4N03, 4T03, 4X04, 4Y03, 4Z03
  - **Thermofluids and Energy Systems:** two approved technical electives; plus MECHENG 4S03; plus two of CHEMENG 4X03, ENPHYS 3D03, 4D03, 4NE3, 4P03, MECHENG 4AA3, 4I03, 4J03, 4N03, 4O04, 4T03, 4U03, 4W03, 4X04, 4Y03
  - **Approved Technical Electives:** any of the required program option courses listed above, plus CIVENG 3K03, COMMERCE 4QA3, ENGINEER 3N03, 4EX3
- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.
- A minimum of 18 units of focus elective courses is required for the program. (This does not include the six units of complementary studies elective in Level I.)

#### REQUIREMENTS

##### LEVEL II: 37 UNITS

###### 6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

###### 22 units

- MECHENG 2A03 - Design Communication
- MECHENG 2C04 - Mechanical Engineering Design I
- MECHENG 2D03 - Mechanical Engineering Design Elements
- MECHENG 2P04 - Statics and Mechanics of Materials
- MECHENG 2Q04 - Engineering Mechanics: Kinetics and Dynamics

- MECHENG 2W04 - Thermodynamics

###### 6 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I
- ENGSOCTY 2Y03 - Case Studies in History and Technology

###### 3 units

- Engineering and Society focus electives

##### LEVEL III: 38 UNITS

###### 3 units

- MATLS 3M03 - Mechanical Behaviour of Materials

###### 6 units

- ENGINEER 2B03 - Engineering Economics
- ENGINEER 2MM3 - Electrical Circuits and Power

###### 3 units

- MATH 3I03 - Partial Differential Equations for Engineering

###### 20 units

- MECHENG 2B03 - Mechanical Engineering Measurements
- MECHENG 3A03 - Engineering Mechanics
- MECHENG 3C03 - Manufacturing Engineering
- MECHENG 3F04 - Modelling and Numerical Solutions
- MECHENG 3O04 - Fluid Mechanics
- MECHENG 3R03 - Heat Transfer

###### 3 units

- ENGSOCTY 3Y03 - Technology and Society

###### 3 units

- Engineering and Society focus electives

##### LEVEL IV: 38 UNITS (2020-2021 ONLY)

###### 3 units

- MATLS 3M03 - Mechanical Behaviour of Materials

###### 3 units

- STATS 3Y03 - Probability and Statistics for Engineering

###### 17 units

- MECHENG 3E05 - Mechanical Engineering Design II
- MECHENG 3M03 A/B - Composite Laboratory
- MECHENG 4Q03 - Mechanical Vibrations
- MECHENG 4R03 - Control Systems
- MECHENG 4V03 - Thermo-Fluids Systems Design and Analysis

###### 3 units

- Program option courses or approved technical electives  
(See *Note 1* above.)

###### 6 units

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

###### 6 units

- Engineering and Society focus electives

##### LEVEL IV: 38 UNITS (EFFECTIVE 2021-2022)

###### 3 units

- STATS 3Y03 - Probability and Statistics for Engineering

###### 17 units

- MECHENG 3E05 - Mechanical Engineering Design II
- MECHENG 3M03 A/B - Composite Laboratory
- MECHENG 4Q03 - Mechanical Vibrations
- MECHENG 4R03 - Control Systems
- MECHENG 4V03 - Thermo-Fluids Systems Design and Analysis

###### 3 units

- Program option courses or approved technical electives  
(See *Note 1* above.)

###### 6 units

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

###### 9 units

- Engineering and Society focus electives



**LEVEL V: 30-37 UNITS**9 units

- MECHENG 4M06 A/B - Project
- MECHENG 4P03 A/B - Composite Laboratory

12-13 units

- Program option courses or approved technical electives  
(See *Note 1* above.)

3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

3 units

- ENGSOCTY 4Y03 - Society Capstone Design

3-9 units

- Engineering and Society focus electives

## W. Booth School of Engineering Practice and Technology

Engineering Technology Building (ETB), Room 509, ext. 26401

<https://www.eng.mcmaster.ca/sept>

DIRECTOR, W. BOOTH SCHOOL OF ENGINEERING PRACTICE AND TECHNOLOGY

**M. Elbestawi**/Ph.D., (*McMaster*), FCAE, P.Eng.

ASSOCIATE DIRECTOR, UNDERGRADUATE BACHELOR OF TECHNOLOGY DEGREE PROGRAM

**D. Centea**/B.Eng. (*Brasov*), M.Phil. (*Bradford, England*), PhD (*McMaster*)

**FOUR-YEAR DEGREE PROGRAMS**

PROGRAM CHAIR, AUTOMATION ENGINEERING TECHNOLOGY

**T. Wanyama**/B.Eng. (*Makerere*), M.Eng. (*New South Wales*), PhD (*Calgary*), P.Eng.

PROGRAM CHAIR, AUTOMOTIVE AND VEHICLE ENGINEERING TECHNOLOGY

**T. (Ka-Ming) Yuen**/B.Eng. (*McMaster*), M.Eng. (*McMaster*), PhD (*McMaster*) P.Eng.

PROGRAM CHAIR, BIOTECHNOLOGY

**A. Rajabzadeh**/B.Sc., M.Sc. (*Sharif*), Ph.D. (*Waterloo*), P.Eng  
CHAIR, MANAGEMENT

**M. Justason**/B.Eng.Mgmt., M.Eng. (*McMaster*), MBA (*Western*), P.Eng.

**DEGREE COMPLETION PROGRAMS**

PROGRAM CHAIR, CIVIL ENGINEERING INFRASTRUCTURE TECHNOLOGY

**M. Justason**/B.Eng.Mgmt., M.Eng. (*McMaster*), MBA (*Western*), P.Eng.

PROGRAM CHAIR, MANUFACTURING ENGINEERING TECHNOLOGY

**E. Ng**/B.Eng. (Hons.), Ph.D. (*Birmingham*)

PROGRAM CHAIR, POWER AND ENERGY ENGINEERING TECHNOLOGY

**C. Tang**/B.A.Sc. (*Waterloo*), M.Eng. (*Toronto*), Ph.D. (*McMaster*), P.Eng., SMIEEE

PROGRAM CHAIR, SOFTWARE ENGINEERING TECHNOLOGY

**S. Srinivasan**/B.Eng. (*Bombay*), M.Sc., Ph.D. (*Michigan*), P.Eng.

CHAIR, MANAGEMENT

**M. Justason**/B.Eng.Mgmt., M.Eng. (*McMaster*), MBA (*Western*), P.Eng.

BUSINESS MANAGER

**M. Mantock**/B.A.

TEAM LEAD, ACADEMIC PROGRAMS

**S. Sullivan**/B.A.

ADMINISTRATIVE ASSISTANT

**S. Bernard**

The Bachelor of Technology (B.Tech.) programs, within the Faculty of Engineering's W. Booth School of Engineering Practice and Technology, provide a degree-level technological education that is distinct from that offered in Bachelor of Engineering programs. These programs are more oriented to applications in specific technologies, with less emphasis on broader mathematical and scientific foundations than a corresponding engineering

program. Graduates will have considerably more breadth and depth in their area of technology than graduates of college technology diploma programs. For degree completion programs, a second objective is to provide a path for college diploma graduates to gain an education leading to a university degree. The programs are being offered in two specific configurations:

- **Four-year programs** with direct entry from secondary school leading to a Bachelor of Technology Degree from McMaster and both an Advanced Diploma in Technology and a Business Management Certificate from Mohawk College. The Four-Year Degree Programs are:
  - Automation Engineering Technology Co-op
  - Automotive and Vehicle Engineering Technology Co-op
  - Biotechnology Co-op
- **Degree-completion programs** for graduates of an Advanced Diploma in a Technology program leading to a Bachelor of Technology degree from McMaster and a Business Management Certificate from Mohawk College. The Degree Completion Programs are:
  - Civil Engineering Infrastructure Technology Co-op
  - Manufacturing Engineering Technology Co-op
  - Power and Energy Engineering Technology Co-op
  - Software Engineering Technology Co-op

**BREADTH OF LEARNING**

B.Tech. graduates will be functioning in an evolving world in which they will play an important role as "evolvers" or change agents. This means that their education cannot just be narrowly focused on technical and management topics but must also enable them to develop important complementary skills, including written and oral communication skills; as well as understanding the relationship between technology and society. The Four-year B.Tech. program has three courses which are designed to develop those unique skills and broaden understanding of the complexities of technological-societal interrelationships.

**MANAGEMENT STUDIES**

The Degree Completion Program includes a seven-course management studies component, and the Four-Year program has a 13 course management studies component with courses such as: financial systems, entrepreneurial thinking & innovation, project management and strategic management. This convergence of engineering technology and management education enables graduates to 'hit the ground running' and make significant contributions within the ever-changing business and technical environments.

**CO-OPERATIVE EDUCATION**

The successful completion of Co-op work terms is a mandatory component of all B.Tech. degree programs; co-op work terms provide explicit experiential learning which is related to the technologically-oriented careers for which students are being prepared. Testing and enhancing their skills through a co-operative education experience is important in enabling graduates to function effectively in an industrial environment. All Co-op work terms must be completed prior to the start of the final academic term. The co-op component is managed by Engineering Co-op and Career Services.

## Four-Year B.Tech. Programs

### ACADEMIC REGULATIONS FOR FOUR-YEAR B.TECH. PROGRAMS

#### STUDENT ACADEMIC RESPONSIBILITY

You are responsible for adhering to the statement on student academic responsibility found in the *General Academic Regulations* of this calendar.

#### ACCESS TO COURSES

All undergraduate courses at McMaster have an enrolment capacity. The University is committed to making every effort to accommodate students in required courses so that their program of study is not extended. Unless otherwise specified, registration is on a first-come basis and in some cases priority is given to students from particular programs or Faculties. Students will be informed of their enrolment periods and are encouraged to enroll as soon as online enrolment is available to them in the Student Centre in Mosaic.

#### STUDENT COMMUNICATION RESPONSIBILITY

It is the student's responsibility to:

- maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- use the university provided e-mail address or maintain a valid forwarding e-mail address.
- regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.
- accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.

*Students enrolled in a Four-Year program for the B.Tech. degree, in addition to meeting the General Academic Regulations of the University, shall be subject to the following regulations.*

#### MINIMUM REQUIREMENTS TO CONTINUE IN A PROGRAM BEYOND LEVEL I

In Level II and above, the student must maintain a Grade Point Average (GPA) of at least 3.5 to continue in the B.Tech. program.

#### SEQUENCE OF COURSES

Courses must be taken in the sequence specified in the requirements for the program as outlined in this Calendar. Students must register for all outstanding work of one level before attempting work for a higher level.

#### REPEATED COURSES

All failed courses must be repeated if they are required courses for the B.Tech. program or may be replaced if the courses are not explicitly required.

#### LEVEL OF REGISTRATION

A student is required to register in the lowest level for which more than six units of work are incomplete. Work of a higher level may be undertaken only with the permission of the B.Tech. Academic Advisor, Office of the Associate Dean (Academic).

#### MINIMUM WORK LOAD

The minimum workload for students registered in Level I of the Bachelor of Technology program is 30 units. The workload for students registered above Level I will range from 30 to 36 units per year and is specified within each academic program.

#### REINSTATEMENT

A student who is ineligible to continue in a Bachelor of Technology program (*May not continue at university*) may normally not apply for reinstatement for one full academic year. Exceptions may be made where there are extenuating circumstances that are supported by documentation.

Students seeking reinstatement must complete the Reinstatement Request Form available at the Office of the Registrar. The completed form and the fee must be submitted to the Office of the Registrar by June 30. The form must be

accompanied by a written explanation of the reason for the student's previous unsatisfactory academic performance, reasons for reinstatement at this time (including documentation of what has been done to correct previous academic problems), reasons why the student would expect to succeed in the desired program if reinstated (i.e. what was the previous problem and what has been done to correct it), activities since last registered at McMaster including all academic work. Letters of reference may be submitted but are not required.

#### Reinstatement is not guaranteed.

A student who is reinstated after being ineligible to continue at a given level must repeat all courses of that level, unless specific course exemptions are granted explicitly in the letter of reinstatement. Students who are reinstated will be placed on program probation, and calculation of their Grade Point Average will begin anew. If at any review after reinstatement the student's Grade Point Average falls below 3.5, the student will be required to withdraw from the University for a period of at least 12 months.

#### TRANSFERS FROM ENGINEERING

Students in good standing in Engineering I can apply to transfer directly to Level I B.Tech. Programs. (Automation Engineering Technology I, Automotive and Vehicle Engineering Technology I, Biotechnology I). Advanced credit will be given for Engineering I courses completed with minimum grade of C- which are equivalent to courses in the Bachelor of Technology program. Students who anticipate making such a transfer should consult with the B.Tech. Academic Advisor, Office of Associate Dean (Academic) at the earliest possible opportunity. Applications for transfer must be submitted to the Academic Advisor (Four-Year Bachelor of Technology Programs) no later than June 15.

#### REQUIREMENTS FOR ADVANCED MOHAWK DIPLOMA

Students registered in the Four-Year Bachelor of Technology Program may elect to leave the Program upon the successful completion of Level III and 8 months of co-op. Students will be awarded a Mohawk College Advanced Diploma.

#### STRUCTURE OF THE FOUR-YEAR B.TECH PROGRAM

	Fall (September - December)	Winter (January - April)	Summer (May-August)
<b>Year 1</b>	IA (15 units from Academic Level I)	IB (15 units from Academic Level I)	
<b>Year 2</b>	IIA (18 units from Academic Level II)	IIB (18 units from Academic Level II)	Co-op Work Term 1 ENGTECH 2EEO
<b>Year 3</b>	IIIA (18 units from Academic Level III)	Co-op Work Term 2 ENGTECH 3EEO	Co-op Work Term 3 ENGTECH 4EEO
<b>Year 4</b>	IIIB (18 units from Academic Level III)	IVA (16 units from Academic Level IV)	
<b>Year 5</b>	IVB (18 units from Academic Level IV)		

*\*Co-op work-term possibilities for the summers in Years 1 and 4 should be discussed with Engineering Co-Op and Career Services.*

## Degree Completion B.Tech. Programs

### ACADEMIC REGULATIONS FOR DEGREE COMPLETION B.TECH. PROGRAMS

#### STUDENT ACADEMIC RESPONSIBILITY

You are responsible for adhering to the statement on student academic responsibility found in the General Academic Regulations of this calendar.

#### STUDENT COMMUNICATION RESPONSIBILITY

It is the student's responsibility to:

- maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- use the university provided e-mail address or maintain a valid forwarding e-mail address.
- regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.
- accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.

*Students enrolled in a degree-completion program for the B.Tech. degree, in addition to meeting the General Academic Regulations of the University, shall be subject to the following regulations.*

#### ADVANCED STANDING

The Bachelor of Technology degree is a 4-year degree program. A minimum of 72 units of work must be completed at McMaster University in order to obtain a Bachelor of Technology degree.

#### SEQUENCE OF COURSES

Students in the degree completion program may register in any courses in the program for which they have achieved the specified prerequisite requirements.

#### REPEATED COURSES

All failed courses must be repeated if they are required courses for the B.Tech. program or may be replaced if the courses are not explicitly required.

#### LEVEL OF REGISTRATION

A student is required to register in the lowest level for which more than six units of work is incomplete.

#### WORK LOAD

Courses in the degree completion program are only offered on evenings (Monday through Friday) and on Saturdays. Students may elect to register in the program full-time or part-time. Students in these programs are considered to be full-time if registered for 9 units or more in an academic term. Students working full-time should not attempt more than two or three courses per academic term. The minimum number of units that may be taken in one academic term is three units (one course).

#### REINSTATEMENT

A student who is ineligible to continue in a Bachelor of Technology program (*May not continue at university*) may normally not apply for reinstatement for one full academic year. Exceptions may be made where there are extenuating circumstances that are supported by documentation.

Students seeking reinstatement must complete the Reinstatement Request Form available at the Office of the Registrar. The completed form and the fee must be submitted to the Office of the Registrar by June 30. The form must be accompanied by a written explanation of the reason for the student's previous unsatisfactory academic performance, reasons for reinstatement at this time (including documentation of what has been done to correct previous academic problems), reasons why the student would expect to succeed in the desired program if reinstated (i.e. what was the previous problem and what has been done to correct it), activities since last registered at McMaster including all academic work. Letters of reference may be submitted but are not required. **Reinstatement is not guaranteed.**

A student who is reinstated after being ineligible to continue at a given level must repeat all courses of that level, unless specific course exemptions are granted explicitly in the letter of reinstatement. Students who are reinstated will be placed on program probation, and calculation of their Grade Point Average will begin anew. If at any review after reinstatement the student's Grade Point Average falls below 3.5, the student will be required to withdraw from the University for a period of at least 12 months.

#### ADMISSION TO DEGREE COMPLETION PROGRAMS

The minimum academic requirement for admission to a Bachelor of Technology degree completion program is successful completion of an advanced technology diploma from an Ontario college with a Grade Point Average of 75%.

The degree completion programs will accept students with diplomas in a related technology program. Applicants with educational background equivalent to those completing Ontario college diplomas (i.e. overseas technology diploma or degree graduates) are encouraged to apply; such applications will be considered on an individual basis. All applicants to the B.Tech. Degree Completion program are required to complete and submit an on-line supplementary form (in lieu of a resume) as part of the application/admission process: [https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real\\_supplementary\\_form.pdf](https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real_supplementary_form.pdf)

#### NOTE

**Co-op Education:** Students in the degree completion Bachelor of Technology programs who initially registered in a program in September 2006 or later will be required to complete eight months of co-op experience prior to the start of their final academic term. The eight months of co-op experience may be acquired through a combination of two four-month experience terms. These co-op work terms will be waived for diploma graduates whose programs are operated on a co-op basis (which would be the case for Mohawk College diploma graduates) and for diploma graduates who have achieved significant work experience in a related field through the completion of a Prior Learning Assessment conducted by the Engineering Co-op & Career Services Office. As well as completing the academic requirements as specified in this Calendar, students in co-op must also complete the following courses prior to graduation:

- ENGTECH 1ETO - Introduction to the Technology Co-op Program
- ENGTECH 2ETO - Four Month Co-op Experience I
- ENGTECH 3ETO - Four Month Co-op Experience II

ENGTECH 1ETO must be completed at least one academic term prior to the term in which the first co-op placement is taken.

## Bachelor of Technology

### AUTOMATION ENGINEERING TECHNOLOGY CO-OP (B.TECH.)

#### ADMISSION TO LEVEL II

Admission to Level II of the Automation Engineering Technology Program requires completion of Automation Engineering Technology I, including ENGTECH 1AC3 and ENGTECH 1PR3 with a minimum Grade Point Average (GPA) of 3.5.

#### NOTE

**Co-Op Education:** Students in the Four-Year Bachelor of Technology programs will be required to complete 12 months of co-op experience prior to the start of their final academic term. The 12 months of co-op experience may be acquired through a combination of three four-month experience terms.

#### REQUIREMENTS

##### LEVEL II: 36 UNITS

##### 21 units

- PROCTECH 2CA3 - CAD for Design
- PROCTECH 2CE3 - Chemical Engineering I: Mass Balance
- PROCTECH 2EC3 - Chemical Engineering II: Energy Balance

- PROCTECH 2EE3 - Electricity and Electronics II
- PROCTECH 2IC3 - Instrumentation and Control
- PROCTECH 2I03 - Industrial Organic Chemistry
- PROCTECH 2PL3 - Introduction to PLC Programming

6 units

- ENGTECH 2MA3 - Mathematics III
- ENGTECH 2MT3 - Mathematics IV

9 units

- GENTECH 2EE3 - Engineering Economics
- GENTECH 2HR3 - Human Resource Fundamentals
- GENTECH 2MP3 - Management Principles

2 courses

- ENGINEER 1EE0 - Introduction to the Engineering Co-op Program
- ENGTECH 2EE0 - Four Month Co-op Experience I

**LEVEL III: 36 UNITS**21 units

- PROCTECH 3CE3 - Chemical Engineering III: Unit and Process Design
- PROCTECH 3CT3 - Control Theory I
- PROCTECH 3MC3 - Motion Control and Robotics
- PROCTECH 3PL3 - Advanced PLC Programming and Control
- PROCTECH 4SS3 - System Specification and Design
- SMRTTECH 3CC3 - Cloud Computing and Internet of Things
- SMRTTECH 3DE3 - Digital Electronics

3 units

- ENGTECH 3ES3 - Engineering Statistics

12 units

- GENTECH 3ET3 - Entrepreneurial Thinking and Innovation
- GENTECH 3FF3 - Financial Systems
- GENTECH 3LS3 - Quality Control and Assurance Methods
- GENTECH 3MT3 - Project Management

2 courses

- ENGTECH 3EE0 - Four Month Co-op Experience II
- ENGTECH 4EE0 - Four Month Co-op Experience III

**LEVEL IV: 34 UNITS**7 units

- PROCTECH 4IT3 - Internet Technologies and Databases
- PROCTECH 4TR1 - Capstone Design Project I
- PROCTECH 4TR3 - Capstone Design Project II

9 units

- GENTECH 4FT3 - Strategic Management
- GENTECH 4OM3 - Operations Management
- GENTECH 4TE3 - Technology Ethics and Sustainability

3 units

from

- GENTECH 4MB3 - Fundamentals of Marketing
- GENTECH 4TS3 - Technology and Society

3 units

from

- PROCTECH 4MH3 - Machine Health and Remote Monitoring
- SMRTTECH 4HM3 - Human Monitoring and Smart Health Systems

**INDUSTRIAL AUTOMATION SYSTEMS STREAM**(See *Note 1* above.)12 Units

- PROCTECH 4AS3 - Industrial System Components and Integration
- PROCTECH 4CT3 - Advanced Control Theory II
- PROCTECH 4IC3 - Industrial Networks and Controllers
- PROCTECH 4MS3 - Manufacturing Technologies

**SMART SYSTEMS STREAM**(See *Note 1* above.)12 Units

- SMRTTECH 4AI3 - Artificial Intelligence and Machine Learning

- SMRTTECH 4ES3 - Embedded Systems
- SMRTTECH 4ID3 - IoT Devices and Networks
- SMRTTECH 4SC3 - Smart Cities and Communities

**AUTOMOTIVE AND VEHICLE ENGINEERING TECHNOLOGY CO-OP (B.TECH.)****ADMISSION TO LEVEL II**

Admission to Level II of the Automotive and Vehicle Engineering Technology Program requires completion of Automotive and Vehicle Engineering Technology I, including ENGTECH 1ME3 and ENGTECH 1PR3 with a minimum Grade Point Average (GPA) of 3.5.

**NOTE**

**Co-Op Education:** Students in the Four-Year Bachelor of Technology programs will be required to complete 12 months of co-op experience prior to the start of their final academic term. The 12 months of co-op experience may be acquired through a combination of three four-month experience terms.

**REQUIREMENTS****LEVEL II: 36 UNITS**15 units

- AUTOTECH 2AC3 - Advanced CAD
- AUTOTECH 2AE3 - Design of Machine Elements
- AUTOTECH 2CD3 - Computer Aided Design
- AUTOTECH 2MT3 - Structure and Properties of Materials
- AUTOTECH 2TS3 - Thermodynamics and Heat Transfer

12 units

- ENGTECH 2ES3 - Engineering Statistics
- ENGTECH 2MA3 - Mathematics III
- ENGTECH 2MS3 - Modelling and Numerical Solutions
- ENGTECH 2MT3 - Mathematics IV

9 units

- GENTECH 2EE3 - Engineering Economics
- GENTECH 2HR3 - Human Resource Fundamentals
- GENTECH 2MP3 - Management Principles

2 courses

- ENGINEER 1EE0 - Introduction to the Engineering Co-op Program
- ENGTECH 2EE0 - Four Month Co-op Experience I

**LEVEL III: 36 UNITS**21 units

- AUTOTECH 3AE3 - Automotive Engineering Technology
- AUTOTECH 3AV3 - Electric and Hybrid Vehicles
- AUTOTECH 3CT3 - Control Theory
- AUTOTECH 3MP3 - Manufacturing Processes and Systems
- AUTOTECH 3MV3 - Mechatronics
- AUTOTECH 3TS3 - Fluid Mechanics
- AUTOTECH 3VD3 - Mechanical Vibrations

3 units

- ENGTECH 3FE3 - Finite Element Analysis

12 units

- GENTECH 3ET3 - Entrepreneurial Thinking and Innovation
- GENTECH 3FF3 - Financial Systems
- GENTECH 3LS3 - Quality Control and Assurance Methods
- GENTECH 3MT3 - Project Management

2 courses

- ENGTECH 3EE0 - Four Month Co-op Experience II
- ENGTECH 4EE0 - Four Month Co-op Experience III

**LEVEL IV: 34 UNITS**16 units

- AUTOTECH 4CI3 - Robotics and Computer Integrated Manufacturing
- AUTOTECH 4DV3 - Vehicle Dynamics
- AUTOTECH 4EC3 - Electrical and Electronics Control Systems



- AUTOTECH 4MS3 - Kinematic and Dynamic Modelling and Simulation
- AUTOTECH 4TR1 - Capstone Design I
- AUTOTECH 4TR3 - Capstone Design II

9 units

- GENTECH 4FT3 - Strategic Management
- GENTECH 4OM3 - Operations Management
- GENTECH 4TE3 - Technology Ethics and Sustainability

3 units from

- GENTECH 4MB3 - Fundamentals of Marketing
- GENTECH 4TS3 - Technology and Society

6 units from

- AUTOTECH 4AE3 - Internal Combustion Engines
- AUTOTECH 4AT3 - Conceptual Design of Electric and Hybrid Vehicles
- MANTECH 4MM3 - Design and Manufacturing of Machine Elements
- PROCTECH 4MH3 - Machine Health and Remote Monitoring
- SFWRTECH 4AI3 - Artificial Intelligence

**BIOTECHNOLOGY CO-OP (B.TECH.)****ADMISSION TO LEVEL II**

Admission to Level II of the Biotechnology Program requires completion of Biotechnology I, including ENGTECH 1AC3 and ENGTECH 1BI3 with a minimum Grade Point Average (GPA) of 3.5.

**NOTE**

**Co-Op Education:** Students in the Four-Year Bachelor of Technology programs will be required to complete 12 months of co-op experience prior to the start of their final academic term. The 12 months of co-op experience may be acquired through a combination of three four-month experience terms.

**REQUIREMENTS****LEVEL II: 36 UNITS**24 units

- BIOTECH 2B03 - Biotechnology Concepts
- BIOTECH 2BC3 - Biochemistry
- BIOTECH 2CB3 - Cell Biology
- BIOTECH 2EC3 - Chemical Engineering Concepts
- BIOTECH 2GT3 - Genetics
- BIOTECH 2MB3 - Microbiology
- BIOTECH 2M03 - Molecular Biology
- BIOTECH 2OC3 - Organic Chemistry

3 units

- ENGTECH 2MA3 - Mathematics III

9 units

- GENTECH 2EE3 - Engineering Economics
- GENTECH 2HR3 - Human Resource Fundamentals
- GENTECH 2MP3 - Management Principles

2 courses

- ENGINEER 1EE0 - Introduction to the Engineering Co-op Program
- ENGTECH 2EE0 - Four Month Co-op Experience I

**LEVEL III: 36 UNITS**18 units

- BIOTECH 3BC3 - Bioprocess Control and Dynamics
- BIOTECH 3B03 - Industrial Biotechnology
- BIOTECH 3BP3 - Bioreactor Processes and Design
- BIOTECH 3FM3 - Food Microbiology
- BIOTECH 3IV3 - Immunology and Virology
- BIOTECH 3PM3 - Pharmacology

3 units

- ENGTECH 3ES3 - Engineering Statistics

3 units from

- BIOTECH 3CM3 - Computational Modeling of Biological Systems
- SFWRTECH 4AI3 - Artificial Intelligence

- SFWRTECH 4DA3 - Data Analytics and Big Data

12 units

- GENTECH 3ET3 - Entrepreneurial Thinking and Innovation
- GENTECH 3FF3 - Financial Systems
- GENTECH 3LS3 - Quality Control and Assurance Methods
- GENTECH 3MT3 - Project Management

2 courses

- ENGTECH 3EE0 - Four Month Co-op Experience II
- ENGTECH 4EE0 - Four Month Co-op Experience III

**LEVEL IV: 34 UNITS**22 units

- BIOTECH 4BI3 - Bioinformatics
- BIOTECH 4BL3 - Biomaterials and Biocompatibility
- BIOTECH 4BM3 - Biopharmaceuticals
- BIOTECH 4BS3 - Biotechnology Regulations
- BIOTECH 4GP3 - Genomics and Proteomics
- BIOTECH 4TB3 - Advanced Biotechnology
- BIOTECH 4TR1 - Capstone Project I
- BIOTECH 4TR3 - Capstone Project II

9 units

- GENTECH 4FT3 - Strategic Management
- GENTECH 4OM3 - Operations Management
- GENTECH 4TE3 - Technology Ethics and Sustainability

3 units from

- GENTECH 4MB3 - Fundamentals of Marketing
- GENTECH 4TS3 - Technology and Society

**CIVIL ENGINEERING INFRASTRUCTURE TECHNOLOGY CO-OP (B.TECH.)****ADMISSION**

Admission requires satisfactory completion of an advanced technology diploma in one of Architectural Engineering Technology, Civil Engineering Technology or Construction Engineering Technology. Applicants with educational backgrounds equivalent to those completing Ontario college diplomas (i.e. overseas technology diploma or degree graduates) are encouraged to apply; such applications will be considered on an individual basis. All applicants to the B.Tech. Degree Completion program are required to complete and submit an on-line supplementary form (in lieu of a resume) as part of the application/admission process: [https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real\\_supplementary\\_form.pdf](https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real_supplementary_form.pdf)

**NOTES**

1. WHMIS 1A00 must be completed in the first term of the program.
2. Students may complete Level III or Level IV courses in any order, provided they meet the specific course prerequisites.

**INFRASTRUCTURE ELECTIVES COURSE LIST A**

- CIVTECH 3PM3 - Highway Design, Construction, and Maintenance
- CIVTECH 3TP3 - Transportation Planning and Modelling
- CIVTECH 4LU3 - Advanced Land Use Planning
- CIVTECH 4WT3 - Municipal and Environmental Engineering
- ENGTECH 4FA3 - Finite Element Analysis

**INFRASTRUCTURE ELECTIVES COURSE LIST B**

- CIVTECH 4BC3 - Building Science
- CIVTECH 4BD3 - Bridge Design, Maintenance and Repair
- CIVTECH 4UM3 - Asset Management
- SFWRTECH 4AI3 - Artificial Intelligence

**REQUIREMENTS****LEVEL III: 36 UNITS**24 units

- CIVTECH 3GE3 - Geotechnical Materials and Analysis
- ENGTECH 3MA3 - Mathematics V

- ENGTECH 3ML3 - Strength of Materials
- ENGTECH 3SD3 - Statics and Dynamics
- ENGTECH 3SP3 - Structure and Properties of Materials
- ENGTECH 3ST3 - Probability and Statistics
- ENGTECH 4MA3 - Advanced Mathematics
- ENGTECH 4TF3 - Mechanics of Fluids

12 units

- GENTECH 3EE3 - Engineering Economics
- GENTECH 3FS3 - Financial Systems
- GENTECH 3MP3 - Management Principles
- GENTECH 4SE3 - Technology Ethics and Sustainability

1 course

- WHMIS 1A00 - Introduction to Health and Safety (See *Note 2* above.)

**LEVEL IV: 36 UNITS**18 units

- CIVTECH 3GT3 - Geotechnical Design
- CIVTECH 3SA3 - Structural Analysis
- CIVTECH 4MH3 - Hydraulic Engineering
- CIVTECH 4RC3 - Reinforced Concrete and Masonry Design
- CIVTECH 4SD3 - Structural Steel Design
- ENGTECH 4ED3 - Senior Engineering Design Project

3 units

- GENTECH 4PM3 - Project Management

6 units

from

- GENTECH 3DM3 - Creativity, Innovation and Technology
- GENTECH 3EN3 - Entrepreneurial Thinking and Innovation
- GENTECH 3TC3
- GENTECH 4EM3 - Legal and Regulatory Issues
- GENTECH 4LM3 - Lean Thinking and Practices
- GENTECH 4MK3 - Fundamentals of Marketing
- GENTECH 4SF3 - Strategic Management
- GENTECH 4ST3 - Contemporary Issues in Management

6 units

- from *Infrastructure Electives Course List A*

3 units

- from *Infrastructure Electives Course List B* or an approved ENRTECH, MANTECH, or SFWRTECH course

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## MANUFACTURING ENGINEERING TECHNOLOGY CO-OP (B.TECH.)

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**ADMISSION**

Manufacturing Engineering Technology is open to graduates of an advanced technology diploma in one of Mechanical Engineering, Chemical Engineering Technology, Electro-Mechanical Engineering Technology and Manufacturing Engineering Technology. Applicants with educational backgrounds equivalent to those applicants completing Ontario college diplomas (i.e. overseas technology diploma or degree graduates) are encouraged to apply; such applications will be considered on an individual basis. All applicants to the B.Tech. Degree Completion program are required to complete and submit an on-line supplementary form (in lieu of a resume) as part of the application/admission process: [https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real\\_supplementary\\_form.pdf](https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real_supplementary_form.pdf)

**NOTE**

WHMIS 1A00 must be taken in the first term of the program.

**REQUIREMENTS****LEVEL III: 36 UNITS**15 units

- ENGTECH 3MA3 - Mathematics V
- ENGTECH 3ML3 - Strength of Materials

- ENGTECH 3SP3 - Structure and Properties of Materials
- MANTECH 3LS3 - Quality Control and Assurance Methods
- ENGTECH 4CT3 - Systems and Control

3 units

- ENGTECH 4MA3 - Advanced Mathematics

9 units

- ENGTECH 3SD3 - Statics and Dynamics
- ENGTECH 3TD3 - Thermodynamics
- MANTECH 3MF3 - Micro Manufacturing and Fabrication

9 units

- GENTECH 3EE3 - Engineering Economics
- GENTECH 3FS3 - Financial Systems
- GENTECH 3MP3 - Management Principles

1 course

- WHMIS 1A00 - Introduction to Health and Safety

(See *Note* above.)

**LEVEL IV: 36 UNITS**24 units

- ENGTECH 4FA3 - Finite Element Analysis
- ENGTECH 4TF3 - Mechanics of Fluids
- MANTECH 4DA3 - Design and Advanced Manufacturing
- MANTECH 4FM3 - CIM and Flexible Manufacturing
- MANTECH 4MM3 - Design and Manufacturing of Machine Elements
- MANTECH 4PM3 - Production Management
- MANTECH 4RM3 - Robot Mechanics and Mechatronics
- SFWRTECH 4AI3 - Artificial Intelligence

6 units

- GENTECH 4PM3 - Project Management
- GENTECH 4SE3 - Technology Ethics and Sustainability

6 units

from

- GENTECH 3DM3 - Creativity, Innovation and Technology
- GENTECH 3EN3 - Entrepreneurial Thinking and Innovation
- GENTECH 3TC3
- GENTECH 4EM3 - Legal and Regulatory Issues
- GENTECH 4LM3 - Lean Thinking and Practices
- GENTECH 4MK3 - Fundamentals of Marketing
- GENTECH 4SF3 - Strategic Management
- GENTECH 4ST3 - Contemporary Issues in Management

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## POWER AND ENERGY ENGINEERING TECHNOLOGY CO-OP (B.TECH.)

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**ADMISSION**

The degree completion programs in Power and Energy Engineering Technology will accept graduates in one of Mechanical Engineering Technology, Electrical Engineering Technology, Electronics Engineering Technology, or Electro-Mechanical Engineering Technology. Graduates from Ontario university engineering programs who seek to develop careers in the power and energy technology sectors will also be accepted. Applicants with educational backgrounds at least equivalent to those applicants completing Ontario college diplomas (i.e. overseas technology diploma or degree graduates) are encouraged to apply; such applications will be considered on an individual basis. All applicants to the B.Tech. Degree Completion program are required to complete and submit an on-line supplementary form (in lieu of a resume) as part of the application/admission process: [https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real\\_supplementary\\_form.pdf](https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real_supplementary_form.pdf)

**NOTES**

1. WHMIS 1A00 be completed in the first term of the program.

**REQUIREMENTS****LEVEL III: 36 UNITS**27 units

- ENRTECH 3EP3 - Power Systems and Electrical Machines
- ENRTECH 3IE3 - Industrial Electronics
- ENRTECH 3IN3 - Industrial Networks and Communication Systems
- ENRTECH 3MI3 - Measurements and Instrumentation
- ENRTECH 3PD3 - Power Distribution I
- ENGTECH 3MA3 - Mathematics V
- ENGTECH 3TD3 - Thermodynamics
- ENGTECH 4MA3 - Advanced Mathematics
- ENGTECH 4TF3 - Mechanics of Fluids

9 units

- GENTECH 3EE3 - Engineering Economics
- GENTECH 3FS3 - Financial Systems
- GENTECH 3MP3 - Management Principles

1 course

- WHMIS 1A00 - Introduction to Health and Safety

(See *Note 3* above.)**LEVEL IV: 36 UNITS**18 units

- ENGTECH 4CT3 - Systems and Control
- ENRTECH 4PD3 - Power System Analysis and Control
- ENRTECH 4PM3 - Power Protection and Maintenance I
- ENRTECH 4PP3 - Power Protection and Maintenance II
- ENRTECH 4RT3 - Renewable Power Generation from Wind, Solar and Hydro
- ENGTECH 4EP3 - Senior Engineering Project

6 units

from

- ENRTECH 4EM3 - Transmission Lines and Electromagnetics
- ENRTECH 4PQ3 - Power Quality
- ENRTECH 4RE3 - Fuel Cell, Geothermal and Biomass Power Generation
- SFWRTECH 4AI3 - Artificial Intelligence

6 units

- GENTECH 4PM3 - Project Management
- GENTECH 4SE3 - Technology Ethics and Sustainability

6 units

from

- GENTECH 3DM3 - Creativity, Innovation and Technology
- GENTECH 3EN3 - Entrepreneurial Thinking and Innovation
- GENTECH 3TC3
- GENTECH 4EM3 - Legal and Regulatory Issues
- GENTECH 4LM3 - Lean Thinking and Practices
- GENTECH 4MK3 - Fundamentals of Marketing
- GENTECH 4SF3 - Strategic Management
- GENTECH 4ST3 - Contemporary Issues in Management

**SOFTWARE ENGINEERING TECHNOLOGY CO-OP (B.TECH.)****ADMISSION**

Admission requires satisfactory completion of an advanced technology diploma in one of Computer Engineering Technology, Computer Systems Technology, Software or Networking, or Computer Programmer/Analyst. Applicants with educational backgrounds equivalent to those applicants completing Ontario college diplomas (i.e. overseas technology diploma or degree graduates) are encouraged to apply; such applications will be considered on an individual basis. All applicants to the B.Tech. Degree Completion program are required to complete and submit an on-line supplementary form (in lieu of a resume) as part of the application/admission process: [https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real\\_supplementary\\_form.pdf](https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real_supplementary_form.pdf)

**NOTES**

1. Software Engineering diploma graduates must complete SFWRTECH 3IT3.
2. Network Engineering Security Analyst diploma graduates must complete SFWRTECH 3PR3.
3. WHMIS 1A00 must be completed in the first term of the program.

**REQUIREMENTS****LEVEL III: 36 UNITS**3 units

from

- SFWRTECH 3IT3 - Fundamentals of Networking
- SFWRTECH 3PR3 - Procedural and Object Oriented Programming Concepts

(See *Notes 1* and *2* above.)15 units

- SFWRTECH 3CS3 - Computer Security
- SFWRTECH 3OS3 - Operating Systems
- SFWRTECH 3RQ3 - Software Requirements and Specification
- SFWRTECH 4DS3 - Data Structures and Algorithms
- SFWRTECH 4NS3 - Advanced Network Security

9 units

- ENGTECH 3DM3 - Discrete Mathematics
- ENGTECH 3MA3 - Mathematics V
- ENGTECH 3ST3 - Probability and Statistics

9 units

- GENTECH 3EE3 - Engineering Economics
- GENTECH 3FS3 - Financial Systems
- GENTECH 3MP3 - Management Principles

1 course

- WHMIS 1A00 - Introduction to Health and Safety

(See *Note 3* above.)**LEVEL IV: 36 UNITS**18 units

- ENGTECH 4FD3 - Senior Engineering Project
- SFWRTECH 4CC3 - Parallel Programming
- SFWRTECH 4DA3 - Data Analytics and Big Data
- SFWRTECH 4DM3 - Data Mining
- SFWRTECH 4ES3 - Real-Time Systems
- SFWRTECH 4MA3 - Numerical Linear Algebra and Numerical Optimization

6 units

from

- SFWRTECH 4AI3 - Artificial Intelligence
- SFWRTECH 4CG3 - Computer Graphics
- SFWRTECH 4NN3 - Neural Networks and Deep Learning
- SFWRTECH 4SA3 - Software Architecture
- SFWRTECH 4VE3 - Visual Effects and Technology for Animated Production
- SFWRTECH 4WP3 - Advanced Web Programming

6 units

- GENTECH 4PM3 - Project Management
- GENTECH 4SE3 - Technology Ethics and Sustainability

6 units

from

- GENTECH 3DM3 - Creativity, Innovation and Technology
- GENTECH 3EN3 - Entrepreneurial Thinking and Innovation
- GENTECH 3TC3
- GENTECH 4EM3 - Legal and Regulatory Issues
- GENTECH 4LM3 - Lean Thinking and Practices
- GENTECH 4MK3 - Fundamentals of Marketing
- GENTECH 4SF3 - Strategic Management
- GENTECH 4ST3 - Contemporary Issues in Management

## Level I Programs

### Bachelor of Applied Science

#### COMPUTER SCIENCE I/COMPUTER SCIENCE I CO-OP (B.A.SC.)

30 units total

##### REQUIREMENTS

###### 15 UNITS

- COMPSCI 1DM3 - Discrete Mathematics for Computer Science
- COMPSCI 1JC3 - Introduction to Computational Thinking
- COMPSCI 1MD3 - Introduction to Programming
- COMPSCI 1XC3 - Computer Science Practice and Experience: Development Basics
- COMPSCI 1XD3 - Computer Science Practice and Experience: Introduction to Software Design Using Web Programming

###### 9 UNITS

- MATH 1B03 - Linear Algebra I
- MATH 1ZA3 - Engineering Mathematics I
- MATH 1ZB3 - Engineering Mathematics II-A

###### 6 UNITS

- Electives

###### 1 COURSE

- ENGINEER 1A00 or
- WHMIS 1A00 - Introduction to Health and Safety

### Bachelor of Engineering

#### ENGINEERING I/ENGINEERING I CO-OP

37 units total

##### REQUIREMENTS

###### 3 UNITS

- CHEM 1E03 - General Chemistry for Engineering I

###### 13 UNITS

- ENGINEER 1P13 A/B - Integrated Cornerstone Design Projects in Engineering

###### 9 UNITS

- MATH 1ZA3 - Engineering Mathematics I
- MATH 1ZB3 - Engineering Mathematics II-A
- MATH 1ZC3 - Engineering Mathematics II-B

###### 6 UNITS

- PHYSICS 1D03 - Introductory Mechanics
- PHYSICS 1E03 - Waves, Electricity and Magnetic Fields

###### 6 UNITS

- approved complementary studies electives.

(See *Elective Courses Available To Level I Students in Degrees, Programs and Courses.*)

###### 1 COURSE

from

- WHMIS 1A00 - Introduction to Health and Safety

or

- ENGINEER 1A00

### Bachelor of Engineering and Biomedical Engineering

#### INTEGRATED BIOMEDICAL ENGINEERING AND HEALTH SCIENCES (IBEHS) I/INTEGRATED BIOMEDICAL ENGINEERING AND HEALTH SCIENCES (IBEHS) I CO-OP

##### NOTES

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EEO. IBEHS 2ECO will be added to the academic record for each 4 month work term.
2. Admission to Level II Engineering and Biomedical Engineering programs requires completion of all 34 units of required IBEHS I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the students Cumulative Grade Point Average. A student in IBEHS I whose Grade Point Average (GPA) is less than 4.0 can no longer continue in IBEHS.
3. Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to 8-units of research project or independent study courses. A full listing can be found on the IBEHS website.
4. Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

##### REQUIREMENTS

37 units total

###### LEVEL I: 37 UNITS

###### 10 units

- IBEHS 1P10 A/B - Health Solutions Design Projects I

###### 3 units

- CHEM 1E03 - General Chemistry for Engineering I

###### 6 units

- HTHSCI 1106 A/B - Cellular and Molecular Biology

###### 9 units

- MATH 1ZA3 - Engineering Mathematics I
- MATH 1ZB3 - Engineering Mathematics II-A
- MATH 1ZC3 - Engineering Mathematics II-B

###### 6 units

- PHYSICS 1D03 - Introductory Mechanics
- PHYSICS 1E03 - Waves, Electricity and Magnetic Fields

###### 3 units

- Complementary Studies  
(See *Elective Courses Available To Level I Students*)

###### 2 courses

- BIOSAFE 1BS0 - Biosafety Training
- WHMIS 1A00 - Introduction to Health and Safety

### Bachelor of Technology

#### B.TECH. 1

##### AUTOMATION ENGINEERING TECHNOLOGY I CO-OP (B.TECH.)

30 units total

##### REQUIREMENTS

###### 18 units

- ENGTECH 1CH3 - Chemistry
- ENGTECH 1CP3 - C++ Programming
- ENGTECH 1EL3 - Electricity and Electronics I
- ENGTECH 1MC3 - Mathematics I



- ENGTECH 1MT3 - Mathematics II
- ENGTECH 1PH3 - Physics

6 units

- GENTECH 1BZ3 - Foundations of Business
- GENTECH 1PC3 - Professional Communications

6 units

- ENGTECH 1AC3 - Analytical Chemistry
- ENGTECH 1PR3 - Object-Oriented Programming

2 courses

- ENGINEER 1EE0 - Introduction to the Engineering Co-op Program
- WHMIS 1A00 - Introduction to Health and Safety

**AUTOMOTIVE AND VEHICLE ENGINEERING TECHNOLOGY I CO-OP (B.TECH.)***30 units total***REQUIREMENTS**18 units

- ENGTECH 1CH3 - Chemistry
- ENGTECH 1CP3 - C++ Programming
- ENGTECH 1EL3 - Electricity and Electronics I
- ENGTECH 1MC3 - Mathematics I
- ENGTECH 1MT3 - Mathematics II
- ENGTECH 1PH3 - Physics

6 units

- GENTECH 1BZ3 - Foundations of Business
- GENTECH 1PC3 - Professional Communications

6 units

- ENGTECH 1ME3 - Statics and Mechanics of Materials
- ENGTECH 1PR3 - Object-Oriented Programming

2 courses

- ENGINEER 1EE0 - Introduction to the Engineering Co-op Program
- WHMIS 1A00 - Introduction to Health and Safety

**BIOTECHNOLOGY I CO-OP (B.TECH.)***30 units total***REQUIREMENTS**18 units

- ENGTECH 1CH3 - Chemistry
- ENGTECH 1EL3 - Electricity and Electronics I
- ENGTECH 1MC3 - Mathematics I
- ENGTECH 1MT3 - Mathematics II
- ENGTECH 1PH3 - Physics
- ENGTECH 1PP3 - Python Programming

6 units

- GENTECH 1BZ3 - Foundations of Business
- GENTECH 1PC3 - Professional Communications

6 units

- ENGTECH 1AC3 - Analytical Chemistry
- ENGTECH 1BI3 - Biology

2 courses

- ENGINEER 1EE0 - Introduction to the Engineering Co-op Program
- WHMIS 1A00 - Introduction to Health and Safety

## Department of Chemical Engineering

Faculty of the Department of Chemical Engineering, as of January 15, 2020

CHAIR**Carlos Filipe**ASSOCIATE CHAIR GRADUATE**Thomas Adams II**ASSOCIATE CHAIR UNDERGRADUATE**Jake Nease**DISTINGUISHED UNIVERSITY PROFESSOR

**John L. Brash**/ B.Sc., Ph.D. (*Glasgow*), D.Hon.Caus. (*Paris Nord*), F.R.S.C., P.Eng. / Emeritus

**John F. MacGregor**/ B.Eng. (*McMaster*), M.S., Ph.D. (*Wisconsin*), FASA, P.Eng. F.C.A.E./Emeritus

**Shipping Zhu**/B.Eng. (*Zhejiang*), Ph.D. (*McMaster*), P.Eng., F.C.I.C., F.R.S.C.

PROFESSORS

**Carlos Filipe**/B.S. (*Universidade Catolica Portuguesa*), Ph.D. (*Clemson*), L.E.L.

**Raja Ghosh**/B.S., M.S. (*Jadavpur*), D.Phil. (*Oxford*)/Canada Research Chair

**Todd Hoare**/B.Sc. (*Queen's*), Ph.D. (*McMaster*), P.Eng.

**Vladimir Mahalec**/Dipl. Ing. (*Zagreb*), Ph.D. (*Houston*)/Director, GMC Centre for Engineering Design

**Prashant Mhaskar**/B.Tech (IIT), M.S. (*Louisiana State*), Ph.D. (*California-Los Angeles*), P.Eng./Canada Research Chair

**Robert H. Pelton**/B.Sc., M.Sc. (*Guelph*), Ph.D. (*Bristol*)/Senior Canada Research Chair, F.R.S.C.

**Heather Sheardown**/B.Eng. (*McMaster*), Ph.D. (*Toronto*), P.Eng.

**Christopher L. E. Swartz**/B.Sc.Eng. (*Cape Town*), Ph.D. (*Wisconsin*), P.Eng./ArcelorMittal Dofasco Chair in Process Automation and Information Technology

**Michael Thompson**/B.Sc., B.Eng., M.Eng. (*McMaster*), Ph.D. (*Waterloo*), P.Eng.

ADJUNCT PROFESSORS

**Andrew N. Hrymak**/B.Eng. (*McMaster*), Ph.D. (*Carnegie Mellon*), P.Eng., F.C.I.C.

**Lyndon W.J. Jones**/B.Sc. (*Wales*), Ph.D. (*Aston*)

**Marko D. Saban**/Dipl. Ing., M.Sc., Ph.D. (*Belgrade*)

**Guerino G. Sacripante**/B.Sc., Ph.D. (*McGill*)

**Wen-Jun Wang**/B.Eng, M.Eng., Ph.D. (*Zhejiang*)

**Yiliang Wu**/B.Sc. (*Sichuan*), M.Sc. (*University of Science and Technology, China*), Ph.D. (*Tokyo Institute of Technology*)

ASSOCIATE PROFESSORS

**Thomas Adams II**/B.S (*Michigan State*), Ph.D. (*Pennsylvania*), P.Eng.

**Kim Jones**/B.A.Sc. (*Waterloo*), M.Sc. (*Guelph*), Ph.D. (*Toronto*), L.E.L.

**David Latulippe**/B.Eng., M.A.Sc., (*McMaster*), Ph.D. (*Pennsylvania State*)

ADJUNCT ASSOCIATE PROFESSORS

**Emily Cranston**/B.Sc., Ph.D. (*McGill*)

**Theodora Kourti**/Dipl. Eng. (*Chemical*)/(*Aristotle*), Ph.D. (*McMaster*)

**Qiang Liu**/B.S, MS., (*University of Science and Technology, China*), Ph.D. (*Laval*)

**David McDonald**/B.Sc. (*Toronto*), M.Sc. (*McMaster*)

ASSISTANT PROFESSORS

**Shelir Ebrahimi**/B.A.Sc. (*Amirkabir University of Technology*), M.A.Sc. (*Sharif University of Technology*), Ph.D. (UBC), P.Eng.

**Charles-Francois de Lannoy**/B.Sc. (*McGill*), Ph.D. (*Duke*)

**Drew Higgins**/B.A.Sc. (*Waterloo*), M.A.Sc. (*Waterloo*), Ph.D. (*Waterloo*)

**Zeinab Hosseinidoust**/B.Sc., M.Sc. (*Sharif*), Ph.D. (*McGill*)

**Kamil Khan**/B.S.E. (*Princeton*), M.Sc., Ph.D. (*MIT*)

**Vincent Leung**/ B.Eng Biosci., M.A.Sc., Ph.D. (*McMaster*)

**Jake Nease**/ B.Eng.Mgmt., PhD (*McMaster*)

**Li Xi**/B.S. (*Zhejiang*), Ph.D. (*Wisconsin-Madison*)

**Boyang Zhang**/B.Sc. (*Georgia Institute of Technology*), Ph.D. (*University of Toronto*)

ADJUNCT ASSISTANT PROFESSORS

**Benoit Chachuat**/B.Eng. (*ENGEES National Engineering School*), M.Sc. (*Louis Pasteur*), Ph.D. (*Lorraine National Institute of Technology*)

**Santiago Faucher**/B.Sc. (*Queen's*), Ph.D. (*McMaster*)

**Niels Smeets**/B.Sc., M.Sc., Ph.D. (*Eindhoven*)

**Danielle Zyngier**/B.Sc. (*Rio de Janeiro*), M.Sc. (*Rio de Janeiro*), Ph.D. (*McMaster*)

ASSOCIATE MEMBERS

**John Brennan**/(Chemistry) B.Sc., M.A.Sc., Ph.D. (Toronto)

**Yingful Li**/B.Sc. (Anhui University), M.Sc. (China Agriculture University), Ph.D. (Simon Fraser University)

**Jose M. Moran-Mirabel**/(Chemistry and Chemical Biology) B.Sc., M.Sc. (Instituto Tecnológico y de Estudios Superiores de Monterrey), M.Sc., Ph.D. (Cornell)

**Ishwar K. Puri**/B.Sc. (Delhi), M.S., Ph.D. (California-San Diego)

## Bachelor of Engineering

### CHEMICAL ENGINEERING, CHEMICAL ENGINEERING CO-OP (B.ENG.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives. Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

- Students may choose to follow a stream of recommended technical elective courses.
  - Process Systems Engineering (PSE) Stream:**  
**Required Courses:** CHEMENG 4H03, 4E03, 4G03, 4L02 (PSE laboratories completed). Other courses may be substituted with permission of the Department Chair.
  - Polymer Materials and Manufacturing (PMM) Stream:**  
**Required Courses:** CHEMENG 3Q03, 4B03, 4H03, 4L02 (PMM laboratories completed), CHEMENG 4X03. Other courses may be substituted with permission of the Department Chair.
  - Water-Energy Technologies (WET) Stream:**  
**Required Courses:** CHEMENG 4A03, 4M03, 4L02 (WET laboratories completed) and one of ENGINEER 4V04 or CIVENG 4V04. Other courses may be substituted with permission of the Department Chair.
- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2EC0 will be added to the academic record for each 4-month work term.

#### REQUIREMENTS

##### LEVEL II: 37 UNITS

##### 19 units

- CHEMENG 2D04 - Chemical Engineering Principles I
- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- CHEMENG 2F04 - Chemical Engineering Principles II
- CHEMENG 2G03 - Problem Solving and Technical Communication
- CHEMENG 2O04 - Fluid Mechanics

##### 3 units

- CHEM 1AA3 - Introductory Chemistry II

##### 6 units

- MATH 2Z03 - Engineering Mathematics III

- MATH 2ZZ3 - Engineering Mathematics IV

##### 3 units

- MATLS 3J03 - Statistical Methods for Materials Engineers

##### 6 units

- approved complementary studies electives

##### LEVEL III: 38 UNITS

##### 29 units

- CHEMENG 3A04 - Heat Transfer
- CHEMENG 3D04 - Chemical Engineering Thermodynamics
- CHEMENG 3G04 - Chemical Process Design and Simulation
- CHEMENG 3I03 - Data Acquisition and Analysis
- CHEMENG 3K04 - Introduction to Reactor Design
- CHEMENG 3L02 - Intermediate Laboratory Skills
- CHEMENG 3M04 - Mass Transfer and Stagewise Operations
- CHEMENG 3P04 - Process Control

##### 9 units total from the following two subsections

##### 3-6 units

from

- CHEM 2E03 - Introductory Organic Chemistry

or both

- CHEM 2OA3 - Organic Chemistry I and
- CHEM 2OB3 - Organic Chemistry II

##### 3-6 units

from

- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- CHEM 3I03 - Industrial Chemistry
- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry
- CHEMBIO 3BM3 - Implanted Biomaterials
- CHEMENG 3Q03 - Introduction to Polymer Science

##### LEVEL IV: 37-40 UNITS

##### 10 units

- CHEMENG 4L02 - Advanced Laboratory Skills
- CHEMENG 4N04 - Engineering Economics and Problem Solving
- CHEMENG 4W04 - Chemical Plant Design and Capstone Project

##### 3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

##### 15-16 units

from

- CHEMENG 3BK3 - Bio-Reaction Engineering
- CHEMENG 3BM3 - Bioseparations Engineering
- CHEMENG 4A03 - Energy Systems Engineering
- CHEMENG 4B03 - Polymer Reaction Engineering
- CHEMENG 4H03 - Big Data Methods and Modeling in Chemical and Materials Engineering
- CHEMENG 4E03 - Digital Computer Process Control
- CHEMENG 4G03 - Optimization in Chemical Engineering
- CHEMENG 4K03 - Reactor Design for Heterogeneous Systems
- CHEMENG 4M03 - Industrial Separation Processes
- CHEMENG 4T03 - Applications of Chemical Engineering in Medicine
- CHEMENG 4TA3 A/B - Engineering Practicum
- CHEMENG 4X03 - Polymer Processing
- CHEMENG 4Y04 A/B - Senior Independent Project
- CHEMENG 4Z03 - Interfacial Engineering
- ENGINEER 4EX3 A/B - Experiential Engineering Design

**Note:** Only two courses from List B (Chem Eng Sci/Math courses) can be taken over the course of the program

##### 3 units

- complementary studies electives

##### 6-8 units

- Level III or IV technical electives from approved List A (Interdisciplinary engineering courses) or permission of the Department of Chemical

Engineering

## Bachelor of Engineering and Biomedical Engineering

### CHEMICAL AND BIOMEDICAL ENGINEERING, CHEMICAL AND BIOMEDICAL ENGINEERING CO-OP (B.ENG.BME)

#### ADMISSION TO LEVEL II IBEHS PROGRAMS

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0.

All students who successfully complete the first year of the program will have a space in one of the two degree options. As enrolment is limited in each of the two degree options (HESE or BME), where there is more demand than spaces, competition will be based on first-year academic achievement.

Students seeking admission to the BME specialization will be admitted to one of eight Level II Engineering programs (Chemical, Civil, Electrical, Engineering Physics, Materials, Mechanical, Mechatronics, or Software). Admission to a Level II Engineering program is guaranteed for all students who meet the general progress requirements. All engineering programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on GPA.

Students who do not meet the requirements to proceed to Level II in May will have a *Pending* flag put on their allocation. The *Pending* flag will be removed in August if the student completes the requirements over the summer.

#### NOTES

- Students may choose to follow a stream of recommended technical elective courses.
  - Process Systems Engineering (PSE) Stream:**  
**Required Courses:** CHEMENG 4H03, 4E03, 4G03, 4L02 (PSE laboratories completed). Other courses may be substituted with permission of the Department Chair.
  - Polymer Materials and Manufacturing (PMM) Stream:**  
**Required Courses:** CHEMENG 3Q03, 4B03, 4H03, 4L02 (PMM laboratories completed), 4X03. Other courses may be substituted with permission of the Department Chair.
  - Water-Energy Technologies (WET) Stream:**  
**Required Courses:** CHEMENG 4A03, 4M03, 4L02 (WET laboratories completed) and one of ENGINEER 4V04 or CIVENG 4V04. Other courses may be substituted with permission of the Department Chair.
- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EE0. IBEHS 2ECO will be added to the academic record for each 4-month work term.
- Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to 8-units of research project or independent study courses. A full listing can be found on the IBEHS website.
- Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

#### REQUIREMENTS

##### LEVEL II: 37 UNITS

##### 15 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2E03 - Inquiry II: Biochemistry
- HTHSCI 2F03 - Human Physiology and Anatomy I
- HTHSCI 2FF3 - Human Physiology and Anatomy II

- IBEHS 2P03 - Health Solutions Design Projects II

##### 22 units

- CHEMENG 2D04 - Chemical Engineering Principles I
- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- CHEMENG 2F04 - Chemical Engineering Principles II
- CHEMENG 2O04 - Fluid Mechanics
- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

##### LEVEL III: 39 UNITS

##### 3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I

##### 13 units

- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

##### 23 units

- CHEMENG 2G03 - Problem Solving and Technical Communication
- CHEMENG 3A04 - Heat Transfer
- CHEMENG 3D04 - Chemical Engineering Thermodynamics
- CHEMENG 3G04 - Chemical Process Design and Simulation
- CHEMENG 3K04 - Introduction to Reactor Design
- CHEMENG 3M04 - Mass Transfer and Stagewise Operations

##### LEVEL IV: 35-36 UNITS (2020-2021 ONLY)

##### 3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I

##### 17 units

- IBEHS 4B03 - Biomechanics
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

##### 9 units

- CHEMENG 3I03 - Data Acquisition and Analysis
- CHEMENG 3L02 - Intermediate Laboratory Skills
- CHEMENG 3P04 - Process Control

##### 3-4 units

- Approved IBEHS Technical Elective

##### 3 units

- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry

##### LEVEL IV: 35-36 UNITS (EFFECTIVE 2021-2022)

##### 17 units

- IBEHS 4B03 - Biomechanics
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

##### 9 units

- CHEMENG 3I03 - Data Acquisition and Analysis
- CHEMENG 3L02 - Intermediate Laboratory Skills
- CHEMENG 3P04 - Process Control

##### 3 units

from

- CHEMENG 3BK3 - Bio-Reaction Engineering
- CHEMENG 3BM3 - Bioseparations Engineering
- CHEMENG 4A03 - Energy Systems Engineering
- CHEMENG 4B03 - Polymer Reaction Engineering
- CHEMENG 4H03 - Big Data Methods and Modeling in Chemical and Materials Engineering
- CHEMENG 4K03 - Reactor Design for Heterogeneous Systems
- CHEMENG 4M03 - Industrial Separation Processes
- CHEMENG 4T03 - Applications of Chemical Engineering in Medicine
- CHEMENG 4TA3 A/B - Engineering Practicum
- CHEMENG 4X03 - Polymer Processing
- CHEMENG 4Z03 - Interfacial Engineering

3-4 units

- Approved IBEHS Technical Elective

3 units

- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry

**LEVEL V: 36-38 UNITS**9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

9 units

- CHEMENG 4L02 - Advanced Laboratory Skills
- CHEMENG 4N04 - Engineering Economics and Problem Solving
- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

9-10 units from

- CHEMENG 3BK3 - Bio-Reaction Engineering
- CHEMENG 3BM3 - Bioseparations Engineering
- CHEMENG 4A03 - Energy Systems Engineering
- CHEMENG 4B03 - Polymer Reaction Engineering
- CHEMENG 4E03 - Digital Computer Process Control
- CHEMENG 4H03 - Big Data Methods and Modeling in Chemical and Materials Engineering
- CHEMENG 4G03 - Optimization in Chemical Engineering
- CHEMENG 4K03 - Reactor Design for Heterogeneous Systems
- CHEMENG 4M03 - Industrial Separation Processes
- CHEMENG 4T03 - Applications of Chemical Engineering in Medicine
- CHEMENG 4TA3 A/B - Engineering Practicum
- CHEMENG 4X03 - Polymer Processing
- CHEMENG 4Y04 A/B - Senior Independent Project
- CHEMENG 4Z03 - Interfacial Engineering

3-4 units

- approved IBEHS Technical Elective

6 units

- Complementary Studies

## Bachelor of Engineering and Biosciences

### CHEMICAL ENGINEERING AND BIOENGINEERING, CHEMICAL ENGINEERING AND BIOENGINEERING CO-OP (B.ENG.BIOSCI.)

**ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a

statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTE**

1. Students may choose to follow a stream of recommended technical elective courses.

- **Process Systems Engineering (PSE) Stream:**

**Required Courses:** CHEMENG 4H03, 4E03, 4G03, 4L02 (PSE laboratories completed). Other courses may be substituted with permission of the Department Chair.

- **Polymer Materials and Manufacturing (PMM) Stream:**

**Required Courses:** CHEMENG 3Q03, 4B03, 4H03, 4L02 (PMM laboratories completed), 4X03. Other courses may be substituted with permission of the Department Chair.

- **Water-Energy Technologies (WET) Stream:**

**Required Courses:** CHEMENG 4A03, 4M03, 4L02 (WET laboratories completed) and one of ENGINEER 4V04 or CIVENG 4V04. Other courses may be substituted with permission of the Department Chair.

2. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4-month work term.

**REQUIREMENTS****LEVEL II: 40 UNITS**19 units

- CHEMENG 2D04 - Chemical Engineering Principles I
- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- CHEMENG 2F04 - Chemical Engineering Principles II
- CHEMENG 2G03 - Problem Solving and Technical Communication
- CHEMENG 2O04 - Fluid Mechanics

3 units

- CHEM 1AA3 - Introductory Chemistry II

3 units

- BIOLOGY 1A03 - Cellular and Molecular Biology

6 units

- HTHSCI 2L03 - Anatomy and Physiology I: Communication
- HTHSCI 2LL3 - Anatomy and Physiology II: Homeostasis

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

3 units

- approved complementary studies electives

**LEVEL III: 37-40 UNITS**31 units

- BIOLOGY 2EE3 - Introduction to Microbiology and Biotechnology
- CHEMENG 3A04 - Heat Transfer
- CHEMENG 3D04 - Chemical Engineering Thermodynamics
- CHEMENG 3G04 - Chemical Process Design and Simulation
- CHEMENG 3I03 - Data Acquisition and Analysis
- CHEMENG 3K04 - Introduction to Reactor Design
- CHEMENG 3L02 - Intermediate Laboratory Skills
- CHEMENG 3M04 - Mass Transfer and Stagewise Operations
- CHEMENG 4T03 - Applications of Chemical Engineering in Medicine

3-6 units

- CHEM 2E03 - Introductory Organic Chemistry

or both

- CHEM 20A3 - Organic Chemistry I
- CHEM 20B3 - Organic Chemistry II



3 units

from

- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- BIOLOGY 2B03 - Cell Biology
- HTHSCI 2K03 - Cell Biology

**LEVEL IV: 36-37 UNITS**

15 units

- CHEMENG 3BK3 - Bio-Reaction Engineering
- CHEMENG 3BM3 - Bioseparations Engineering
- CHEMENG 3P04 - Process Control
- CHEMENG 4L02 - Advanced Laboratory Skills
- IBEHS 2P03 - Health Solutions Design Projects II

3 units

- BIOCHEM 3G03 - Proteins and Nucleic Acids

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

6 units

from

- CHEM 3I03 - Industrial Chemistry
- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry
- CHEMBIO 3BM3 - Implanted Biomaterials
- CHEMENG 3Q03 - Introduction to Polymer Science

3 units

- MATLS 3J03 - Statistical Methods for Materials Engineers

3 units

- approved complementary studies electives

3 units

- approved technical electives from biosciences or bioengineering

**LEVEL V: 36-39 UNITS**

8 units

- CHEMENG 4N04 - Engineering Economics and Problem Solving
- CHEMENG 4W04 - Chemical Plant Design and Capstone Project

15-16 units

from

- CHEMENG 4A03 - Energy Systems Engineering
- CHEMENG 4B03 - Polymer Reaction Engineering
- CHEMENG 4E03 - Digital Computer Process Control
- CHEMENG 4G03 - Optimization in Chemical Engineering
- CHEMENG 4H03 - Big Data Methods and Modeling in Chemical and Materials Engineering
- CHEMENG 4K03 - Reactor Design for Heterogeneous Systems
- CHEMENG 4M03 - Industrial Separation Processes
- CHEMENG 4TA3 A/B - Engineering Practicum
- CHEMENG 4X03 - Polymer Processing
- CHEMENG 4Y04 A/B - Senior Independent Project
- CHEMENG 4Z03 - Interfacial Engineering
- ENGINEER 4EX3 A/B - Experiential Engineering Design

4 units

- CIVENG 4V04 - Biological Aspects of Wastewater Treatment

3-4 units

- approved technical electives from biosciences or bioengineering

3 units

- approved complementary studies electives

3-4 units

- Level III or IV technical electives from approved List A (Interdisciplinary engineering courses) or permission of the Department of Chemical Engineering

## Bachelor of Engineering and Management

### CHEMICAL ENGINEERING AND MANAGEMENT, CHEMICAL ENGINEERING AND MANAGEMENT CO-OP (B.ENG.MGT.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

1. Students may choose to follow a stream of recommended technical elective courses.

- **Process Systems Engineering (PSE) Stream:**

**Required Courses:** CHEMENG 4H03, 4E03, 4G03, 4L02 (PSE laboratories completed). Other courses may be substituted with permission of the Department Chair.

- **Polymer Materials and Manufacturing (PMM) Stream:**

**Required Courses:** CHEMENG 3Q03, 4B03, 4H03, 4L02 (PMM laboratories completed), 4X03. Other courses may be substituted with permission of the Department Chair.

- **Water-Energy Technologies (WET) Stream:**

**Required Courses:** CHEMENG 4A03, 4M03, 4L02 (WET laboratories completed) and one of ENGINEER 4V04 or CIVENG 4V04. Other courses may be substituted with permission of the Department Chair.

2. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2EC0 will be added to the academic record for each 4 month work term.

#### REQUIREMENTS

##### LEVEL II: 37 UNITS

19 units

- CHEMENG 2D04 - Chemical Engineering Principles I
- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- CHEMENG 2F04 - Chemical Engineering Principles II
- CHEMENG 2G03 - Problem Solving and Technical Communication
- CHEMENG 2O04 - Fluid Mechanics

3 units

- CHEM 1AA3 - Introductory Chemistry II

3 units

- COMMERCE 1AA3 - Introductory Financial Accounting

3 units

- ECON 1BB3 - Introductory Macroeconomics

3 units

- ENGNMGT 2AA3 - Communication Skills

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

**LEVEL III: 40 UNITS**25 units

- CHEMENG 3A04 - Heat Transfer
- CHEMENG 3D04 - Chemical Engineering Thermodynamics
- CHEMENG 3G04 - Chemical Process Design and Simulation
- CHEMENG 3I03 - Data Acquisition and Analysis
- CHEMENG 3K04 - Introduction to Reactor Design
- CHEMENG 3L02 - Intermediate Laboratory Skills
- CHEMENG 3M04 - Mass Transfer and Stagewise Operations

3 units

- approved complementary studies electives

12 units

- COMMERCE 1BA3 - Organizational Behaviour (or 2BA3)
- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2FA3 - Introduction to Finance
- COMMERCE 2MA3 - Introduction to Marketing

**LEVEL IV: 34-37 UNITS**4 units

- CHEMENG 3P04 - Process Control

3 units

- MATLS 3J03 - Statistical Methods for Materials Engineers

6 units

from

- CHEMENG 3BK3 - Bio-Reaction Engineering
- CHEMENG 3BM3 - Bioseparations Engineering
- CHEMENG 4A03 - Energy Systems Engineering
- CHEMENG 4B03 - Polymer Reaction Engineering
- CHEMENG 4H03 - Big Data Methods and Modeling in Chemical and Materials Engineering
- CHEMENG 4K03 - Reactor Design for Heterogeneous Systems
- CHEMENG 4M03 - Industrial Separation Processes
- CHEMENG 4T03 - Applications of Chemical Engineering in Medicine
- CHEMENG 4TA3 A/B - Engineering Practicum
- CHEMENG 4X03 - Polymer Processing
- CHEMENG 4Z03 - Interfacial Engineering
- ENGINEER 4EX3 A/B - Experiential Engineering Design

**Note:** Only one course from List B (Chem Eng Sci/Math courses) can be taken over the course of the program.

9 units

- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3-6 units

- CHEM 2E03 - Introductory Organic Chemistry

or both

- CHEM 20A3 - Organic Chemistry I and
- CHEM 20B3 - Organic Chemistry II

3 units

from

- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- CHEM 3I03 - Industrial Chemistry
- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry
- CHEMBIO 3BM3 - Implanted Biomaterials
- CHEMENG 3Q03 - Introduction to Polymer Science

3 units

- ENGNMGT 4A03 - Innovation Driven Project Development and Management

**LEVEL V: 37-40 UNITS**10 units

- CHEMENG 4L02 - Advanced Laboratory Skills
- CHEMENG 4N04 - Engineering Economics and Problem Solving
- CHEMENG 4W04 - Chemical Plant Design and Capstone Project

6 units

- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 4PA3 - Business Policy: Strategic Management

6-7 units

from

- CHEMENG 3BK3 - Bio-Reaction Engineering
- CHEMENG 3BM3 - Bioseparations Engineering
- CHEMENG 4A03 - Energy Systems Engineering
- CHEMENG 4B03 - Polymer Reaction Engineering
- CHEMENG 4H03 - Big Data Methods and Modeling in Chemical and Materials Engineering
- CHEMENG 4E03 - Digital Computer Process Control
- CHEMENG 4G03 - Optimization in Chemical Engineering
- CHEMENG 4K03 - Reactor Design for Heterogeneous Systems
- CHEMENG 4M03 - Industrial Separation Processes
- CHEMENG 4T03 - Applications of Chemical Engineering in Medicine
- CHEMENG 4TA3 A/B - Engineering Practicum
- CHEMENG 4X03 - Polymer Processing
- CHEMENG 4Y04 A/B - Senior Independent Project
- CHEMENG 4Z03 - Interfacial Engineering
- ENGINEER 4EX3 A/B - Experiential Engineering Design

**Note:** Only one course from List B (Chem Eng Sci/Math courses) can be taken over the course of the program

3 units

- ENGNMGT 5B03 - Engineering and Management Projects

6 units

- Commerce electives selected from Level III or IV Commerce

6-8 units

- Level III or IV technical electives from approved List A or permission of the Department of Chemical Engineering

## Bachelor of Engineering and Society

### CHEMICAL ENGINEERING AND SOCIETY, CHEMICAL ENGINEERING AND SOCIETY CO-OP (B.ENG.SOCIETY)

## PROGRAM DIRECTOR, ENGINEERING &amp; SOCIETY

C. Churchill (*Civil Engineering*) B.Eng., M.Eng. (*McMaster*)**ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTES**

1. Students may choose to follow a stream of recommended technical elective courses.

- **Process Systems Engineering (PSE) Stream:**

**Required Courses:** CHEMENG 4H03, 4E03, 4G03, 4L02 (PSE)

laboratories completed). Other courses may be substituted with permission of the Department Chair.

• **Polymer Materials and Manufacturing (PMM) Stream:**

**Required Courses:** CHEMENG 3Q03, 4B03, 4H03, 4L02 (PMM laboratories completed), 4X03. Other courses may be substituted with permission of the Department Chair.

• **Water-Energy Technologies (WET) Stream:**

**Required Courses:** CHEMENG 4A03, 4M03, 4L02 (WET laboratories completed), and one of ENGINEER 4V04 or CIVENG 4V04. Other courses may be substituted with permission of the Department Chair.

- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2EC0 will be added to the academic record for each 4 month work term.
- A minimum of 18 units of focus elective courses is required for the program. This does not include the six units of complementary studies elective in Level I.

**REQUIREMENTS**

**LEVEL II: 37-40 UNITS**

19 units

- CHEMENG 2D04 - Chemical Engineering Principles I
- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- CHEMENG 2F04 - Chemical Engineering Principles II
- CHEMENG 2G03 - Problem Solving and Technical Communication
- CHEMENG 2O04 - Fluid Mechanics

3 units

- CHEM 1AA3 - Introductory Chemistry II

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

6 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I
- ENGSOCTY 2Y03 - Case Studies in History and Technology

3-6 units

- Engineering and Society focus electives

**LEVEL III: 34-40 UNITS**

25 units

- CHEMENG 3A04 - Heat Transfer
- CHEMENG 3D04 - Chemical Engineering Thermodynamics
- CHEMENG 3G04 - Chemical Process Design and Simulation
- CHEMENG 3I03 - Data Acquisition and Analysis
- CHEMENG 3K04 - Introduction to Reactor Design
- CHEMENG 3L02 - Intermediate Laboratory Skills
- CHEMENG 3M04 - Mass Transfer and Stagewise Operations

3-6 units

- CHEM 2E03 - Introductory Organic Chemistry

or both

- CHEM 2OA3 - Organic Chemistry I and
- CHEM 2OB3 - Organic Chemistry II

3 units

- ENGSOCTY 3Y03 - Technology and Society

3-6 units

- Engineering and Society focus electives

**LEVEL IV: 34 UNITS**

4 units

- CHEMENG 3P04 - Process Control

3 units

- MATLS 3J03 - Statistical Methods for Materials Engineers

9 units

from

- CHEMENG 3BK3 - Bio-Reaction Engineering
- CHEMENG 3BM3 - Bioseparations Engineering
- CHEMENG 4A03 - Energy Systems Engineering
- CHEMENG 4B03 - Polymer Reaction Engineering
- CHEMENG 4H03 - Big Data Methods and Modeling in Chemical and Materials Engineering
- CHEMENG 4K03 - Reactor Design for Heterogeneous Systems
- CHEMENG 4M03 - Industrial Separation Processes
- CHEMENG 4T03 - Applications of Chemical Engineering in Medicine
- CHEMENG 4TA3 A/B - Engineering Practicum
- CHEMENG 4X03 - Polymer Processing
- CHEMENG 4Z03 - Interfacial Engineering
- ENGINEER 4EX3 A/B - Experiential Engineering Design

**Note:** Only one course from List B (Chem Eng Sci/Math courses) can be taken over the course of the program

6 units

from

- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- CHEM 3I03 - Industrial Chemistry
- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry
- CHEMENG 3Q03 - Introduction to Polymer Science

6 units

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

6 units

- Engineering and Society focus electives

**LEVEL V: 34-37 UNITS**

10 units

- CHEMENG 4L02 - Advanced Laboratory Skills
- CHEMENG 4N04 - Engineering Economics and Problem Solving
- CHEMENG 4W04 - Chemical Plant Design and Capstone Project

6-7 units

from

- CHEMENG 3BK3 - Bio-Reaction Engineering
- CHEMENG 3BM3 - Bioseparations Engineering
- CHEMENG 4A03 - Energy Systems Engineering
- CHEMENG 4B03 - Polymer Reaction Engineering
- CHEMENG 4H03 - Big Data Methods and Modeling in Chemical and Materials Engineering
- CHEMENG 4E03 - Digital Computer Process Control
- CHEMENG 4G03 - Optimization in Chemical Engineering
- CHEMENG 4K03 - Reactor Design for Heterogeneous Systems
- CHEMENG 4M03 - Industrial Separation Processes
- CHEMENG 4T03 - Applications of Chemical Engineering in Medicine
- CHEMENG 4TA3 A/B - Engineering Practicum
- CHEMENG 4X03 - Polymer Processing
- CHEMENG 4Y04 A/B - Senior Independent Project
- CHEMENG 4Z03 - Interfacial Engineering
- ENGINEER 4EX3 A/B - Experiential Engineering Design

**Note:** Only one course from List B (Chem Eng Sci/Math courses) can be taken over the course of the program

6-8 units

- Level III or IV technical electives from approved List A (Interdisciplinary engineering courses) or permission of the Department of Chemical Engineering

3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

3 units

- ENGSOCTY 4Y03 - Society Capstone Design

6 units

- Engineering and Society focus electives

## Department of Civil Engineering

John Hodgins Engineering Building, Room 301, ext. 24287 or 24315

<http://www.eng.mcmaster.ca/civil/>

**Faculty of the Department of Civil Engineering, as of January 15, 2020**

### CHAIR

**Michael J. Tait**

ASSOCIATE CHAIR GRADUATE

**Sarah Dickson**

ASSOCIATE CHAIR UNDERGRADUATE

**Cameron Churchill**

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**Peijun Guo**/B.Sc., M.Sc., Ph.D. (*SWJTU*), Ph.D. (*Calgary*), P.Eng.

**Yiping Guo**/B.Sc. (*Zhejiang*), M.A.Sc., Ph.D. (*Toronto*), P.Eng.

**K.S. Sivakumar**/B.Sc. (*Sri Lanka*), M.Eng. (*Asian Inst. Tech.*), Ph.D. (*Calgary*), P.Eng.

**Michael J. Tait**/B.E.Sc., Ph.D. (*Western Ontario*), P.Eng./Joe Ng-JNE

Consulting Chair in Design, Construction and Management of Infrastructure Renewal

### ASSOCIATE PROFESSORS

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**Younggy Kim**/B.E., M.S. (*Korea*), Ph.D. (*Texas-Austin*), L.E.L.

**Saiedeh N. Razavi**/B.Sc. (*Sharif*), M.Sc. (*Tehran*), Ph.D. (*Waterloo*)/Chair in Heavy Construction

**Lydell Wiebe**/B.Sc. (*Toronto*), M.Sc. (*ROSE*), Ph.D. (*Toronto*), P.Eng.

### ASSISTANT PROFESSORS

**Georgios Balomenos**/Dip., M.Sc. (*Democritus, Greece*), Ph.D. (*Waterloo*)

**Cameron J. Churchill**/B.Eng., M.A.Sc. (*McMaster*), L.E.L.

**Mohamed Ezzeldin**/B.Sc., M.Sc. (*Ain Shams*), Ph.D. (*McMaster*)

**Sonia Hassini**/B. Eng. (*Tunis*), M. Eng. (*Waterloo*), Ph.D. (*McMaster*)

**Mohamed Hussein**/B.Sc., M.Sc. (*Ain Shams*), Ph.D. (*UBC*)

**Zhong (Zoe) Li**/B. Eng. (*Beijing Normal*), M.A.Sc., Ph.D., (*Regina*)

**Moataz Mohamed**/B.E. (*Egypt*), M.A.Sc. (*Rome*), Ph.D. (*Ulster*)

**SeonHong Na**/B.Sc., M.Sc. (*Seoul*), Ph.D. (*Columbia*)

**Cancan Yang**/B.Sc. (*Chongqing, China*), M.S., Ph.D. (*Buffalo*)

**Hao Yang**/B.Sc. (*China*), M.S., Ph.D. (*California-Irvine*)

**Benzhong (Robin) Zhao**/B.A.Sc. (*Waterloo*), M.Sc., Ph.D. (*M.I.T.*)

## Bachelor of Engineering

### CIVIL ENGINEERING, CIVIL ENGINEERING CO-OP (B.ENG.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

### NOTES

1. Students entering Level II will register in the Civil Engineering program following the requirements outlined below. Students entering Levels III and IV should follow the program requirements as specified in the Undergraduate Calendar of the year of their entry into Level II. Such students are advised to refer to their degree audit for the program for which they are registered in and to consult with the Department of Civil Engineering for further information.
2. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.
3. Before the end of Level III, students must complete a Civil Engineering electives form, and ensure that it has been reviewed by the Department before completing Level IV Registration.
4. To meet the capstone project requirement, all students in their final level must take CIVENG 4X06 A/B.

### REQUIREMENTS

#### LEVEL II: 38 UNITS

##### 32 units

- CIVENG 2A03 - Surveying and Measurement for Transportation and Construction
- CIVENG 2B04 - Principles of Environmental Engineering
- CIVENG 2C04 - Structural Mechanics
- CIVENG 2E03 - Computer Applications in Civil Engineering
- CIVENG 2I03 - Communications in Civil Engineering
- CIVENG 2J04 - Principles of Geological and Geo-Environmental Engineering
- CIVENG 2Q04 - Fluid Mechanics
- CIVENG 2Q03 - Engineering Mechanics: Dynamics
- CIVENG 2P04 - Statics and Mechanics of Materials

##### 6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

#### LEVEL III: 40 UNITS

##### 33 units

- CIVENG 3A03 - Geotechnical Engineering I
- CIVENG 3B03 - Geotechnical Engineering II
- CIVENG 3C03 - Engineering Systems
- CIVENG 3G04 - Structural Analysis
- CIVENG 3J04 - Reinforced Concrete Design
- CIVENG 3K03 - Introduction to Transportation Engineering
- CIVENG 3L03 - Water Quality
- CIVENG 3M03 - Municipal Hydraulics
- CIVENG 3P04 - Civil Engineering Materials and Design
- CIVENG 3RR3 - Engineering Economics and Project Management

##### 4 units

- STATS 3J04 - Probability and Statistics for Civil Engineering

##### 3 units

- approved complementary studies electives

#### LEVEL IV: 39 UNITS

##### 3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

##### 4 units

- CIVENG 4N04 - Steel Structures

##### 3 units

- approved complementary studies electives

##### 6 units

- CIVENG 4X06 A/B - Design and Synthesis Project in Civil Engineering

##### 20 units

- from approved list of Level IV Civil Engineering technical electives.



3 units

- ENGPYHS 3ES3 - Introduction to Energy Systems

## Bachelor of Engineering and Biomedical Engineering

### CIVIL AND BIOMEDICAL ENGINEERING, CIVIL AND BIOMEDICAL ENGINEERING CO-OP (B.ENG.BME)

#### ADMISSION TO LEVEL II IBEHS PROGRAMS

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0.

All students who successfully complete the first year of the program will have a space in one of the two degree options. As enrolment is limited in each of the two degree options (HESE or BME), where there is more demand than spaces, competition will be based on first-year academic achievement.

Students seeking admission to the BME specialization will be admitted to one of eight Level II Engineering programs (Chemical, Civil, Electrical, Engineering Physics, Materials, Mechanical, Mechatronics, or Software). Admission to a Level II Engineering program is guaranteed for all students who meet the general progress requirements. All engineering programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on GPA.

Students who do not meet the requirements to proceed to Level II in May will have a *Pending* flag put on their allocation. The *Pending* flag will be removed in August if the student completes the requirements over the summer.

#### NOTES

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EE0. IBEHS 2ECO will be added to the academic record for each 4 month work term.
2. Students entering Level II will register in the Civil Engineering program following the requirements outlined below. Students entering Levels III, IV and V should follow the program requirements as specified in the Undergraduate Calendar of the year of their entry into Level II. Such students are advised to refer to their degree audit for the program for which they are registered in and to consult with the Department of Civil Engineering for further information.
3. Before the end of Level IV, students must complete a Civil Engineering electives form, and ensure that it has been reviewed by the Department before completing Level V Registration.
4. Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to 8-units of research project or independent study courses. A full listing can be found on the IBEHS website.
5. Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

#### REQUIREMENTS

##### LEVEL II: 40 UNITS

##### 12 units

- HTHSCI 2E03 - Inquiry II: Biochemistry
- HTHSCI 2F03 - Human Physiology and Anatomy I
- HTHSCI 2FF3 - Human Physiology and Anatomy II
- IBEHS 2P03 - Health Solutions Design Projects II

##### 28 units

- CIVENG 2A03 - Surveying and Measurement for Transportation and Construction

- CIVENG 2B04 - Principles of Environmental Engineering
- CIVENG 2C04 - Structural Mechanics
- CIVENG 2J04 - Principles of Geological and Geo-Environmental Engineering
- CIVENG 2P04 - Statics and Mechanics of Materials
- CIVENG 2Q03 - Engineering Mechanics: Dynamics
- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

##### LEVEL III: 39 UNITS

##### 16 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

##### 20 units

- CIVENG 2E03 - Computer Applications in Civil Engineering
- CIVENG 2O04 - Fluid Mechanics
- CIVENG 3A03 - Geotechnical Engineering I
- CIVENG 3B03 - Geotechnical Engineering II
- CIVENG 3L03 - Water Quality
- CIVENG 3P04 - Civil Engineering Materials and Design

##### 3 units

- Complementary Studies

##### LEVEL IV: 35 UNITS (2020-2021 ONLY)

##### 17 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

##### 18 units

- CIVENG 3C03 - Engineering Systems
- CIVENG 3G04 - Structural Analysis
- CIVENG 3J04 - Reinforced Concrete Design
- CIVENG 3M03 - Municipal Hydraulics
- CIVENG 3P04 - Civil Engineering Materials and Design

##### LEVEL IV: 37 UNITS (EFFECTIVE 2021-2022)

##### 3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I

##### 20 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

##### 14 units

- CIVENG 3C03 - Engineering Systems
- CIVENG 3G04 - Structural Analysis
- CIVENG 3J04 - Reinforced Concrete Design
- CIVENG 3M03 - Municipal Hydraulics

##### LEVEL V: 39-40 UNITS (2020-2021 ONLY)

##### 9 units

- IBEHS 5A03
- IBEHS 5B06 A/B

13 units

- CIVENG 3K03 - Introduction to Transportation Engineering
- CIVENG 4N04 - Steel Structures
- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- ENGPYS 3ES3 - Introduction to Energy Systems

6-7 units

from

- approved IBEHS Technical Elective

8 units

from

- approved list of Level IV Civil technical electives

3 units

- Complementary Studies

**LEVEL V: 39-40 UNITS (2021-2022 ONLY)**3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 20A3 - Organic Chemistry I

9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

10 units

- CIVENG 3K03 - Introduction to Transportation Engineering
- CIVENG 4N04 - Steel Structures
- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

6-7 units

from

- approved IBEHS Technical Electives

8 units

from

- approved list of Level IV Civil technical electives

3 units

- Complementary Studies

**LEVEL V: 36-37 UNITS (EFFECTIVE 2022-2023)**9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

10 units

- CIVENG 3K03 - Introduction to Transportation Engineering
- CIVENG 4N04 - Steel Structures
- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

6-7 units

from

- approved IBEHS Technical Electives

8 units

from

- approved list of Level IV Civil technical electives

3 units

- Complementary Studies

## Bachelor of Engineering and Management

### CIVIL ENGINEERING AND MANAGEMENT, CIVIL ENGINEERING AND MANAGEMENT CO-OP (B.ENG.MGT.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0. Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives. Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

1. Students entering Level II will register in the Civil Engineering program following the requirements outlined below. Students entering Levels III, IV and V should follow the program requirements as specified in the Undergraduate Calendar of the year of their entry into Level II. Such students are advised to refer to their degree audit for the program for which they are registered in and to consult with the Department of Civil Engineering for further information.
2. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EEO. ENGINEER 2ECO will be added to the academic record for each four month work term.
3. Before the end of Level IV, students must complete a Civil Engineering electives form, and ensure that it has been reviewed by the Department before completing Level V Registration.
4. To meet the capstone project requirement, all students in their final level must take CIVENG 4X06 A/B.

#### REQUIREMENTS

##### LEVEL II: 38 UNITS

23 units

- CIVENG 2A03 - Surveying and Measurement for Transportation and Construction
- CIVENG 2B04 - Principles of Environmental Engineering
- CIVENG 2C04 - Structural Mechanics
- CIVENG 2J04 - Principles of Geological and Geo-Environmental Engineering
- CIVENG 2O04 - Fluid Mechanics
- CIVENG 2P04 - Statics and Mechanics of Materials

6 units

- COMMERCE 1AA3 - Introductory Financial Accounting
- COMMERCE 2MA3 - Introduction to Marketing

3 units

- ENGNMGT 2AA3 - Communication Skills

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

##### LEVEL III: 38 UNITS

19 units

- CIVENG 2E03 - Computer Applications in Civil Engineering
- CIVENG 2Q03 - Engineering Mechanics: Dynamics
- CIVENG 3A03 - Geotechnical Engineering I
- CIVENG 3B03 - Geotechnical Engineering II
- CIVENG 3G04 - Structural Analysis
- CIVENG 3M03 - Municipal Hydraulics

9 units

- COMMERCE 1BA3 - Organizational Behaviour
- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2FA3 - Introduction to Finance

3 units

- ECON 1BB3 - Introductory Macroeconomics

4 units

- STATS 3J04 - Probability and Statistics for Civil Engineering

3 units

- approved complementary studies electives

**LEVEL IV: 39 UNITS**17 units

- CIVENG 3C03 - Engineering Systems
- CIVENG 3J04 - Reinforced Concrete Design
- CIVENG 3K03 - Introduction to Transportation Engineering
- CIVENG 3L03 - Water Quality
- CIVENG 3P04 - Civil Engineering Materials and Design

3 units

- ENGPYHS 3ES3 - Introduction to Energy Systems

12 units

- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

3 units

- ENGMGT 4A03 - Innovation Driven Project Development and Management

4 units

- from approved list of Level IV Civil Engineering technical electives.

**LEVEL V: 37 UNITS**3 units

- COMMERCE 4PA3 - Business Policy: Strategic Management

6 units

- Commerce electives selected from Level III or IV Commerce

3 units

- ENGMGT 5B03 - Engineering and Management Projects

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

4 units

- CIVENG 4N04 - Steel Structures

6 units

- CIVENG 4X06 A/B - Design and Synthesis Project in Civil Engineering

12 units

- from approved list of Level IV Civil Engineering technical electives.

## Bachelor of Engineering and Society

### CIVIL ENGINEERING AND SOCIETY, CIVIL ENGINEERING AND SOCIETY CO-OP (B.ENG.SOCIETY)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

1. Students entering Level II will register in the Civil Engineering program following the requirements outlined below. Students entering Levels III, IV and V should follow the program requirements as specified in the

Undergraduate Calendar of the year of their entry into Level II. Such students are advised to refer to their degree audit for the program for which they are registered in and to consult with the Department of Civil Engineering for further information.

2. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EEO. ENGINEER 2ECO will be added to the academic record for each 4 month work term.
3. Before the end of Level IV, students must complete a Civil Engineering electives form, and ensure that it has been reviewed by the Department before completing Level V Registration.
4. To meet the capstone project requirement, all students in their final level must take CIVENG 4X06 A/B.
5. A minimum of 18 units of focus elective courses is required for the program. (This does not include the six units of complementary studies elective in Level I.)

#### REQUIREMENTS

##### LEVEL II: 38 UNITS

23 units

- CIVENG 2A03 - Surveying and Measurement for Transportation and Construction
- CIVENG 2B04 - Principles of Environmental Engineering
- CIVENG 2C04 - Structural Mechanics
- CIVENG 2J04 - Principles of Geological and Geo-Environmental Engineering
- CIVENG 2004 - Fluid Mechanics
- CIVENG 2P04 - Statics and Mechanics of Materials

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

6 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I
- ENGSOCTY 2Y03 - Case Studies in History and Technology

3 units

- Engineering and Society focus electives

##### LEVEL III: 32-35 UNITS

19 units

- CIVENG 2E03 - Computer Applications in Civil Engineering
- CIVENG 2Q03 - Engineering Mechanics: Dynamics
- CIVENG 3A03 - Geotechnical Engineering I
- CIVENG 3B03 - Geotechnical Engineering II
- CIVENG 3G04 - Structural Analysis
- CIVENG 3M03 - Municipal Hydraulics

4 units

- STATS 3J04 - Probability and Statistics for Civil Engineering

3 units

- ENGSOCTY 3Y03 - Technology and Society

6-9 units

- from Engineering and Society focus electives

##### LEVEL IV: 35-38 UNITS

20 units

- CIVENG 3C03 - Engineering Systems
- CIVENG 3J04 - Reinforced Concrete Design
- CIVENG 3K03 - Introduction to Transportation Engineering
- CIVENG 3L03 - Water Quality
- CIVENG 3P04 - Civil Engineering Materials and Design
- CIVENG 3RR3 - Engineering Economics and Project Management

3 units

- ENGPYHS 3ES3 - Introduction to Energy Systems

6 units

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II

- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives  
6-9 units

- Engineering and Society focus electives

**LEVEL V: 35 UNITS**6 units

- CIVENG 4X06 A/B - Design and Synthesis Project in Civil Engineering

4 units

- CIVENG 4N04 - Steel Structures

16 units

- from approved list of Level IV Civil Engineering technical electives

**3 units**

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

**3 units**

- ENGSOCTY 4Y03 - Society Capstone Design

**3 units**

- Engineering and Society focus electives

## Department of Computing and Software

**Faculty of the Department of Computing and Software as of January 15, 2020**

CHAIR

**Mark S. Lawford**

PROFESSORS

**Antoine Deza**/M.Eng. (*Ecole Nationale des Ponts et Chaussées, Paris*), Ph.D. (*Tokyo Institute of Technology*), P.Eng.

**Douglas G. Down**/B.A.Sc., M.A.Sc. (*Toronto*), Ph.D. (*Illinois-Urbana*), P.Eng.

**William M. Farmer**/B.A. (*Notre Dame*), M.A., M.S., Ph.D. (*Wisconsin-Madison*), P.Eng.

**Frantisek Franek**/M.Sc., R.N.Dr. (*Charles, Prague*), Ph.D. (*Toronto*), L.E.L.

**Ryszard Janicki**/M.Sc. (*Warsaw*), Ph.D., D.Hab. (*Polish Acad. Sci.*)

**Ridha Khedri**/Dipl.Eng. (*Tunis*), M.Sc., Ph.D. (*Laval*), P.Eng.

**Mark S. Lawford**/B.Sc. (*Queen's*), M.A.Sc., Ph.D. (*Toronto*), P.Eng.

**Ned Nedialkov**/B.Sc. (*Sofia, Bulgaria*), M.Sc., Ph.D. (*Toronto*), L.E.L.

**Richard Paige**/B.Sc. (*McMaster*), M.Sc., Ph.D. (*Toronto*)

**Rong Zheng**/B.S., M.S. (*Tsinghua*), Ph.D. (*Illinois-Urbana*), P. Eng

ASSOCIATE PROFESSORS

**Christopher Anand**/B.Math. (*Waterloo*), M.Sc., Ph.D. (*McGill*), L.E.L.

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**Wenbo He**/B.S. (*Harbin*), M.S. (*Tsinghua*), Ph.D. (*Illinois-Urbana*)

**Wolfram Kahl**/M.Sc. (*Oxford*), Dr.rer.nat. (*University of the German Armed Forces, Munich*)

**George Karakostas**/Dipl. Eng. (*Patras*), M.S.A., Ph.D. (*Princeton*), P.Eng.

**Ryan Leduc**/B.Eng. (*Victoria*), M.A.Sc., Ph.D. (*Toronto*), P.Eng.

**Emil Sekerinski**/Dipl.Inf., Dr.rer.nat. (*Karlsruhe*)

**Spencer Smith**/B.Eng.C.S., M.Eng., Ph.D., (*McMaster*), P.Eng.

**Martin von Mohrenschildt**/Dipl.Math., Dr.Sc.Math. (*ETH-Zürich*), P.Eng.

**Alan Wass yng**/B.Sc., B.Sc., M.Sc., Ph.D. (*Witwatersrand*), P.Eng.

ASSISTANT PROFESSORS

**Hassan Ashtiani**/B.Sc., M.Sc. (*Tehran*), Ph.D. (*Waterloo*)

**Asgar Bokhari**/M.S.E.E. (*Oklahoma*), M.Sc., Ph.D. (*McMaster*), P.Eng.

**Fei Chiang**/B.Sc. (*Toronto*), M.Math (*Waterloo*), Ph.D. (*Toronto*), L.E.L.

**Reza Samavi**/B.Sc. (*Amirkabir*), M.Eng., Ph.D. (*Toronto*), P.Eng.

**NOTES**

1. All programs in the Department of Computing and Software have limited enrolment.
2. For the purpose of admission to Level II B.A.Sc. programs, the three

courses MATH 1A03, MATH 1AA3 and MATH 1B03 together are considered equivalent to MATH 1ZA3, MATH 1ZB3 and MATH 1ZC3.

For the Arts & Science and Computer Science (B.Arts.Sc.) program, see *Arts & Science Program*

For the Honours Economics and Computer Science (B.A.) program, see *Faculty of Social Sciences, Department of Economics*

For the Honours Mathematics and Computer Science (B.Sc.) program, see *Faculty of Science, Department of Mathematics and Statistics*

## Bachelor of Applied Science

### HONOURS COMPUTER SCIENCE AS A SECOND DEGREE (B.A.SC.)

**ADMISSION**

Completion of a Bachelor's degree from a recognized university in a discipline other than Computer Science with a Grade Point Average of least 7.0 ; and completion of MATH 1ZA3, MATH 1ZB3 and a grade of at least C+ in COMPSCI 1MD3 or equivalent. As Second Degree candidates, applicants must first apply for admission to the University through the Enrolment Services (Admissions) indicating they wish to apply for the Honours Computer Science B.A.Sc. as a Second Degree program. For the purpose of admission to this program, the two courses MATH 1A03 and MATH 1AA3 together are considered as equivalent to MATH 1ZA3 and MATH 1ZB3.

**NOTE**

If a student in the program has previously taken a required course (or its equivalent), it is not a requirement to repeat the course. However, if the credit from that course has been used toward completion of a previous degree, the student will be required to take another course with the required number of units. Admission to this program is at Level III.

**LEVEL III: 30 UNITS**27 units

- COMPSCI 2C03 - Data Structures and Algorithms
- COMPSCI 2DM3 - Discrete Mathematics with Applications I
- COMPSCI 2FA3 - Discrete Mathematics with Applications II
- COMPSCI 2GA3 - Computer Architecture
- COMPSCI 2ME3 - Introduction to Software Development
- COMPSCI 2S03 - Principles of Programming
- COMPSCI 2XA3 - Computer Science Practice and Experience: Software Development Skills
- COMPSCI 2XB3 - Computer Science Practice and Experience: Binding Theory to Practice
- COMPSCI 3I03 - Communication Skills

3 units

- Levels III, IV Computer Science, or other approved technical electives from List G (contact the *Department of Computing and Software*)

**LEVEL IV: 30 UNITS**27 units

- COMPSCI 3AC3 - Algorithms and Complexity
- COMPSCI 3DB3 - Databases
- COMPSCI 3MI3 - Principles of Programming Languages
- COMPSCI 3SD3 - Concurrent Systems
- COMPSCI 3SH3 - Computer Science Practice and Experience: Operating Systems
- COMPSCI 4C03 - Computer Networks and Security
- COMPSCI 4TB3 - Syntax-Based Tools and Compilers
- COMPSCI 4ZP6 A/B - Capstone Project

3 units

- Levels III, IV Computer Science, or other approved technical electives from List G (contact the *Department of Computing and Software*)



## HONOURS COMPUTER SCIENCE, HONOURS COMPUTER SCIENCE CO-OP (B.A.SC.)

### ADMISSION TO LEVEL II COMPUTER SCIENCE PROGRAMS

Admission to Level II Honours Computer Science requires completion of all non-elective Computer Science I courses with a minimum Grade Point Average (GPA) of 4.0.

#### NOTES

1. This program has limited enrolment.
2. For the purpose of admission to Level II B.A.Sc. programs, the three courses MATH 1A03, MATH 1AA3 and MATH 1B03 together are considered equivalent to MATH 1ZA3, MATH 1ZB3, and MATH 1ZC3.

### REQUIREMENTS FOR STUDENTS WHO ENTER THE PROGRAM IN 2020-2021 OR EARLIER

#### LEVEL II: 30 UNITS

##### 24 units

- COMPSCI 2C03 - Data Structures and Algorithms
- COMPSCI 2DM3 - Discrete Mathematics with Applications I
- COMPSCI 2FA3 - Discrete Mathematics with Applications II
- COMPSCI 2GA3 - Computer Architecture
- COMPSCI 2ME3 - Introduction to Software Development
- COMPSCI 2S03 - Principles of Programming
- COMPSCI 2XA3 - Computer Science Practice and Experience: Software Development Skills
- COMPSCI 2XB3 - Computer Science Practice and Experience: Binding Theory to Practice

##### 6 units

- Electives

#### LEVEL III: 30 UNITS

##### 18 units

- COMPSCI 3AC3 - Algorithms and Complexity
- COMPSCI 3DB3 - Databases
- COMPSCI 3I03 - Communication Skills
- COMPSCI 3MI3 - Principles of Programming Languages
- COMPSCI 3SD3 - Concurrent Systems
- COMPSCI 3SH3 - Computer Science Practice and Experience: Operating Systems

##### 6 units

from

- Levels III, IV Computer Science, or other approved technical electives from List G (contact the Department of Computing and Software)

##### 6 units

- Electives

#### LEVEL IV: 30 UNITS

##### 12 units

- COMPSCI 4C03 - Computer Networks and Security
- COMPSCI 4TB3 - Syntax-Based Tools and Compilers
- COMPSCI 4ZP6 A/B - Capstone Project

##### 12 units

from

- Levels III, IV Computer Science, or other approved technical electives from List G (contact the Department of Computing and Software)
- SEP 4EP3 - New Enterprise Capstone Project

##### 6 units

- Electives

### REQUIREMENTS (EFFECTIVE 2021-2022)

#### LEVEL II: 30 UNITS

##### 24 units

- COMPSCI 2AC3 - Automata and Computability
- COMPSCI 2C03 - Data Structures and Algorithms
- COMPSCI 2DB3 - Databases

- COMPSCI 2GA3 - Computer Architecture
- COMPSCI 2LC3 - Logical Reasoning for Computer Science
- COMPSCI 2ME3 - Introduction to Software Development
- COMPSCI 2SD3 - Concurrent Systems
- COMPSCI 2XC3 - Computer Science Practice and Experience: Algorithms and Software Design

##### 6 units

- Electives

#### LEVEL III: 30 UNITS

##### 18 units

- COMPSCI 3AC3 - Algorithms and Complexity
- COMPSCI 3I03 - Communication Skills
- COMPSCI 3MI3 - Principles of Programming Languages
- COMPSCI 3N03 - Computer Networks and Security
- COMPSCI 3SH3 - Computer Science Practice and Experience: Operating Systems
- COMPSCI 3TB3 - Syntax-Based Tools and Compilers

##### 6 units

from

- Levels III, IV Computer Science, or other approved technical electives from List G (contact the *Department of Computing and Software*)

##### 6 units

- Electives

#### LEVEL IV: 30 UNITS

##### 6 units

- COMPSCI 4ZP6 A/B - Capstone Project

##### 12 units

from

- Levels III, IV Computer Science, or other approved technical electives from List G (contact the *Department of Computing and Software*)
- SEP 4EP3 - New Enterprise Capstone Project

##### 12 units

- Electives

## Bachelor of Engineering

### MECHATRONICS ENGINEERING, MECHATRONICS ENGINEERING CO-OP (B.ENG.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTE

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EEO. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

**REQUIREMENTS****LEVEL II: 37 UNITS**6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

3 units

- ENGINEER 2B03 - Engineering Economics

6 units

- SFWRENG 2MD3 - Data Structures, Algorithms, and Language Concepts for Mechatronics
- SFWRENG 2MP3 - Programming for Mechatronics

8 units

- ENGPHY 2A04 - Electricity and Magnetism
- ENGPHY 2E04 - Analog and Digital Circuits

7 units

- MECHENG 2BA3 - Mechanical Engineering Measurements
- MECHENG 2QA4 - Engineering Mechanics: Kinetics and Dynamics

7 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- ENGINEER 2P04 - Engineering Mechanics

**LEVEL III: 40 UNITS**9 units

- SFWRENG 3I03 - Communication Skills
- SFWRENG 3SH3 - Operating Systems
- SFWRENG 4X03 - Scientific Computation

19 units

- MECHTRON 3DX4 - Dynamic Models and Control of Physical Systems
- MECHTRON 3K04 - Software Development
- MECHTRON 3MX3 - Signals and Systems
- MECHTRON 3TA4 - Embedded Systems Design I
- MECHTRON 3TB4 - Embedded Systems Design II

3 units

- MECHENG 2DA3 - Mechanical Engineering Design Elements

3 units

- ENGPHY 2NE3 - Thermal Systems Design

3 units

- ENGINEER 3N03 - Electronics and Instrumentation

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

**LEVEL IV: 37 UNITS**10 units

- MECHTRON 4AA4 - Real-Time Systems and Control Applications
- MECHTRON 4TB6 A/B - Mechatronics Capstone Design Project

6 units

- MECHENG 4H03 - Mechatronics
- MECHENG 4K03 - Robotics

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

6 units

- approved technical electives from List A (Contact the Department of Computing and Software.)

6 units

- approved technical electives from List B (Contact the Department of Computing and Software.)

6 units

- approved complementary studies electives

**SOFTWARE ENGINEERING - EMBEDDED SYSTEMS, SOFTWARE ENGINEERING - EMBEDDED SYSTEMS CO-OP (B.ENG.)**

Admission to level II Software Engineering - Embedded Systems and Software Engineering - Embedded Systems Co-op was last offered for the last time in September 2017.

**NOTE**

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

**REQUIREMENTS****LEVEL IV: 37 UNITS**13 units

- SFWRENG 4X03 - Scientific Computation
- SFWRENG 4AA4 - Real-Time Systems and Control Applications
- SFWRENG 4C03 - Computer Networks and Security
- SFWRENG 4HC3 - Human Computer Interfaces

6 units

- MECHTRON 4TB6 A/B - Mechatronics Capstone Design Project (See *Note 1* above.)

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

3 units

- Approved technical electives from Lists E and F (Contact the Department of Computing and Software)

3 units

- approved technical electives from List C (contact the Department of Computing and Software)

6 units

- approved complementary studies electives

**SOFTWARE ENGINEERING, SOFTWARE ENGINEERING CO-OP (B.ENG.)****ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTE**

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

**REQUIREMENTS****LEVEL II: 35 UNITS**3 units

- MATH 2Z03 - Engineering Mathematics III

29 units

- SFWRENG 2AA4 - Software Design I - Introduction to Software Development
- SFWRENG 2C03 - Data Structures and Algorithms
- SFWRENG 2DA4 - Digital Systems and Interfacing
- SFWRENG 2DM3 - Discrete Mathematics with Applications I
- SFWRENG 2FA3 - Discrete Mathematics and Applications II
- SFWRENG 2GA3 - Computer Architecture
- SFWRENG 2S03 - Principles of Programming
- SFWRENG 2XA3 - Software Engineering Practice and Experience: Software Development Skills
- SFWRENG 2XB3 - Software Engineering Practice and Experience: Binding Theory to Practice

3 units

- approved complementary studies electives

**LEVEL III: 39 UNITS**33 units

- SFWRENG 3A04 - Software Design III - Large System Design
- SFWRENG 3BB4 - Software Design II - Concurrent System Design
- SFWRENG 3DB3 - Databases
- SFWRENG 3DX4 - Dynamic Systems and Control
- SFWRENG 3I03 - Communication Skills
- SFWRENG 3MX3 - Signals and Systems
- SFWRENG 3O03 - Linear Optimization
- SFWRENG 3RA3 - Software Requirements and Security Considerations
- SFWRENG 3S03 - Software Testing
- SFWRENG 3XA3 - Software Engineering Practice and Experience: Software Project Management

3 units

- ENGINEER 2B03 - Engineering Economics

3 units

- approved technical electives from List E (contact the Department of Computing and Software)

**LEVEL IV: 37 UNITS**3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- approved complementary studies electives

22 units

- SFWRENG 4AA4 - Real-Time Systems and Control Applications
- SFWRENG 4C03 - Computer Networks and Security
- SFWRENG 4E03 - Performance Analysis of Computer Systems
- SFWRENG 4G06 A/B - Software Design IV - Capstone Design Project
- SFWRENG 4HC3 - Human Computer Interfaces
- SFWRENG 4X03 - Scientific Computation

3 units

- approved technical electives from List E (contact the Department of Computing and Software)

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

3 units

from

- approved technical electives from List C (contact the Department of Computing and Software)

## Bachelor of Engineering and Biomedical Engineering

### MECHATRONICS AND BIOMEDICAL ENGINEERING, MECHATRONICS AND BIOMEDICAL ENGINEERING CO-OP (B.ENG.BME)

**ADMISSION TO LEVEL II IBEHS PROGRAMS**

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0.

All students who successfully complete the first year of the program will have a space in one of the two degree options. As enrolment is limited in each of the two degree options (HESE or BME), where there is more demand than spaces, competition will be based on first-year academic achievement. Students seeking admission to the BME specialization will be admitted to one of eight Level II Engineering programs (Chemical, Civil, Electrical, Engineering Physics, Materials, Mechanical, Mechatronics, or Software). Admission to a Level II Engineering program is guaranteed for all students who meet the general progress requirements. All engineering programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on GPA. Students who do not meet the requirements to proceed to Level II in May will have a *Pending* flag put on their allocation. The *Pending* flag will be removed in August if the student completes the requirements over the summer.

**NOTES**

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EE0. IBEHS 2EC0 will be added to the academic record for each 4 month work term.
2. Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to eight units of research project or independent study courses. A full listing can be found on the IBEHS website.
3. Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

**REQUIREMENTS****LEVEL II: 36 UNITS**12 units

- HTHSCI 2E03 - Inquiry II: Biochemistry
- HTHSCI 2F03 - Human Physiology and Anatomy I
- HTHSCI 2FF3 - Human Physiology and Anatomy II
- IBEHS 2P03 - Health Solutions Design Projects II

24 units

- ENGINEER 2P04 - Engineering Mechanics
- ENGPYHS 2A04 - Electricity and Magnetism
- ENGPYHS 2E04 - Analog and Digital Circuits
- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV
- SFWRENG 2MD3 - Data Structures, Algorithms, and Language Concepts for Mechatronics
- SFWRENG 2MP3 - Programming for Mechatronics

**LEVEL III: 40 UNITS (2020-2021 ONLY)**16 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems

- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

24 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- ENGINEER 2P04 - Engineering Mechanics
- MECHENG 2BA3 - Mechanical Engineering Measurements
- MECHENG 2DA3 - Mechanical Engineering Design Elements
- MECHENG 2QA4 - Engineering Mechanics: Kinetics and Dynamics
- MECHTRON 3K04 - Software Development
- SFWRENG 3I03 - Communication Skills

**LEVEL III: 39 UNITS (EFFECTIVE 2021-2022)**16 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

23 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- ENGPYS 2NE3 - Thermal Systems Design
- MECHENG 2BA3 - Mechanical Engineering Measurements
- MECHENG 2DA3 - Mechanical Engineering Design Elements
- MECHENG 2QA4 - Engineering Mechanics: Kinetics and Dynamics
- MECHTRON 3K04 - Software Development
- SFWRENG 3I03 - Communication Skills

**LEVEL IV: 40 UNITS**3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I

20 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

8 units

- MECHTRON 3TA4 - Embedded Systems Design I
- MECHTRON 3TB4 - Embedded Systems Design II

3 units

- SFWRENG 3SH3 - Operating Systems

3 units

- approved IBEHS Technical Elective

3 units

- Complementary Studies

**LEVEL V: 37-38 UNITS**9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

16 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- MECHENG 4H03 - Mechatronics
- MECHENG 4K03 - Robotics
- MECHTRON 4AA4 - Real-Time Systems and Control Applications
- SFWRENG 4X03 - Scientific Computation

3-4 units

- approved IBEHS Technical Elective

3 units

- Complementary Studies

3 units

- approved technical electives from List A (Contact the Department of Computing and Software)

3 units

- approved technical electives from List B (Contact the Department of Computing and Software)

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## SOFTWARE AND BIOMEDICAL ENGINEERING, SOFTWARE AND BIOMEDICAL ENGINEERING CO-OP (B.ENG.BME)

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**ADMISSION TO LEVEL II IBEHS PROGRAMS**

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0.

All students who successfully complete the first year of the program will have a space in one of the two degree options. As enrolment is limited in each of the two degree options (HESE or BME), where there is more demand than spaces, competition will be based on first-year academic achievement.

Students seeking admission to the BME specialization will be admitted to one of eight Level II Engineering programs (Chemical, Civil, Electrical, Engineering Physics, Materials, Mechanical, Mechatronics, or Software). Admission to a Level II Engineering program is guaranteed for all students who meet the general progress requirements. All engineering programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on GPA.

Students who do not meet the requirements to proceed to Level II in May will have a *Pending* flag put on their allocation. The *Pending* flag will be removed in August if the student completes the requirements over the summer.

**NOTES**

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EE0. IBEHS 2EC0 will be added to the academic record for each four-month work term.
2. Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to eight units of research project or independent study courses. A full listing can be found on the IBEHS website.
3. Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

**REQUIREMENTS****LEVEL II: 37 UNITS**12 units

- HTHSCI 2E03 - Inquiry II: Biochemistry
- HTHSCI 2F03 - Human Physiology and Anatomy I
- HTHSCI 2FF3 - Human Physiology and Anatomy II
- IBEHS 2P03 - Health Solutions Design Projects II

25 units

- MATH 2Z03 - Engineering Mathematics III
- SFWRENG 2AA4 - Software Design I - Introduction to Software Development
- SFWRENG 2C03 - Data Structures and Algorithms
- SFWRENG 2DM3 - Discrete Mathematics with Applications I
- SFWRENG 2FA3 - Discrete Mathematics and Applications II
- SFWRENG 2S03 - Principles of Programming
- SFWRENG 2XA3 - Software Engineering Practice and Experience: Software Development Skills
- SFWRENG 2XB3 - Software Engineering Practice and Experience: Binding Theory to Practice



**LEVEL III: 35 UNITS**16 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

19 units

- SFWRENG 2DA4 - Digital Systems and Interfacing
- SFWRENG 3DB3 - Databases
- SFWRENG 3I03 - Communication Skills
- SFWRENG 3O03 - Linear Optimization
- SFWRENG 3XA3 - Software Engineering Practice and Experience: Software Project Management
- SFWRENG 2GA3 - Computer Architecture

**LEVEL IV: 40 UNITS**3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I

20 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

14 units

- SFWRENG 3A04 - Software Design III - Large System Design
- SFWRENG 3BB4 - Software Design II - Concurrent System Design
- SFWRENG 3RA3 - Software Requirements and Security Considerations
- SFWRENG 3S03 - Software Testing

3 units

- approved IBEHS Technical Elective

**LEVEL V: 40 UNITS**9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

19 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- SFWRENG 4AA4 - Real-Time Systems and Control Applications
- SFWRENG 4C03 - Computer Networks and Security
- SFWRENG 4E03 - Performance Analysis of Computer Systems
- SFWRENG 4HC3 - Human Computer Interfaces
- SFWRENG 4X03 - Scientific Computation

3 units

- approved technical electives from *List E* (Contact the Department of Computing and Software)

3 units

- approved IBEHS Technical Elective

6 units

- Complementary Studies

**Bachelor of Engineering and Management****MECHATRONICS ENGINEERING AND MANAGEMENT,  
MECHATRONICS ENGINEERING AND MANAGEMENT CO-OP (B.ENG.MGT.)****ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average. Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0. Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives. Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTES**

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0.

**REQUIREMENTS****LEVEL II: 40 UNITS**6 units

- SFWRENG 2MD3 - Data Structures, Algorithms, and Language Concepts for Mechatronics
- SFWRENG 2MP3 - Programming for Mechatronics

8 units

- ENGPYHS 2A04 - Electricity and Magnetism
- ENGPYHS 2E04 - Analog and Digital Circuits

7 units

- MECHENG 2BA3 - Mechanical Engineering Measurements
- MECHENG 2QA4 - Engineering Mechanics: Kinetics and Dynamics

7 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- ENGINEER 2P04 - Engineering Mechanics

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

3 units

- COMMERCE 2MA3 - Introduction to Marketing

3 units

- ENGNMGT 2AA3 - Communication Skills

**LEVEL III: 35 UNITS**11 units

- MECHTRON 3DX4 - Dynamic Models and Control of Physical Systems
- MECHTRON 3K04 - Software Development
- MECHTRON 3MX3 - Signals and Systems

3 units

- SFWRENG 3SH3 - Operating Systems

3 units

- ENGPYHS 2NE3 - Thermal Systems Design

3 units

- MECHENG 2DA3 - Mechanical Engineering Design Elements

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

3 units

- ECON 1BB3 - Introductory Macroeconomics

9 units

- COMMERCE 2FA3 - Introduction to Finance
- COMMERCE 1AA3 - Introductory Financial Accounting
- COMMERCE 1BA3 - Organizational Behaviour

#### LEVEL IV: 39 UNITS

12 units

- MECHTRON 3TA4 - Embedded Systems Design I
- MECHTRON 3TB4 - Embedded Systems Design II
- MECHTRON 4AA4 - Real-Time Systems and Control Applications

3 units

- SFWRENG 4X03 - Scientific Computation

3 units

- MECHENG 4H03 - Mechatronics

3 units

- ENGINEER 3N03 - Electronics and Instrumentation

3 units

- ENGNMGT 4A03 - Innovation Driven Project Development and Management

12 units

- COMMERCE 3MC3 - Applied Marketing Management
- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2BC3 - Human Resource Management and Labour Relations

3 units

- approved technical electives from List A (Contact the Department of Computing and Software.)

#### LEVEL V: 36 UNITS (2020-2021 ONLY)

6 units

- MECHTRON 4TB6 A/B - Mechatronics Capstone Design Project

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- MECHENG 4K03 - Robotics

6 units

- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

3 units

- approved complementary studies electives

3 units

- approved technical electives from List A (Contact the Department of Computing and Software.)

3 units

- approved technical electives from List B (Contact the Department of Computing and Software.)

3 units

- ENGNMGT 5B03 - Engineering and Management Projects

6 units

- Commerce electives selected from Level III or IV Commerce,

#### LEVEL V: 36 UNITS (EFFECTIVE 2021-2022)

6 units

- MECHTRON 4TB6 A/B - Mechatronics Capstone Design Project

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- MECHENG 4K03 - Robotics

6 units

- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

3 units

- approved complementary studies electives

6 units

- approved technical electives from List B (Contact the Department of Computing and Software.)

3 units

- ENGNMGT 5B03 - Engineering and Management Projects

6 units

- Commerce electives selected from Level III or IV Commerce

## SOFTWARE ENGINEERING AND MANAGEMENT, SOFTWARE ENGINEERING AND MANAGEMENT CO-OP (B.ENG.MGT.)

### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

### NOTES

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

### REQUIREMENTS

#### LEVEL II: 35 UNITS

3 units

- COMMERCE 2MA3 - Introduction to Marketing

3 units

- ENGNMGT 2AA3 - Communication Skills

3 units

- MATH 2Z03 - Engineering Mathematics III

26 units

- SFWRENG 2AA4 - Software Design I - Introduction to Software Development
- SFWRENG 2C03 - Data Structures and Algorithms
- SFWRENG 2DA4 - Digital Systems and Interfacing
- SFWRENG 2DM3 - Discrete Mathematics with Applications I
- SFWRENG 2FA3 - Discrete Mathematics and Applications II
- SFWRENG 2S03 - Principles of Programming
- SFWRENG 2XA3 - Software Engineering Practice and Experience: Software Development Skills
- SFWRENG 2XB3 - Software Engineering Practice and Experience: Binding Theory to Practice

#### LEVEL III: 39 UNITS

9 units

- COMMERCE 1AA3 - Introductory Financial Accounting
- COMMERCE 1BA3 - Organizational Behaviour
- COMMERCE 2FA3 - Introduction to Finance

3 units

- ECON 1BB3 - Introductory Macroeconomics

27 units

- SFWRENG 2GA3 - Computer Architecture

- SFWRENG 3A04 - Software Design III - Large System Design
- SFWRENG 3BB4 - Software Design II - Concurrent System Design
- SFWRENG 3DB3 - Databases
- SFWRENG 3DX4 - Dynamic Systems and Control
- SFWRENG 3MX3 - Signals and Systems
- SFWRENG 3RA3 - Software Requirements and Security Considerations
- SFWRENG 3XA3 - Software Engineering Practice and Experience: Software Project Management

**LEVEL IV: 34 UNITS**12 units

- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management

10 units

- SFWRENG 3S03 - Software Testing
- SFWRENG 4AA4 - Real-Time Systems and Control Applications
- SFWRENG 4HC3 - Human Computer Interfaces

3 units

- ENGMGT 4A03 - Innovation Driven Project Development and Management

3 units

- approved technical electives from List E (Contact the Department of Computing and Software)

3 units

- approved complementary studies electives

3 units

- Commerce electives selected from Level III or IV Commerce

**LEVEL V: 36 UNITS**6 units

- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

3 units

- ENGMGT 5B03 - Engineering and Management Projects

12 units

- SFWRENG 4C03 - Computer Networks and Security
- SFWRENG 4G06 A/B - Software Design IV - Capstone Design Project
- SFWRENG 4X03 - Scientific Computation

3 units

- approved technical electives from List E (Contact the Department of Computing and Software)

3 units

- Commerce electives selected from Level III or IV Commerce

3 units

- approved technical electives from List C (contact the Department of Computing and Software)

## Bachelor of Engineering and Society

### MECHATRONICS ENGINEERING AND SOCIETY, MECHATRONICS ENGINEERING AND SOCIETY CO-OP (B.ENG.SOCIETY)

**ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average. Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0. Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives. Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTES**

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2EC0 will be added to the academic record for each 4 month work term.

**REQUIREMENTS****LEVEL II: 37 UNITS**6 units

- SFWRENG 2MD3 - Data Structures, Algorithms, and Language Concepts for Mechatronics
- SFWRENG 2MP3 - Programming for Mechatronics

8 units

- ENGPYS 2A04 - Electricity and Magnetism
- ENGPYS 2E04 - Analog and Digital Circuits

7 units

- MECHENG 2BA3 - Mechanical Engineering Measurements
- MECHENG 2QA4 - Engineering Mechanics: Kinetics and Dynamics

7 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- ENGINEER 2P04 - Engineering Mechanics

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

3 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I

**LEVEL III: 35 UNITS**11 units

- MECHTRON 3DX4 - Dynamic Models and Control of Physical Systems
- MECHTRON 3K04 - Software Development
- MECHTRON 3MX3 - Signals and Systems

3 units

- SFWRENG 3SH3 - Operating Systems

3 units

- ENGPYS 2NE3 - Thermal Systems Design

3 units

- MECHENG 2DA3 - Mechanical Engineering Design Elements

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

6 units

- ENGSOCTY 2Y03 - Case Studies in History and Technology
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

6 units

- Engineering and Society focus electives

**LEVEL IV: 36-39 UNITS**12 units

- MECHTRON 3TA4 - Embedded Systems Design I
- MECHTRON 3TB4 - Embedded Systems Design II
- MECHTRON 4AA4 - Real-Time Systems and Control Applications

3 units

- SFWRENG 4X03 - Scientific Computation

6 units

- MECHENG 4H03 - Mechatronics
- MECHENG 4K03 - Robotics

6 units

- ENGINEER 2B03 - Engineering Economics
- ENGINEER 3N03 - Electronics and Instrumentation

6 units

- ENGSOCTY 3Y03 - Technology and Society
- ENGSOCTY 3X03 - Inquiry in an Engineering Context II

3-6 units

- Engineering and Society focus electives

**LEVEL V: 30-33 UNITS (2020-2021 ONLY)**6 units

- MECHTRON 4TB6 A/B - Mechatronics Capstone Design Project

6 units

- approved technical electives from List A (Contact the Department of Computing and Software.)

6 units

- approved technical electives from List B (Contact the Department of Computing and Software.)

3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

3 units

- ENGSOCTY 4Y03 - Society Capstone Design

6-9 units

- Engineering and Society focus electives

**LEVEL V: 30-33 UNITS (EFFECTIVE 2021-2022)**6 units

- MECHTRON 4TB6 A/B - Mechatronics Capstone Design Project

3 units

- approved technical electives from List A (Contact the Department of Computing and Software.)

6 units

- approved technical electives from List B (Contact the Department of Computing and Software.)

3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

3 units

- ENGSOCTY 4Y03 - Society Capstone Design

9-12 units

- Engineering and Society focus electives

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## SOFTWARE ENGINEERING AND SOCIETY, SOFTWARE ENGINEERING AND SOCIETY CO-OP (B.ENG.SOCIETY)

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**ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that

program will be based on the student's Cumulative Grade Point Average. Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0. Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives. Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTES**

1. A minimum of 18 units of focus elective courses is required for the program. (This does not include the 6 units of complementary studies elective in Level I.)
2. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0.

**REQUIREMENTS****LEVEL II: 34 UNITS**3 units

- MATH 2Z03 - Engineering Mathematics III

22 units

- SFWRENG 2AA4 - Software Design I - Introduction to Software Development
- SFWRENG 2C03 - Data Structures and Algorithms
- SFWRENG 2DM3 - Discrete Mathematics with Applications I
- SFWRENG 2FA3 - Discrete Mathematics and Applications II
- SFWRENG 2S03 - Principles of Programming
- SFWRENG 2XA3 - Software Engineering Practice and Experience: Software Development Skills
- SFWRENG 2XB3 - Software Engineering Practice and Experience: Binding Theory to Practice

6 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I
- ENGSOCTY 2Y03 - Case Studies in History and Technology

3 units

- Engineering and Society focus electives

**LEVEL III: 36-39 UNITS**3 units

- ENGINEER 2B03 - Engineering Economics

24 units

- SFWRENG 2DA4 - Digital Systems and Interfacing
- SFWRENG 2GA3 - Computer Architecture
- SFWRENG 3BB4 - Software Design II - Concurrent System Design
- SFWRENG 3DX4 - Dynamic Systems and Control
- SFWRENG 3I03 - Communication Skills
- SFWRENG 3MX3 - Signals and Systems
- SFWRENG 3XA3 - Software Engineering Practice and Experience: Software Project Management

3 units

- approved technical electives from List C (contact the Department of Computing and Software)

3 units

- ENGSOCTY 3Y03 - Technology and Society

3-6 units

- Engineering and Society focus electives

**LEVEL IV: 38 UNITS**20 units

- SFWRENG 3A04 - Software Design III - Large System Design
- SFWRENG 3DB3 - Databases
- SFWRENG 3O03 - Linear Optimization
- SFWRENG 3RA3 - Software Requirements and Security Considerations



- SFWRENG 3S03 - Software Testing
- SFWRENG 4AA4 - Real-Time Systems and Control Applications

**6 units**

- approved technical electives from List E (contact the Department of Computing and Software)

**6 units**

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

**6 units**

- Engineering and Society focus electives

**LEVEL V: 36-39 UNITS****18 units**

- SFWRENG 4C03 - Computer Networks and Security
- SFWRENG 4E03 - Performance Analysis of Computer Systems
- SFWRENG 4G06 A/B - Software Design IV - Capstone Design Project
- SFWRENG 4HC3 - Human Computer Interfaces
- SFWRENG 4X03 - Scientific Computation

**3 units**

- STATS 3Y03 - Probability and Statistics for Engineering

**3 units**

- approved technical electives from List D (contact the Department of Computing and Software)

**3 units**

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

**3 units**

- ENGSOCTY 4Y03 - Society Capstone Design

**6-9 units**

- Engineering and Society focus electives

## Minor(s):

### MINOR IN COMPUTER SCIENCE

**REQUIREMENTS****24 UNITS**

- Computer Science courses (at most 6 units from Level 1)

## Department of Electrical and Computer Engineering

**Faculty as of January 15, 2020****CHAIR****Timothy Davidson****ASSOCIATE CHAIR (UNDERGRADUATE PROGRAMS)****Shahram Shirani****ASSOCIATE CHAIR (GRADUATE STUDIES)****Ian Bruce****DISTINGUISHED UNIVERSITY PROFESSOR**

**M. Jamal Deen**/B.Sc. (Guyana), M.S., Ph.D. (Case Western Reserve), DEng-hc, Dr-hc, Dr-hc, FRSC, FCAE, MEASA, FNASI, FINAE, FIEEE, FAPS, FECS, FAAA, FEIC/Canada Research Chair in Information Technology

**PROFESSORS**

**M. Bakr**/B.Sc., M.Sc. (Cairo), Ph.D. (McMaster), P.Eng.

**I. Bruce**/B.Eng., Ph.D. (Melbourne), P. Eng., FASA

**J. Chen**/B.Eng. (Jiao Tong, Shanghai), M.Sc., Ph.D. (Cornell)

**T. Davidson**/B.Eng. (Western Australia), D. Phil. (Oxford), P.Eng.

**H. deBruin**/B.Eng., M.Eng., Ph.D (McMaster), P.Eng.

**A. Emadi**/B.S., M.S. (Sharif University of Technology), Ph.D. (Texas A&M)/FIEEE, FNAI, Canada Research Chair in Transportation Electrification and Smart Mobility, NSERC/FCA Industrial Research Chair in Electrified Powertrains

**S. Hranilovic**/B.A.Sc. (Waterloo), M.A.Sc., Ph.D. (Toronto), P.Eng.

**T. Kirubarajan**/B.A., M.A. (Cambridge), M.S., Ph.D. (Connecticut)/ NSERC/ General Dynamics Mission Systems-Canada Industrial Research Chair in Target Tracking and Information Fusion

**S. Kumar**/B.Eng. (Mysore), M.S., Ph.D. (Indian Institute of Science), Ph.D. (Osaka), FOSA, P. Eng.

**X. Li**/B.S. (Shandong), M.S. (Wuhan Research Institute of Posts and Telecommunications), Ph.D. (Northern Jiaotong), P.Eng.

**B. Nahid-Mobarakeh**/B.Sc. (University of Technology, Iran), M.Sc. (University of Tehran), Ph.D. (Institut National Polytechnique de Lorraine)

**N. Nicolici**/B.Eng. (Technical University Timisoara), Ph.D. (Southampton), P.Eng.

**N. Nikolova**/Dipl. Ing. (Technical University of Varna), Ph.D. (University of Electrocommunications, Tokyo), P.Eng., FCAE, FIEEE

**M. Noseworthy**/B.Sc., M.Sc., Ph.D. (Guelph), P.Eng.

**S. Shirani**/B.Sc. (Isfahan University of Technology), M.Sc. (Amirkabir University of Technology), Ph.D. (British Columbia), P.Eng./L.R. Wilson/Bell Canada Enterprises Chair in Data Communications

**S. Siropour**/B.Sc., M.Sc. (Sharif University of Technology, Iran), Ph.D. (British Columbia), P.Eng.

**T. H. Szymanski**/B.A.Sc., M.A.Sc., Ph.D. (Toronto), P.Eng.

**T. D. Todd**/B.A.Sc., M.A.Sc., Ph.D. (Waterloo), P.Eng.

**X. Wu**/B.Sc. (Wuhan, China), Ph.D. (Calgary), FIEEE

**D. Zhao**/B.S. (Northern Jiaotong, Beijing), Ph.D. (Waterloo), P.Eng.

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**L. Carney**/S.B., (MIT), M.S., Ph.D. (Wisconsin), FASA, FAIME

**B. Cheng**/B.S., M.S. (Northeastern), Ph.D. (Massachusetts)

**S. Samavi**/B.Sc. (California State), M.S. (Memphis), Ph.D. (Mississippi)

**N. Zargari**/B. Eng (Tehran), M.A.Sc., Ph.D. (Concordia)

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**A. Jeremic**/Dipl. Ing. (Belgrade), M.Sc., Ph.D. (Illinois-Chicago)

**J.K. Zhang**/B.S., M.S., Ph.D. (Xidian)

**ADJUNCT ASSOCIATE PROFESSORS**

**M. McDonald**/B.Sc., M.Sc. (Queen's), Ph.D. (Western Ontario)

**H. Yang**/B.S. (Southeast University, China), M.S., Ph.D. (Michigan)

**ASSISTANT PROFESSORS**

**J. Bauman**/B.A.Sc., Ph.D. (Waterloo), P. Eng

**B. Bilgin**/B.Sc., M.Sc. (Istanbul Technical University), Ph.D. (Illinois Institute of Technology)

**M. Hassan**/B.Sc., M.Sc. (Cairo), Ph.D. (Waterloo)

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**P. Malysz**/B. Eng., M.A.Sc., Ph.D., (McMaster)

**M. Margarit**/M.Sc. (Bucharest), Ph.D. (Simon Fraser)

**O. Marinov**/M.Sc., Ph.D. (Technical University, Sofia)

**A. Sathyan**/B.S. (Bharathiar University), M.S. (Coimbatore Institute of Technology), Ph.D. (Illinois Institute of Technology)

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**S. Wirasingha**/B.S., M.S., Ph.D. (Illinois Institute of Technology)

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**J. Ye**/B. Eng. M.A.Sc. (Xi'an Jiaotong University), Ph.D. (McMaster)

#### ASSOCIATE MEMBERS

**Q. Fang**/(Engineering Physics), B.S. (Nankai University), M.S., Ph.D. (East Carolina University)

**V. Galea**/(Rehabilitation Sciences), B.Sc., M.Sc. (Waterloo), Ph.D. (McMaster)

**S. Habibi**/(Mechanical Engineering), B.Sc. (Dundee), Ph.D. (Cambridge)

**G. Hasey**/(Psychiatry and Behavioural Neurosciences), M.D. (Alberta), M.Sc. (Toronto)

**T. Mondal**/(Pediatrics), MBBS (Calcutta), MD (VSS Medical College)

**R. Zheng**/(Computing and Software), B.S., M.S. (Tsinghua), Ph.D. (Illinois-Urbana)

## Bachelor of Engineering

### COMPUTER ENGINEERING, COMPUTER ENGINEERING CO-OP (B.ENG.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTE

- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2EC0 will be added to the academic record for each 4 month work term.

#### REQUIREMENTS

##### LEVEL II: 39 UNITS

##### 16 units

- COMPENG 2DI4 - Logic Design
- COMPENG 2DX4 - Microprocessor Systems Project
- COMPENG 2SH4 - Principles of Programming
- COMPENG 2SI4 - Data Structures, Algorithms and Discrete Mathematics

##### 17 units

- ELECENG 2CI5 - Introduction to Electrical Engineering
- ELECENG 2CJ4 - Circuits and Systems
- ELECENG 2EI5 - Electronic Devices and Circuits I
- ELECENG 2FL3 - Applied Electromagnetics

##### 3 units

- MATH 2Z03 - Engineering Mathematics III

##### 3 units

- STATS 3Y03 - Probability and Statistics for Engineering

##### LEVEL III: 40 UNITS

##### 12 units

- COMPENG 3DQ5 - Digital Systems Design
- COMPENG 3DY4 - Computer Systems Integration Project
- SFWRENG 3SH3 - Operating Systems

##### 18 units

- ELECENG 3CL4 - Introduction to Control Systems
- ELECENG 3EJ4 - Electronic Devices and Circuits II
- ELECENG 3TP3 - Signal & Systems
- ELECENG 3TQ3 - Advanced Probability and Random Processes
- ELECENG 3TR4 - Communication Systems

##### 4 units

- SFWRENG 3K04 - Software Development

##### 3 units

- ENGINEER 2B03 - Engineering Economics

##### 3 units

- approved complementary studies electives

#### LEVEL IV: 37-39 UNITS

##### 16 units

- COMPENG 4DK4 - Computer Communication Networks
- COMPENG 4DM4 - Computer Architecture
- COMPENG 4DN4 - Advanced Internet Communications
- COMPENG 4DS4 - Embedded Systems

##### 6 units

- ELECENG 4OI6 A/B - Engineering Design

##### 3 units

- approved complementary studies electives

##### 3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

##### 3 units

- COMPENG 3SK3 - Computer-Aided Engineering

##### 3-4 units

- technical electives from an approved list of Computer Engineering or Electrical Engineering Level III or IV

##### 3-4 units

- approved Level III or IV technical electives of the Faculty of Engineering (excluding ELECENG and COMPENG)

### ELECTRICAL AND BIOMEDICAL ENGINEERING, ELECTRICAL AND BIOMEDICAL ENGINEERING CO-OP (B.ENG.)

Admission to level II Electrical and Biomedical Engineering and Electrical and Biomedical Engineering Co-op was last offered in September 2017.

#### REQUIREMENTS

##### LEVEL IV: 36-39 UNITS

##### 4 units

- COMPENG 4TL4 - Digital Signal Processing

##### 14 units

- ELECENG 3TR4 - Communication Systems
- ELECENG 4BC3 - Modelling of Biological Systems
- ELECENG 4BD4 - Biomedical Instrumentation
- IBEHS 4D03 - Introduction to Medical Imaging

##### 6 units

- ELECENG 4BI6 A/B - Biomedical Design Project

##### 3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

##### 3 units

- approved complementary studies electives

##### 6-9 units

- technical electives from an approved list of Level III or IV courses

## ELECTRICAL ENGINEERING, ELECTRICAL ENGINEERING CO-OP (B.ENG.)

### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

### NOTE

- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

### REQUIREMENTS

#### LEVEL II: 40 UNITS

##### 18 units

- ELECENG 2CI5 - Introduction to Electrical Engineering
- ELECENG 2CJ4 - Circuits and Systems
- ELECENG 2EI5 - Electronic Devices and Circuits I
- ELECENG 2FH4 - Electromagnetics I

##### 16 units

- COMPENG 2DI4 - Logic Design
- COMPENG 2DX4 - Microprocessor Systems Project
- COMPENG 2SH4 - Principles of Programming
- COMPENG 2SI4 - Data Structures, Algorithms and Discrete Mathematics

##### 3 units

- MATH 2Z03 - Engineering Mathematics III

##### 3 units

- STATS 3Y03 - Probability and Statistics for Engineering

#### LEVEL III: 39 UNITS

##### 4 units

- ELECENG 3EY4 - Electrical Systems Integration Project

##### 3 units

- ENGINEER 2B03 - Engineering Economics

##### 26 units

- ELECENG 3CL4 - Introduction to Control Systems
- ELECENG 3EJ4 - Electronic Devices and Circuits II
- ELECENG 3FK4 - Electromagnetics II
- ELECENG 3PI4 - Energy Conversion
- ELECENG 3TP3 - Signal & Systems
- ELECENG 3TQ3 - Advanced Probability and Random Processes
- ELECENG 3TR4 - Communication Systems

##### 6 units

- approved complementary studies electives

#### LEVEL IV: 37-40 UNITS

##### 6 units

- ELECENG 4OI6 A/B - Engineering Design

##### 16 units

from

- COMPENG 4DK4 - Computer Communication Networks
- COMPENG 4DM4 - Computer Architecture

- COMPENG 4DN4 - Advanced Internet Communications
- COMPENG 4DS4 - Embedded Systems
- COMPENG 4TL4 - Digital Signal Processing
- ELECENG 4BE4 - Medical Robotics
- ELECENG 4CL4 - Control System Design
- ELECENG 4EM4 - Photonic Devices and Systems
- ELECENG 4FJ4 - Devices and Antennas for Wireless Systems
- ELECENG 4PK4 - Power Electronics
- ELECENG 4PM4 - Electrical Power Systems
- ELECENG 4PN4 - Electric Motor Drives
- ELECENG 4PP4 - Smart and Micro Grids
- ELECENG 4TK4 - Digital Communications Systems
- ELECENG 4TM4 - Digital Communications II
- IBEHS 4F04 - Biomedical Instrumentation and Measurement

##### 3 units

- COMPENG 3SK3 - Computer-Aided Engineering

##### 6-8 units

- technical electives from the approved list of Computer Engineering or Electrical Engineering Level III or IV courses

##### 3-4 units

- approved Level III or IV technical electives of the Faculty of Engineering (excluding ELECENG and COMPENG)

##### 3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

## Bachelor of Engineering and Biomedical Engineering

### ELECTRICAL AND BIOMEDICAL ENGINEERING, ELECTRICAL AND BIOMEDICAL ENGINEERING CO-OP (B.ENG.BME)

#### ADMISSION TO LEVEL II IBEHS PROGRAMS

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0.

All students who successfully complete the first year of the program will have a space in one of the two degree options. As enrolment is limited in each of the two degree options (HESE or BME), where there is more demand than spaces, competition will be based on first-year academic achievement. Students seeking admission to the BME specialization will be admitted to one of eight Level II Engineering programs (Chemical, Civil, Electrical, Engineering Physics, Materials, Mechanical, Mechatronics, or Software). Admission to a Level II Engineering program is guaranteed for all students who meet the general progress requirements. All engineering programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on GPA.

Students who do not meet the requirements to proceed to Level II in May will have a *Pending* flag put on their allocation. The *Pending* flag will be removed in August if the student completes the requirements over the summer.

#### NOTES

- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EE0. IBEHS 2ECO will be added to the academic record for each four month work term.
- Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to eight units of research project or independent study courses. A full listing can be found on the IBEHS website.
- Students enrolled in a B.Eng.BME program wishing to enrol in a research

project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

### REQUIREMENTS

#### LEVEL II: 36 UNITS

##### 12 units

- HTHSCI 2E03 - Inquiry II: Biochemistry
- HTHSCI 2F03 - Human Physiology and Anatomy I
- HTHSCI 2FF3 - Human Physiology and Anatomy II
- IBEHS 2P03 - Health Solutions Design Projects II

##### 24 units

- COMPENG 2SH4 - Principles of Programming
- COMPENG 2SI4 - Data Structures, Algorithms and Discrete Mathematics
- ELECENG 2CI5 - Introduction to Electrical Engineering
- ELECENG 2CJ4 - Circuits and Systems
- ELECENG 2FH4 - Electromagnetics I
- MATH 2Z03 - Engineering Mathematics III

#### LEVEL III: 36 UNITS

##### 16 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

##### 20 units

- COMPENG 2DI4 - Logic Design
- COMPENG 2DX4 - Microprocessor Systems Project
- ELECENG 2EI5 - Electronic Devices and Circuits I
- ELECENG 3FK4 - Electromagnetics II
- ELECENG 3TQ3 - Advanced Probability and Random Processes

#### LEVEL IV: 37 UNITS

##### 3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I

##### 20 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

##### 11 units

- COMPENG 3SK3 - Computer-Aided Engineering
- ELECENG 3EJ4 - Electronic Devices and Circuits II
- ELECENG 3TR4 - Communication Systems

##### 3 units

- approved IBEHS Technical Elective

#### LEVEL V: 35-38 UNITS

##### 9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

##### 3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

##### 8 units

from

- COMPENG 4DK4 - Computer Communication Networks
- COMPENG 4DM4 - Computer Architecture
- COMPENG 4DN4 - Advanced Internet Communications
- COMPENG 4DS4 - Embedded Systems

- COMPENG 4TL4 - Digital Signal Processing
- ELECENG 4BE4 - Medical Robotics
- ELECENG 4EM4 - Photonic Devices and Systems
- ELECENG 4FJ4 - Devices and Antennas for Wireless Systems
- ELECENG 4PK4 - Power Electronics
- ELECENG 4PM4 - Electrical Power Systems
- ELECENG 4PN4 - Electric Motor Drives
- ELECENG 4PP4 - Smart and Micro Grids
- ELECENG 4TK4 - Digital Communications Systems
- ELECENG 4TM4 - Digital Communications II

##### 3-4 units

- approved IBEHS Technical Elective

##### 6-8 units

- technical elective from an approved list of Electrical Engineering Level III or IV courses

##### 6 units

- Complementary Studies

## Bachelor of Engineering and Management

### COMPUTER ENGINEERING AND MANAGEMENT, COMPUTER ENGINEERING AND MANAGEMENT CO-OP (B.ENG.MGT.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average. Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0. Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives. Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

#### REQUIREMENTS

##### LEVEL II: 35 UNITS

##### 3 units

- COMMERCE 1AA3 - Introductory Financial Accounting (or 2AA3)

##### 8 units

- COMPENG 2SH4 - Principles of Programming
- COMPENG 2SI4 - Data Structures, Algorithms and Discrete Mathematics

##### 3 units

- ECON 1BB3 - Introductory Macroeconomics

##### 9 units

- ELECENG 2CI5 - Introduction to Electrical Engineering
- ELECENG 2CJ4 - Circuits and Systems

##### 3 units

- ENGNMGT 2AA3 - Communication Skills

##### 3 units

- MATH 2Z03 - Engineering Mathematics III

##### 3 units



- STATS 3Y03 - Probability and Statistics for Engineering
- 3 units

- approved complementary studies electives

**LEVEL III: 38 UNITS**12 units

- COMMERCE 1BA3 - Organizational Behaviour (or 2BA3)
- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2FA3 - Introduction to Finance
- COMMERCE 2MA3 - Introduction to Marketing

14 units

- ELECENG 2E15 - Electronic Devices and Circuits I
- ELECENG 2FL3 - Applied Electromagnetics
- ELECENG 3TP3 - Signal & Systems
- ELECENG 3TQ3 - Advanced Probability and Random Processes

8 units

- COMPENG 2D14 - Logic Design
- COMPENG 2DX4 - Microprocessor Systems Project

4 units

- SFWRENG 3K04 - Software Development

**LEVEL IV: 39 UNITS**9 units

- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management

9 units

- COMPENG 3DQ5 - Digital Systems Design
- COMPENG 3DY4 - Computer Systems Integration Project

12 units

- ELECENG 3CL4 - Introduction to Control Systems
- ELECENG 3EJ4 - Electronic Devices and Circuits II
- ELECENG 3TR4 - Communication Systems

3 units

- ENGNMGT 4A03 - Innovation Driven Project Development and Management

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- SFWRENG 3SH3 - Operating Systems

**LEVEL V: 40 UNITS**6 units

- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

16 units

- COMPENG 4DK4 - Computer Communication Networks
- COMPENG 4DM4 - Computer Architecture
- COMPENG 4DN4 - Advanced Internet Communications
- COMPENG 4DS4 - Embedded Systems

6 units

- ELECENG 4O16 A/B - Engineering Design

3 units

- COMPENG 3SK3 - Computer-Aided Engineering

3 units

- ENGNMGT 5B03 - Engineering and Management Projects

6 units

- Commerce electives selected from Level III or IV Commerce

## ELECTRICAL ENGINEERING AND MANAGEMENT, ELECTRICAL ENGINEERING AND MANAGEMENT CO-OP (B.ENG.MGT.)

**ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTES**

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EEO. ENGINEER 2ECO will be added to the academic record for each four month work term.

**REQUIREMENTS****LEVEL II: 36 UNITS**3 units

- COMMERCE 1AA3 - Introductory Financial Accounting

3 units

- ECON 1BB3 - Introductory Macroeconomics

12 units

- COMPENG 2DX4 - Microprocessor Systems Project
- COMPENG 2SH4 - Principles of Programming
- COMPENG 2SI4 - Data Structures, Algorithms and Discrete Mathematics

9 units

- ELECENG 2CI5 - Introduction to Electrical Engineering
- ELECENG 2CJ4 - Circuits and Systems

3 units

- ENGNMGT 2AA3 - Communication Skills

3 units

- MATH 2Z03 - Engineering Mathematics III

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

**LEVEL III: 38 UNITS**12 units

- COMMERCE 1BA3 - Organizational Behaviour
- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2FA3 - Introduction to Finance
- COMMERCE 2MA3 - Introduction to Marketing

7 units

- COMPENG 2D14 - Logic Design
- COMPENG 3SK3 - Computer-Aided Engineering

19 units

- ELECENG 2E15 - Electronic Devices and Circuits I
- ELECENG 2FH4 - Electromagnetics I
- ELECENG 3EY4 - Electrical Systems Integration Project
- ELECENG 3TP3 - Signal & Systems
- ELECENG 3TQ3 - Advanced Probability and Random Processes

**LEVEL IV: 38 UNITS**9 units

- COMMERCE 2BC3 - Human Resource Management and Labour Relations

- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management

20 units

- ELECENG 3CL4 - Introduction to Control Systems
- ELECENG 3EJ4 - Electronic Devices and Circuits II
- ELECENG 3FK4 - Electromagnetics II
- ELECENG 3PI4 - Energy Conversion
- ELECENG 3TR4 - Communication Systems

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- ENGNMGT 4A03 - Innovation Driven Project Development and Management

3 units

- Commerce electives selected from Level III or IV Commerce

**LEVEL V: 40 UNITS**6 units

- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

15-16 units

from

- COMPENG 3DQ5 - Digital Systems Design
- COMPENG 4DK4 - Computer Communication Networks
- COMPENG 4DM4 - Computer Architecture
- COMPENG 4DN4 - Advanced Internet Communications
- COMPENG 4DS4 - Embedded Systems
- COMPENG 4TL4 - Digital Signal Processing
- ELECENG 4BB3 - Cellular Bioelectricity
- ELECENG 4BE4 - Medical Robotics
- ELECENG 4CL4 - Control System Design
- ELECENG 4EM4 - Photonic Devices and Systems
- ELECENG 4FJ4 - Devices and Antennas for Wireless Systems
- ELECENG 4PK4 - Power Electronics
- ELECENG 4PM4 - Electrical Power Systems
- ELECENG 4PN4 - Electric Motor Drives
- ELECENG 4PP4 - Smart and Micro Grids
- ELECENG 4TK4 - Digital Communications Systems
- ELECENG 4TM4 - Digital Communications II
- IBEHS 4F04 - Biomedical Instrumentation and Measurement

6 units

- ELECENG 4O16 A/B - Engineering Design

3 units

- approved complementary studies electives

3 units

- ENGNMGT 5B03 - Engineering and Management Projects

3 units

- Commerce electives selected from Level III or IV Commerce

3 units

- approved Level III or IV technical electives of the Faculty of Engineering (excluding ELECENG and COMPENG)

## Bachelor of Engineering and Society

### COMPUTER ENGINEERING AND SOCIETY, COMPUTER ENGINEERING AND SOCIETY CO-OP (B.ENG.SOCIETY)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that

program will be based on the student's Cumulative Grade Point Average. Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0. Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives. Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTES**

1. A minimum of 18 units of focus elective courses is required for the program. (This does not include the six units of complementary studies elective in Level I.)
2. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

**REQUIREMENTS****LEVEL II: 39 UNITS**12 units

- COMPENG 2DI4 - Logic Design
- COMPENG 2SH4 - Principles of Programming
- COMPENG 2SI4 - Data Structures, Algorithms and Discrete Mathematics

12 units

- ELECENG 2CI5 - Introduction to Electrical Engineering
- ELECENG 2CJ4 - Circuits and Systems
- ELECENG 2FL3 - Applied Electromagnetics

3 units

- MATH 2Z03 - Engineering Mathematics III

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

6 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I
- ENGSOCTY 2Y03 - Case Studies in History and Technology

3 units

- Engineering and Society focus electives

**LEVEL III: 34 UNITS**7 units

- COMPENG 2DX4 - Microprocessor Systems Project
- SFWRENG 3SH3 - Operating Systems

11 units

- ELECENG 2EI5 - Electronic Devices and Circuits I
- ELECENG 3TP3 - Signal & Systems
- ELECENG 3TQ3 - Advanced Probability and Random Processes

4 units

- SFWRENG 3K04 - Software Development

6 units

- ENGSOCTY 3Y03 - Technology and Society
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

6 units

- Engineering and Society focus electives

**LEVEL IV: 33-36 UNITS**9 units

- COMPENG 3DQ5 - Digital Systems Design
- COMPENG 3DY4 - Computer Systems Integration Project

12 units

- ELECENG 3CL4 - Introduction to Control Systems
- ELECENG 3EJ4 - Electronic Devices and Circuits II
- ELECENG 3TR4 - Communication Systems

3 units

- ENGINEER 2B03 - Engineering Economics

3 units

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II

6-9 units

- Engineering and Society focus electives

**LEVEL V: 37-38 UNITS**16 units

- COMPENG 4DK4 - Computer Communication Networks
- COMPENG 4DM4 - Computer Architecture
- COMPENG 4DN4 - Advanced Internet Communications
- COMPENG 4DS4 - Embedded Systems

6 units

- ELECENG 40I6 A/B - Engineering Design

3 units

- COMPENG 3SK3 - Computer-Aided Engineering

3-4 units

- technical electives from an approved list of Computer Engineering or Electrical Engineering Level III or IV

3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

3 units

- ENGSOCTY 4Y03 - Society Capstone Design

3 units

- Engineering and Society focus electives

## **ELECTRICAL ENGINEERING AND SOCIETY, ELECTRICAL ENGINEERING AND SOCIETY CO-OP (B.ENG.SOCIETY)**

**ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTES**

1. A minimum of 18 units of focus elective courses is required for the program. (This does not include the six units of complementary studies elective in Level I.)
2. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

**REQUIREMENTS****LEVEL II: 40 UNITS**16 units

- COMPENG 2DI4 - Logic Design
- COMPENG 2DX4 - Microprocessor Systems Project
- COMPENG 2SH4 - Principles of Programming
- COMPENG 2SI4 - Data Structures, Algorithms and Discrete Mathematics

9 units

- ELECENG 2CI5 - Introduction to Electrical Engineering
- ELECENG 2CJ4 - Circuits and Systems

3 units

- MATH 2Z03 - Engineering Mathematics III

6 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I
- ENGSOCTY 2Y03 - Case Studies in History and Technology

3 units

- Engineering and Society focus electives

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

**LEVEL III: 31-34 UNITS**3 units

- COMPENG 3SK3 - Computer-Aided Engineering

19 units

- ELECENG 2EI5 - Electronic Devices and Circuits I
- ELECENG 2FH4 - Electromagnetics I
- ELECENG 3EY4 - Electrical Systems Integration Project
- ELECENG 3TP3 - Signal & Systems
- ELECENG 3TQ3 - Advanced Probability and Random Processes

6 units

- ENGSOCTY 3Y03 - Technology and Society
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

3-6 units

- Engineering and Society focus electives

**LEVEL IV: 35-39 UNITS**20 units

- ELECENG 3CL4 - Introduction to Control Systems
- ELECENG 3EJ4 - Electronic Devices and Circuits II
- ELECENG 3FK4 - Electromagnetics II
- ELECENG 3PI4 - Energy Conversion
- ELECENG 3TR4 - Communication Systems

3 units

- ENGINEER 2B03 - Engineering Economics

3 units

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II

6-9 units

- Engineering and Society focus electives

3-4 units

- approved Level III or IV technical electives of the Faculty of Engineering (excluding ELECENG and COMPENG)

**LEVEL V: 37-39 UNITS**6 units

- ELECENG 40I6 A/B - Engineering Design

15-17 units

from

- COMPENG 3DQ5 - Digital Systems Design
- COMPENG 4DK4 - Computer Communication Networks
- COMPENG 4DM4 - Computer Architecture
- COMPENG 4DN4 - Advanced Internet Communications
- COMPENG 4DS4 - Embedded Systems
- COMPENG 4TL4 - Digital Signal Processing
- ELECENG 4BB3 - Cellular Bioelectricity
- ELECENG 4BE4 - Medical Robotics
- ELECENG 4CL4 - Control System Design
- ELECENG 4EM4 - Photonic Devices and Systems
- ELECENG 4FJ4 - Devices and Antennas for Wireless Systems
- ELECENG 4PK4 - Power Electronics
- ELECENG 4PM4 - Electrical Power Systems
- ELECENG 4PN4 - Electric Motor Drives
- ELECENG 4PP4 - Smart and Micro Grids
- ELECENG 4TK4 - Digital Communications Systems
- ELECENG 4TM4 - Digital Communications II

- IBEHS 4F04 - Biomedical Instrumentation and Measurement

#### 3-4 units

- technical electives from the approved list of Computer Engineering or Electrical Engineering Level III or IV courses

#### 3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

#### 3 units

- ENGSOCTY 4Y03 - Society Capstone Design

#### 6 units

- Engineering and Society focus electives

## Department of Engineering Physics

**Faculty of the Department of Engineering Physics, as of January 15, 2020**

#### CHAIR

**Ray R. LaPierre**

ASSOCIATE CHAIR, UNDERGRADUATE

**Ayse Turak**

ASSOCIATE CHAIR, GRADUATE

**Chang-qing Xu**

PROFESSORS

**Adriaan Buijs**/M.Sc., Ph.D. (*Utrecht*), L.E.L.

**Qiyin Fang**/B.S. (*Nankai*), M.S., Ph.D. (*East Carolina*), L.E.L.

**Harold K. Haugen**/B.Sc. (*Acadia*), M.Eng. (*McMaster*), Ph.D. (*Aarhus*), L.E.L.

**Adrian H. Kitai**/B.Eng. (*McMaster*), Ph.D. (*Cornell*), P.Eng.

**Rafael N. Kleiman**/SB (*M.I.T.*), M.Sc., Ph.D. (*Cornell*)

**Andrew P. Knights**/B.Sc. (DeMontfort), Ph.D. (East Anglia)

**Ray R. LaPierre**/B.Sc. (*Dalhousie*), M.Eng., Ph.D. (*McMaster*), P.Eng.

**John C. Luxat**/B.Sc., M.Sc. (*Cape Town*), Ph.D. (*Windsor*), P.Eng.

**Peter Mascher**/M.Eng., Ph.D. (*Technical University of Graz*), P.Eng.

**Shinya Nagasaki**/B.Eng., M.Eng., Ph.D. (*Tokyo*)

**David R. Novog**/B.Sc. Eng. (*Manitoba*), M.Eng., Ph.D. (*McMaster*), P.Eng.

**John S. Preston**/B.Eng. (*McMaster*), M.Sc., Ph.D. (*Toronto*), P.Eng.

**Chang-qing Xu**/B.Sc., M.Sc. (*University of Science and Technology of China*), D.Eng. (*Tokyo*), L.E.L.

#### INDUSTRY PROFESSORS

**Nikola K. Popov**/B.Eng. (*Kiril and Metodij*), M.Sc. (*Belgrade*), Ph.D. (*Zagreb*)

**Victor G. Snell**/B.Sc. (*Manitoba*), M.Sc., Ph.D. (*Toronto*)

**Thambiyah Nitheanandan**/B.Sc. (*Faisalabad, Pakistan*), M.Sc., Ph.D. (*Manitoba*)

#### ADJUNCT PROFESSORS

**Pavel Chebep**/M.Sc. (*Slovak Technical University*), Ph.D. (*Complutense University of Madrid*)

**David P. Jackson**/B.Sc., M.A., M.A.Sc., Ph.D. (*Toronto*), L.E.L.

**Woo Young Kim**/B.S., M.E. (*Purdue*)

**Laurence Leung**/B.A.Sc., M.A.Sc., Ph.D. (*Ottawa*)

**Jeremy Pencser**/B.Sc. (*St. Francis Xavier*), M.Sc., Ph.D. (*Guelph*)

**Benjamin Rouben**/B.Sc. (*McGill*), Ph.D. (*M.I.T.*)

**Peter Vilks**/B.Sc. (*Dalhousie*), M.Sc., Ph.D. (*McMaster*)

#### ASSOCIATE PROFESSOR

**Leyla Soleymani**/B.Eng. (*McGill*), M.S. (*Southern California*), Ph.D. (*Toronto*)

**Ayse Turak**/B.Sc. (*Queen's*), Ph.D. (*Toronto*)

#### ASSISTANT PROFESSORS

**Jonathan Bradley**/B.Eng., M.A.Sc. (*McMaster*), Ph.D. (*University of Twente*)

**Ryan B. Lewis**/B.Sc. (*Dalhousie*), M.A.Sc., Ph.D. (*British Columbia*)

**Matthew Minnick**/B.Eng., Ph.D. (*McMaster*), P.Eng.

#### ADJUNCT ASSISTANT PROFESSOR

**Simon Day**/B.Sc. (*St. Mary's*), M.Eng., Ph.D. (*McMaster*)

#### ASSOCIATE MEMBERS

**M. Jamal Deen**/(*Electrical and Computer Engineering*) B.Sc. (*Guyana*), M.Sc.,

Ph.D. (*Case Western Reserve*)

**Joseph E. Hayward**/(*Radiology*) B.Eng., M.Eng., Ph.D. (*McMaster*)

**Marilyn F. Lightstone**/(*Mechanical Engineering*) B.Sc. (*Queen's*), M.A.Sc., Ph.D. (*Waterloo*), P.Eng.

**Ishwar K. Puri**/(*Mechanical Engineering*) B.Sc. (*Delhi*), M.S., Ph.D. (*California-San Diego*)

**Kalaichelvi Saravanamuttu**/(*Chemistry*) B.Sc., Ph.D. (*McGill*)

## Bachelor of Engineering

### ENGINEERING PHYSICS, ENGINEERING PHYSICS CO-OP (B.ENG.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

1. Approved electives for a total of 42-45 units:

- Students must take at least 6 units of Approved complementary studies electives (in addition to the 6 units taken in Engineering 1)
- Students must take at least 3 units of Approved Engineering technical electives outside of Engineering Physics
- Students must take at least 17 units of Approved technical electives from the Engineering Physics course offerings
- Remaining units: Students may take any approved Engineering or Science technical elective (including Engineering Physics)

2. While 2 units worth of the 4U\*2 courses are required at a minimum, these courses are also part of the Approved Engineering Physics technical electives and students may take an unlimited number of these courses to fulfill their elective requirements in any year.

3. Approved technical electives are available in a list on the Engineering Physics website. Subject to Chair approval, students may replace Engineering Physics technical electives with approved Science or Engineering courses. Also subject to Chair approval, courses not appearing on the technical elective list may qualify as acceptable technical electives. Students are free to choose their technical electives according to their own interests, but may consider the following course recommendations for a program of study. Further detail on program specializations and course recommendations is available on the Engineering Physics website. Students are responsible for ensuring that they fulfill the prerequisites for each course.

- **Nanotech Engineering (Nano- and Micro-Devices):** ENGPYS 3F03, 3PN4, 4MD3, 4UM2, 4Z03, MATLS 4H03, MECH ENG 4E03
- **Nanotech Engineering (Photonics):** ENGPYS 3E04, 3F03, 3PD3, 3PN4, 4S03, 4UP2, 4Z03, ELECENG 3FK4 and 4EM4
- **Nanotech Engineering (Solar):** ENGPYS 3E04, 3ES3, 3F03, 3PN4, 4MD3, 4X03, 4UM3, 4Z03, MATLS 4Q03
- **Nuclear Engineering:** ENGPYS 3D03, 3ES3, 3O04, 4D03, 4NE3, 4P03, 4PP3, 4UN2



- **Biomedical Engineering:** ENGPYHS 3E04, 3F03, 3PN4, 4I03, 4S03, 4UB2, 4Z03, ELECENG 4BD4, MECHENG 4E03
  - **Smart Systems Engineering:** ENGPYHS 3F03, 3PN4, 4US2, SFWRENG 2MP3, 2MD3, MECHENG 4R03, ELECENG 4CL4, and 6-8 units from ELECENG 3FK4, 3TR4, MECHENG 4E03, 4H03
  - **Quantum Computing:** ENGPYHS 4QC3, COMPENG 2SH4, 2SI4, MATH 2R03, 3C03, 3D03, 3QC3, PHYSICS 3MM3, 3QI3, 4F03
  - **Interdisciplinary Engineering:** ENGPYHS 3D03, 3E04, 3O04, 3ES3, 3F03, 3PN4, 4MD3, 4P03 and 4S03
4. Students in a Co-op program must complete ENGINEER 1EE0 in addition to the academic requirements specified in this calendar. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

## REQUIREMENTS

### LEVEL II: 34-35 UNITS

#### 22 units

- ENGPYHS 2A04 - Electricity and Magnetism
- ENGPYHS 2CM4 - Computational Multiphysics
- ENGPYHS 2E04 - Analog and Digital Circuits
- ENGPYHS 2NE3 - Thermal Systems Design
- ENGPYHS 2P04 - Computational Mechanics
- ENGPYHS 2QM3 - Introduction to Quantum Mechanics

#### 6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

#### 6-7 units

- approved electives (see Note 1)

### LEVEL III: 39-40 UNITS

#### 27 units

- ENGPYHS 3BA4 - Electronics I: Circuits with Non-Linear and Active Components
- ENGPYHS 3BB4 - Electronics II: Embedding and Programming a Micro-Controller
- ENGPYHS 3EC4 - Professional Communication and Project Management
- ENGPYHS 3L04 - Engineering Metrology: Fundamentals and Applications
- ENGPYHS 3NM4 - Numerical Methods for Engineering
- ENGPYHS 3SM3 - Statistical Mechanics
- ENGPYHS 3W04 - Signals and Systems for Engineering

#### 3 units

- ENGINEER 2B03 - Engineering Economics

#### 9-10 units

- approved electives (see Note 1)

### LEVEL IV: 38-39 UNITS

#### 3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

#### 6 units

- ENGPYHS 4A06 A/B - Engineering Physics Design and Synthesis Project

#### 2 units

from

- ENGPYHS 4UB2 - Modern and Applied Physics Laboratory: Biomedical
- ENGPYHS 4UM2 - Modern and Applied Physics Laboratory: Nano- and Micro-devices
- ENGPYHS 4UN2 - Modern and Applied Physics Laboratory: Nuclear Labs
- ENGPYHS 4UP2 - Modern and Applied Physics Laboratory: Photonics
- ENGPYHS 4US2 - Modern and Applied Physics Laboratory: Smart Systems

(See *Note 2* above.)

#### 27-28 units

- approved electives (See *Note 1* above.)

## Bachelor of Engineering and Biomedical Engineering

### ENGINEERING PHYSICS AND BIOMEDICAL ENGINEERING, ENGINEERING PHYSICS AND BIOMEDICAL ENGINEERING CO-OP (B.ENG.BME)

#### ADMISSION TO LEVEL II IBEHS PROGRAMS

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0.

All students who successfully complete the first year of the program will have a space in one of the two degree options. As enrolment is limited in each of the two degree options (HESE or BME), where there is more demand than spaces, competition will be based on first-year academic achievement. Students seeking admission to the BME specialization will be admitted to one of eight Level II Engineering programs (Chemical, Civil, Electrical, Engineering Physics, Materials, Mechanical, Mechatronics, or Software). Admission to a Level II Engineering program is guaranteed for all students who meet the general progress requirements. All engineering programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on GPA.

Students who do not meet the requirements to proceed to Level II in May will have a *Pending* flag put on their allocation. The *Pending* flag will be removed in August if the student completes the requirements over the summer.

#### NOTES

- Approved technical electives for a total of 21-24 units:
  - Students must take at least 3 units of Approved Engineering technical electives outside of Engineering Physics
  - Students must take at least 6 units of Approved technical electives from the Engineering Physics course offerings
  - Remaining units: Students may take any approved Engineering or Science technical elective (including Engineering Physics)
- While two units worth of the 4U\*2 courses are required at a minimum, these courses are also part of the Approved Engineering Physics technical electives and students may take an unlimited number of these courses to fulfill their elective requirements in any year.
- Approved technical electives are available in a list on the Engineering Physics website. Subject to Chair approval, students may replace Engineering Physics technical electives with approved Engineering courses. Also subject to Chair approval, courses not appearing on the technical elective list may qualify as acceptable technical electives. Students are free to choose their technical electives according to their own interests, but may consider the following course recommendations for a program of study. Further detail on program specializations and course recommendations is available on the Engineering Physics website. Students are responsible for ensuring that they fulfill the prerequisites for each course.
  - **Nanotech Engineering (Nano- and Micro-Devices):** ENGPYHS 3F03, 3PN4, 4MD3, 4UM2, 4Z03, MATLS 4H03, MECHENG 4E03
  - **Nanotech Engineering (Photonics):** ENGPYHS 3E04, 3F03, 3PD3, 3PN4, 4S03, 4UP2, 4Z03, ELECENG 3FK4 and 4EM4
  - **Nanotech Engineering (Solar):** ENGPYHS 3E04, 3ES3, 3F03, 3PN4, 4MD3, 4X03, 4UM3, 4Z03, MATLS 4Q03
  - **Nuclear Engineering:** ENGPYHS 3D03, 3ES3, 3O04, 4D03, 4NE3, 4P03, 4PP3, 4UN2
  - **Biomedical Engineering:** ENGPYHS 3E04, 3F03, 3PN4, 4I03, 4S03, 4UB2, 4Z03, MECHENG 4E03
  - **Smart Systems Engineering:** ENGPYHS 3F03, 3PN4, 4US2, SFWRENG

- 2MP3, 2MD3, MECHENG 4R03, ELECENG 4CL4, and 6-8 units from ELECENG 3FK4, 3TR4, MECHENG 4E03, 4H03
- **Quantum Computing:** ENGPYHS 4QC3, COMPENG 2SH4, 2SI4, MATH 2R03, 3C03, 3D03, 3QC3, PHYSICS 3MM3, 3QI3, 4F03
  - **Interdisciplinary Engineering:** ENGPYHS 3D03, 3E04, 3O04, 3ES3, 3F03, 3PN4, 4MD3, 4P03 and 4S03
4. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EE0. IBEHS 2ECO will be added to the academic record for each four month work term.
  5. Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to eight units of research project or independent study courses. A full listing can be found on the IBEHS website.
  6. Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

**REQUIREMENTS****LEVEL II: 40 UNITS**12 units

- HTHSCI 2E03 - Inquiry II: Biochemistry
- HTHSCI 2F03 - Human Physiology and Anatomy I
- HTHSCI 2FF3 - Human Physiology and Anatomy II
- IBEHS 2P03 - Health Solutions Design Projects II

28 units

- ENGPYHS 2A04 - Electricity and Magnetism
- ENGPYHS 2CM4 - Computational Multiphysics
- ENGPYHS 2E04 - Analog and Digital Circuits
- ENGPYHS 2NE3 - Thermal Systems Design
- ENGPYHS 2P04 - Computational Mechanics
- ENGPYHS 2QM3 - Introduction to Quantum Mechanics
- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

**LEVEL III: 35 UNITS**16 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

19 units

- ENGPYHS 3BA4 - Electronics I: Circuits with Non-Linear and Active Components
- ENGPYHS 3BB4 - Electronics II: Embedding and Programming a Micro-Controller
- ENGPYHS 3L04 - Engineering Metrology: Fundamentals and Applications
- ENGPYHS 3NM4 - Numerical Methods for Engineering
- ENGPYHS 3SM3 - Statistical Mechanics

**LEVEL IV: 36-38 UNITS (2020-2021 ONLY)**3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I

17 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

4 units

- ENGPYHS 3L04 - Engineering Metrology: Fundamentals and Applications

9-10 units

- approved technical electives (see *Note 1* above.)

3-4 units

- approved IBEHS technical electives

**LEVEL IV: 36-38 UNITS (EFFECTIVE 2021-2022)**3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I

17 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

4 units

- ENGPYHS 3EC4 - Professional Communication and Project Management

9-10 units

- approved technical electives (see *Note 1* above.)

3-4 units

- approved IBEHS technical electives

**LEVEL V: 37-39 UNITS (2020-2021 ONLY)**9 units

- IBEHS 5A03
- IBEHS 5B06 A/B

7 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- ENGPYHS 4U02 A/B

**(Note:** Students must take ENGPYHS 4U02 twice (*totalling four (4) units*), in order to fulfill degree requirements. Students must select two unique topics, one topic must be the biomedical section; the same topic cannot be repeated.)

3-4 units

- approved IBEHS Technical Elective

12-13 units

- approved technical electives (see *Note 1*)

6 units

- Complementary Studies

**LEVEL V: 36-38 UNITS (2021-2022 ONLY)**9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

2 units

from

- ENGPYHS 4UB2 - Modern and Applied Physics Laboratory: Biomedical
- ENGPYHS 4UM2 - Modern and Applied Physics Laboratory: Nano- and Micro-devices
- ENGPYHS 4UN2 - Modern and Applied Physics Laboratory: Nuclear Labs
- ENGPYHS 4UP2 - Modern and Applied Physics Laboratory: Photonics
- ENGPYHS 4US2 - Modern and Applied Physics Laboratory: Smart Systems

(See *Note 2* above.)7 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- ENGPYHS 3EC4 - Professional Communication and Project Management

3-4 units

- approved IBEHS Technical Elective

9-10 units

- approved technical electives (see *Note 1* above.)

6 units

- Complementary Studies

**LEVEL V: 35-37 UNITS (EFFECTIVE 2022-2023)**9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

2 units

from

- ENGPYHS 4UB2 - Modern and Applied Physics Laboratory: Biomedical
- ENGPYHS 4UM2 - Modern and Applied Physics Laboratory: Nano- and Micro-devices
- ENGPYHS 4UN2 - Modern and Applied Physics Laboratory: Nuclear Labs
- ENGPYHS 4UP2 - Modern and Applied Physics Laboratory: Photonics
- ENGPYHS 4US2 - Modern and Applied Physics Laboratory: Smart Systems

(See *Note 2* above.)3-4 units

- approved IBEHS Technical Elective

12-13 units

- approved technical electives (see *Note 1* above.)

6 units

- Complementary Studies

## Bachelor of Engineering and Management

### ENGINEERING PHYSICS AND MANAGEMENT, ENGINEERING PHYSICS AND MANAGEMENT CO-OP (B.ENG.MGT.)

**ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTES**

- Approved technical electives for a total of 33-36 units:
  - Students must take at least 3 units of Approved Engineering technical electives outside of Engineering Physics
  - Students must take at least 17 units of Approved technical electives from the Engineering Physics course offerings
  - Remaining units: Students may take any approved Engineering or Science technical elective (including Engineering Physics)
- While two units worth of the 4U\*2 courses are required at a minimum, these courses are also part of the Approved Engineering Physics technical electives and students may take an unlimited number of these courses to fulfill their elective requirements in any year.
- Approved technical electives are available in a list on the Engineering Physics website. Subject to Chair approval, students may replace Engineering Physics technical electives with approved Engineering courses.

Also subject to Chair approval, courses not appearing on the technical elective list may qualify as acceptable technical electives. Students are free to choose their technical electives according to their own interests, but may consider the following course recommendations for a program of study. Further detail on program specializations and course recommendations is available on the Engineering Physics website. Students are responsible for ensuring that they fulfill the prerequisites for each course.

- **Nanotech Engineering (Nano- and Micro-Devices):** ENGPYHS 3F03, 3PN4, 4MD3, 4UM2, 4Z03, MATLS 4H03, MECHENG 4E03
- **Nanotech Engineering (Photonics):** ENGPYHS 3E04, 3F03, 3PD3, 3PN4, 4S03, 4UP2, 4Z03, ELECENG 3FK4 and 4EM4
- **Nanotech Engineering (Solar):** ENGPYHS 3E04, 3ES3, 3F03, 3PN4, 4MD3, 4X03, 4UM3, 4Z03, MATLS 4Q03
- **Nuclear Engineering:** ENGPYHS 3D03, 3ES3, 3004, 4D03, 4NE3, 4P03, 4PP3, 4UN2
- **Biomedical Engineering:** ENGPYHS 3E04, 3F03, 3PN4, 4I03, 4S03, 4UB2, 4Z03, MECHENG 4E03
- **Smart Systems Engineering:** ENGPYHS 3F03, 3PN4, 4US2, SFWRENG 2MP3, 2MD3, MECHENG 4R03, ELECENG 4CL4, and 6-8 units from ELECENG 3FK4, 3TR4, MECHENG 4E03, 4H03
- **Quantum Computing:** ENGPYHS 4QC3, COMPENG 2SH4, 2SI4, MATH 2R03, 3C03, 3D03, 3QC3, PHYSICS 3MM3, 3QI3, 4F03
- **Interdisciplinary Engineering:** ENGPYHS 3D03, 3E04, 3004, 3ES3, 3F03, 3PN4, 4MD3, 4P03 and 4S03

- Students in a Co-op program must complete ENGINEER 1EEO in addition to the academic requirements specified in this calendar. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

**REQUIREMENTS****LEVEL II: 37 UNITS**6 units

- COMMERCE 1AA3 - Introductory Financial Accounting
- COMMERCE 2MA3 - Introduction to Marketing

3 units

- ENGNMGT 2AA3 - Communication Skills

22 units

- ENGPYHS 2A04 - Electricity and Magnetism
- ENGPYHS 2CM4 - Computational Multiphysics
- ENGPYHS 2E04 - Analog and Digital Circuits
- ENGPYHS 2NE3 - Thermal Systems Design
- ENGPYHS 2P04 - Computational Mechanics
- ENGPYHS 2QM3 - Introduction to Quantum Mechanics

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

**LEVEL III: 38-39 UNITS**9 units

- COMMERCE 1BA3 - Organizational Behaviour
- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2FA3 - Introduction to Finance

3 units

- ECON 1BB3 - Introductory Macroeconomics

23 units

- ENGPYHS 3BA4 - Electronics I: Circuits with Non-Linear and Active Components
- ENGPYHS 3BB4 - Electronics II: Embedding and Programming a Micro-Controller
- ENGPYHS 3L04 - Engineering Metrology: Fundamentals and Applications
- ENGPYHS 3NM4 - Numerical Methods for Engineering
- ENGPYHS 3SM3 - Statistical Mechanics
- ENGPYHS 3W04 - Signals and Systems for Engineering

3-4 units

- approved technical electives (see Note 1)

**LEVEL IV: 37-38 UNITS**12 units

- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

3 units

- ENGMGT 4A03 - Innovation Driven Project Development and Management

6 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- ENGPYS 3EC4 - Professional Communication and Project Management

15-16 units

- approved technical electives (see Note 1)

**LEVEL V: 35-36 UNITS**3 units

- COMMERCE 4PA3 - Business Policy: Strategic Management

3 units

- ENGMGT 5B03 - Engineering and Management Projects

7 units

- ENGPYS 4A06 A/B - Engineering Physics Design and Synthesis Project

2 units

from

- ENGPYS 4UB2 - Modern and Applied Physics Laboratory: Biomedical
- ENGPYS 4UM2 - Modern and Applied Physics Laboratory: Nano- and Micro-devices
- ENGPYS 4UN2 - Modern and Applied Physics Laboratory: Nuclear Labs
- ENGPYS 4UP2 - Modern and Applied Physics Laboratory: Photonics
- ENGPYS 4US2 - Modern and Applied Physics Laboratory: Smart Systems

(See *Note 2* above.)6 units

- Commerce electives selected from Level III or IV Commerce

15-16 units

- approved technical electives (see Note 1)

## Bachelor of Engineering and Society

### ENGINEERING PHYSICS AND SOCIETY, ENGINEERING PHYSICS AND SOCIETY CO-OP (B.ENG.SOCIETY)

**ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTES**

1. Approved technical electives for a total of 33-36 units:
  - Students must take at least 3 units of Approved Engineering technical electives outside of Engineering Physics

- Students must take at least 17 units of Approved technical electives from the Engineering Physics course offerings
  - Remaining units: Students may take any approved Engineering or Science technical elective (including Engineering Physics)
2. While two units worth of the 4U\*2 courses are required at a minimum, these courses are also part of the Approved Engineering Physics technical electives and students may take an unlimited number of these courses to fulfill their elective requirements in any year.
  3. Approved technical electives are available in a list on the Engineering Physics website. Subject to Chair approval, students may replace Engineering Physics technical electives with approved Engineering courses. Also subject to Chair approval, courses not appearing on the technical elective list may qualify as acceptable technical electives. Students are free to choose their technical electives according to their own interests, but may consider the following course recommendations for a program of study. Further detail on program specializations and course recommendations is available on the Engineering Physics website. Students are responsible for ensuring that they fulfill the prerequisites for each course.
    - **Nanotech Engineering (Nano- and Micro-Devices):** ENGPYS 3F03, 3PN4, 4MD3, 4UM2, 4Z03, MATLS 4H03, MECHENG 4E03
    - **Nanotech Engineering (Photonics):** ENGPYS 3E04, 3F03, 3PD3, 3PN4, 4S03, 4UP2, 4Z03, ELECENG 3FK4 and 4EM4
    - **Nanotech Engineering (Solar):** ENGPYS 3E04, 3ES3, 3F03, 3PN4, 4MD3, 4X03, 4UM3, 4Z03, MATLS 4Q03
    - **Nuclear Engineering:** ENGPYS 3D03, 3ES3, 3O04, 4D03, 4NE3, 4P03, 4PP3, 4UN2
    - **Biomedical Engineering:** ENGPYS 3E04, 3F03, 3PN4, 4I03, 4S03, 4UB2, 4Z03, MECHENG 4E03
    - **Smart Systems Engineering:** ENGPYS 3F03, 3PN4, 4US2, SFWRENG 2MP3, 2MD3, MECHENG 4R03, ELECENG 4CL4, and 6-8 units from ELECENG 3FK4, 3TR4, MECHENG 4E03, 4H03
    - **Quantum Computing:** ENGPYS 4QC3, COMPENG 2SH4, 2SI4, MATH 2R03, 3C03, 3D03, 3QC3, PHYSICS 3MM3, 3QI3, 4F03
    - **Interdisciplinary Engineering:** ENGPYS 3D03, 3E04, 3O04, 3ES3, 3F03, 3PN4, 4MD3, 4P03 and 4S03
  4. Students in a Co-op program must complete ENGINEER 1EE0 in addition to the academic requirements specified in this calendar. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

**REQUIREMENTS****LEVEL II: 37 UNITS**22 units

- ENGPYS 2A04 - Electricity and Magnetism
- ENGPYS 2CM4 - Computational Multiphysics
- ENGPYS 2E04 - Analog and Digital Circuits
- ENGPYS 2NE3 - Thermal Systems Design
- ENGPYS 2P04 - Computational Mechanics
- ENGPYS 2QM3 - Introduction to Quantum Mechanics

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

6 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I
- ENGSOCTY 2Y03 - Case Studies in History and Technology

3 units

- Engineering and Society focus electives

**LEVEL III: 35-36 UNITS**23 units

- ENGPYS 3BA4 - Electronics I: Circuits with Non-Linear and Active Components
- ENGPYS 3BB4 - Electronics II: Embedding and Programming a Micro-Controller



- ENGPYHS 3L04 - Engineering Metrology: Fundamentals and Applications
- ENGPYHS 3NM4 - Numerical Methods for Engineering
- ENGPYHS 3SM3 - Statistical Mechanics
- ENGPYHS 3W04 - Signals and Systems for Engineering

3 units

- ENGSOCTY 3Y03 - Technology and Society

6 units

- Engineering and Society focus electives

3-4 units

- approved technical electives (see *Note 1*)

**LEVEL IV: 34-35 UNITS**7 units

- ENGINEER 2B03 - Engineering Economics
- ENGPYHS 3EC4 - Professional Communication and Project Management

12-13 units

- approved technical electives (see *Note 1*)

6 units

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

9 units

- Engineering and Society focus electives

**LEVEL V: 32-33 UNITS**3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

6 units

- ENGPYHS 4A06 A/B - Engineering Physics Design and Synthesis Project

2 units

from

- ENGPYHS 4UB2 - Modern and Applied Physics Laboratory: Biomedical
- ENGPYHS 4UM2 - Modern and Applied Physics Laboratory: Nano- and Micro-devices
- ENGPYHS 4UN2 - Modern and Applied Physics Laboratory: Nuclear Labs
- ENGPYHS 4UP2 - Modern and Applied Physics Laboratory: Photonics
- ENGPYHS 4US2 - Modern and Applied Physics Laboratory: Smart Systems

(See *Note 2* above.)3 units

- ENGSOCTY 4Y03 - Society Capstone Design

18-19 units

- approved technical electives (see *Note 1*)

## Department of Materials Science and Engineering

Faculty of the Department of Materials Science and Engineering, as of January 15, 2020

CHAIR**Hatem Zurob**GRADUATE ASSOCIATE CHAIR**Joey Kish**UNDERGRADUATE ASSOCIATE CHAIR**André Phillion**DISTINGUISHED UNIVERSITY PROFESSOR

**David S. Wilkinson**/B.A.Sc. (Toronto), Ph.D. (Cambridge), F.R.S.C., F.C.A.E., F.C.I.M., F.A.Cer.S., P.Eng.

PROFESSORS

**Gianluigi Botton**/B.Eng.Phy., Ph.D. (Ecole Polytechnique), F.R.S.C. /Canada Research Chair in Microscopy of Nanoscale Materials

**Joey Kish**/B.Eng., Ph.D. (McMaster), P.Eng.

**Adrian Kitai**/B.Sc. (McMaster), Ph.D. (Cornell), P.Eng.

**Dmitri V. Malakhov**/B.Sc. (Moscow), M.Sc., Ph.D. (Novosibirsk, Russia), L.E.L.

**Joseph R. McDermid**/B.Sc. (Hons.) (Queen's), M. Eng., Ph.D. (McGill) P.Eng./NSERC/Stelco Inc. Industrial Research Chair in Advanced Coated Steels

**Marek Niewczasz**/M.Sc., Ph.D. (Krakow), P.Eng.

**Gu Xu**/M.Sc., Ph.D. (Pittsburgh), D.E.S. (Columbia), F.C.A.E., P.Eng.

**Igor Zhitomirsky**/M.Sc. (State University, Kalinin), Ph.D. (Karpov Institute, Moscow), P.Eng. /Distinguished Engineering Professor

**Hatem S. Zurob**/B.Eng., Ph.D. (McMaster) P.Eng.

ADJUNCT PROFESSORS

**Mansoor Barati**/M.Sc. (Isfahan), Ph.D. (McMaster)

**Yves Brechet**/D.E.A. (Ecole Polytechnique), Ph.D. (Grenoble)

**Kenneth S. Coley**/B.Sc. (Strathclyde), Ph.D., D.I.C. (Imperial College, London), F.C.I.M., P.Eng.

**Michael Greenwood**/B.Sc. (Dalhousie), M.A.Sc., Ph.D. (McMaster)

**Jidong Kang**/B.Sc. (Nanchang, Hong Kong), M.A.Sc. (Xi'an Jiaotong), Ph.D. (Tianjin)

**Sorin Lazar**/Ph.D. (Delft)

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## Bachelor of Engineering

### MATERIALS ENGINEERING, MATERIALS ENGINEERING CO-OP (B.ENG.)

**ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTES**

1. The Department of Materials Science and Engineering offers a common core with five streams of study in Levels III and IV. Students may complete the required units as listed in the calendar in Levels III and IV by choosing a

course selection according to the following elective streams:

- Biomaterials
- Data Analytics & Computational Materials
- Materials Generalist
- Materials for Manufacturing & Infrastructure
- Smart Materials & Devices

A list of approved technical electives for each stream is available on the Department of Materials Science and Engineering website. Note that a course in a stream may not be taught when the enrollment is (expected to be) too low.

- Students entering Level II should register in the Materials Science and Engineering program and follow the requirements outlined below. Students entering Levels III, IV or V should follow the program requirements as specified in the Undergraduate Calendar of the year of their entry into Level II. Such students are advised to refer to their degree audit for the program in which they are registered and to consult with the Department of Materials Science and Engineering for further information.
- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EEO. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

### REQUIREMENTS FOR STUDENTS WHO ENTER THE PROGRAM IN 2020-2021 OR LATER

#### LEVEL II: 36 UNITS

##### 8 units

- CHEMENG 2004 - Fluid Mechanics
- ENGINEER 2P04 - Engineering Mechanics

##### 19 units

- MATLS 2B03 - Introduction to the Thermodynamics of Materials
- MATLS 2D03 - Thermodynamics of Alloys and Phase Diagrams
- MATLS 2H04 A/B - Integrated Materials Engineering Laboratory
- MATLS 2Q03 - Electronic Properties of Materials
- MATLS 2X03 - Crystalline Structure of Materials
- MATLS 3M03 - Mechanical Behaviour of Materials

##### 6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

##### 3 units

- approved complementary studies electives

#### LEVEL III: 37-40 UNITS

##### 3 units

- ENGINEER 2B03 - Engineering Economics

##### 8 units

- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- CHEMENG 3A04 - Heat Transfer

##### 17 units

- MATLS 3B03 - Manufacturing Engineering of Multifunctional and Biomedical Materials
- MATLS 3E04 - Mass Transfer
- MATLS 3F03 - High-Temperature Materials Production
- MATLS 3J03 - Statistical Methods for Materials Engineers
- MATLS 3T04 - Phase Transformations

##### 9-12 units

- approved Level III or IV technical electives from approved List A or List B from approved List A or List B

#### LEVEL IV: 35-39 UNITS

##### 7 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- ENGINEER 4T04 - Materials Selection in Design and Manufacturing

##### 9 units

- MATLS 4I03 - Sustainable Manufacturing Processes

- MATLS 4Z06 A/B - Materials Engineering Capstone

##### 4 units

from

- MATLS 4LA2 - Heat-Treatable Al Alloys
- MATLS 4LB2 - Synthesis and Characterization of Biomedical Coatings
- MATLS 4LF2 - Synthesis, Properties and Application of Thin Films
- MATLS 4LS2 - Physical Metallurgy of Steels

##### 3 units

- approved complementary studies electives

##### 9-10 units

- approved Level III or IV technical electives

##### 3-4 units

- approved Level III or IV technical electives from approved List B (Interdisciplinary engineering courses)

### REQUIREMENTS FOR STUDENTS WHO ENTERED THE PROGRAM PRIOR TO 2020-2021

#### LEVEL II: 36 UNITS

##### 4 units

- CHEMENG 2004 - Fluid Mechanics

##### 7 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- ENGINEER 2P04 - Engineering Mechanics

##### 16 units

- MATLS 2B03 - Introduction to the Thermodynamics of Materials
- MATLS 2D03 - Thermodynamics of Alloys and Phase Diagrams
- MATLS 2H04 A/B - Integrated Materials Engineering Laboratory
- MATLS 2Q03 - Electronic Properties of Materials
- MATLS 2X03 - Crystalline Structure of Materials

##### 6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

##### 3 units

- approved complementary studies electives

#### LEVEL III: 36-39 UNITS

##### 3 units

- ENGINEER 2B03 - Engineering Economics

##### 24 units

- CHEMENG 3A04 - Heat Transfer
- MATLS 3B03 - Manufacturing Engineering of Multifunctional and Biomedical Materials
- MATLS 3E04 - Mass Transfer
- MATLS 3F03 - High-Temperature Materials Production
- MATLS 3J03 - Statistical Methods for Materials Engineers
- MATLS 3M03 - Mechanical Behaviour of Materials
- MATLS 3T04 - Phase Transformations

##### 9-12 units

from

- MATLS 3C03 - Applied Thermodynamics
- Approved Level III or IV technical electives

#### LEVEL IV: 35-39 UNITS

##### 16 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- ENGINEER 4T04 - Materials Selection in Design and Manufacturing
- MATLS 4I03 - Sustainable Manufacturing Processes
- MATLS 4Z06 A/B - Materials Engineering Capstone

##### 4 units

from

- MATLS 4LA2 - Heat-Treatable Al Alloys
- MATLS 4LB2 - Synthesis and Characterization of Biomedical Coatings
- MATLS 4LF2 - Synthesis, Properties and Application of Thin Films
- MATLS 4LS2 - Physical Metallurgy of Steels

3 units

- Approved complementary studies electives

12-16 units

from

- ENGINEER 3MF3 - Materials Fabrication
- Approved Level III or IV technical electives

## Bachelor of Engineering and Biomedical Engineering

### MATERIALS AND BIOMEDICAL ENGINEERING, MATERIALS AND BIOMEDICAL ENGINEERING CO-OP (B.ENG.BME)

#### ADMISSION TO LEVEL II IBEHS PROGRAMS

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0.

All students who successfully complete the first year of the program will have a space in one of the two degree options. As enrolment is limited in each of the two degree options (HESE or BME), where there is more demand than spaces, competition will be based on first-year academic achievement.

Students seeking admission to the BME specialization will be admitted to one of eight Level II Engineering programs (Chemical, Civil, Electrical, Engineering Physics, Materials, Mechanical, Mechatronics, or Software). Admission to a Level II Engineering program is guaranteed for all students who meet the general progress requirements. All engineering programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on GPA.

Students who do not meet the requirements to proceed to Level II in May will have a *Pending* flag put on their allocation. The *Pending* flag will be removed in August if the student completes the requirements over the summer.

#### NOTES

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EE0. IBEHS 2ECO will be added to the academic record for each four month work term.
2. Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to eight units of research project or independent study courses. A full listing can be found on the IBEHS website.
3. Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

#### REQUIREMENTS

##### LEVEL II: 39 UNITS

9 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2E03 - Inquiry II: Biochemistry
- IBEHS 2P03 - Health Solutions Design Projects II

27 units

- CHEMENG 2004 - Fluid Mechanics
- ENGINEER 2P04 - Engineering Mechanics
- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV
- MATLS 2B03 - Introduction to the Thermodynamics of Materials
- MATLS 2D03 - Thermodynamics of Alloys and Phase Diagrams
- MATLS 2H04 A/B - Integrated Materials Engineering Laboratory
- MATLS 2X03 - Crystalline Structure of Materials

3 units

- Complementary Studies

##### LEVEL III: 39 UNITS (2020-2021 ONLY)

16 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

17 units

- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- MATLS 2Q03 - Electronic Properties of Materials
- MATLS 3B03 - Manufacturing Engineering of Multifunctional and Biomedical Materials
- MATLS 3E04 - Mass Transfer
- MATLS 3M03 - Mechanical Behaviour of Materials

6 units

- Complementary Studies

##### LEVEL III: 39 UNITS (EFFECTIVE 2021-2022)

19 units

- HTHSCI 2F03 - Human Physiology and Anatomy I
- HTHSCI 2FF3 - Human Physiology and Anatomy II
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

17 units

- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- MATLS 2Q03 - Electronic Properties of Materials
- MATLS 3B03 - Manufacturing Engineering of Multifunctional and Biomedical Materials
- MATLS 3E04 - Mass Transfer
- MATLS 3M03 - Mechanical Behaviour of Materials

3 units

##### LEVEL IV: 35 UNITS (2020-21 ONLY)

20 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

15 units

- CHEMENG 3A04 - Heat Transfer
- MATLS 3B03 - Manufacturing Engineering of Multifunctional and Biomedical Materials
- MATLS 3E04 - Mass Transfer
- MATLS 3T04 - Phase Transformations

##### LEVEL IV: 37-38 UNITS (EFFECTIVE 2021-2022)

3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2O A3 - Organic Chemistry I

20 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering

- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

11 units

- CHEMENG 3A04 - Heat Transfer
- MATLS 3F03 - High-Temperature Materials Production
- MATLS 3T04 - Phase Transformations

3-4 units

- approved Level III or IV tech elective

**LEVEL V: 38-40 UNITS**3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2O A3 - Organic Chemistry I

9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

10 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- ENGINEER 4T04 - Materials Selection in Design and Manufacturing
- MATLS 4I03 - Sustainable Manufacturing Processes

4 units

from

- MATLS 4LA2 - Heat-Treatable Al Alloys
- MATLS 4LB2 - Synthesis and Characterization of Biomedical Coatings
- MATLS 4LF2 - Synthesis, Properties and Application of Thin Films
- MATLS 4LS2 - Physical Metallurgy of Steels

6-7 units

- approved IBEHS Technical Elective

6-7 units

- approved Level III or IV tech elective

**LEVEL V: 35-39 UNITS (EFFECTIVE 2022-2023)**9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

10 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- ENGINEER 4T04 - Materials Selection in Design and Manufacturing
- MATLS 4I03 - Sustainable Manufacturing Processes

4 units

from

- MATLS 4LA2 - Heat-Treatable Al Alloys
- MATLS 4LB2 - Synthesis and Characterization of Biomedical Coatings
- MATLS 4LF2 - Synthesis, Properties and Application of Thin Films
- MATLS 4LS2 - Physical Metallurgy of Steels

6-8 units

- approved IBEHS Technical Elective

6-8 units

- approved Level III or IV tech elective

## Bachelor of Engineering and Management

### MATERIALS ENGINEERING AND MANAGEMENT, MATERIALS ENGINEERING AND MANAGEMENT CO-OP (B.ENG.MGT.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there

be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average. Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0. Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives. Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTES**

1. The Department of Materials Science and Engineering offers a common core with five streams of study in Levels III and IV. Students may complete the required units as listed in the calendar in Levels III and IV by choosing a course selection according to the following elective streams:

- Biomaterials
- Data Analytics & Computational Materials
- Materials Generalist
- Materials for Manufacturing & Infrastructure
- Smart Materials & Devices

A list of approved technical electives for each stream is available on the Department of Materials Science and Engineering website. Note that a course in a stream may not be taught when the enrollment is (expected to be) too low.

2. Students entering Level II should register in the Materials Science and Engineering program and follow the requirements outlined below. Students entering Levels III, IV or V should follow the program requirements as specified in the Undergraduate Calendar of the year of their entry into Level II. Such students are advised to refer to their degree audit for the program in which they are registered and to consult with the Department of Materials Science and Engineering for further information.

3. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each four month work term.

#### REQUIREMENTS FOR STUDENTS WHO ENTER THE PROGRAM IN 2020-2021 OR LATER

**LEVEL II: 36 UNITS**8 units

- CHEMENG 2004 - Fluid Mechanics
- ENGINEER 2P04 - Engineering Mechanics

3 units

- COMMERCE 2MA3 - Introduction to Marketing

3 units

- ECON 1BB3 - Introductory Macroeconomics

3 units

- ENGNMGT 2AA3 - Communication Skills

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

13 units

- MATLS 2B03 - Introduction to the Thermodynamics of Materials
- MATLS 2D03 - Thermodynamics of Alloys and Phase Diagrams
- MATLS 2H04 A/B
- MATLS 2X03 - Crystalline Structure of Materials

**LEVEL III: 36 UNITS**12 units

- COMMERCE 1AA3 - Introductory Financial Accounting (or 2AA3)
- COMMERCE 1BA3 - Organizational Behaviour (or 2BA3)
- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 2FA3 - Introduction to Finance



8 units

- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- CHEMENG 3A04 - Heat Transfer

16 units

- MATLS 2Q03 - Electronic Properties of Materials
- MATLS 3B03 - Manufacturing Engineering of Multifunctional and Biomedical Materials
- MATLS 3E04 - Mass Transfer
- MATLS 3F03 - High-Temperature Materials Production
- MATLS 3M03 - Mechanical Behaviour of Materials

**LEVEL IV: 34-37 UNITS**9 units

- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- ENGMGT 4A03 - Innovation Driven Project Development and Management

7 units

- MATLS 3J03 - Statistical Methods for Materials Engineers
- MATLS 3T04 - Phase Transformations

6-8 units

- approved Level III or IV technical electives from approved List A or List B

3-4 units

- approved Level III or IV technical electives from approved List B (Interdisciplinary engineering courses)

3 units

- Commerce electives selected from Level III or IV Commerce

**LEVEL V: 35-37 UNITS**6 units

- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

13 units

- ENGINEER 4T04 - Materials Selection in Design and Manufacturing
- MATLS 4I03 - Sustainable Manufacturing Processes
- MATLS 4Z06 A/B - Materials Engineering Capstone

4 units

from

- MATLS 4LA2 - Heat-Treatable Al Alloys
- MATLS 4LB2 - Synthesis and Characterization of Biomedical Coatings
- MATLS 4LF2 - Synthesis, Properties and Application of Thin Films
- MATLS 4LS2 - Physical Metallurgy of Steels

3 units

- ENGMGT 5B03 - Engineering and Management Projects

3 units

- Commerce electives selected from Level III or IV Commerce

6-8 units

- Approved Level III or IV technical electives from approved List A or List B

**REQUIREMENTS FOR STUDENTS WHO ENTERED THE PROGRAM PRIOR TO 2020-2021****LEVEL II: 32 UNITS**4 units

- CHEMENG 2004 - Fluid Mechanics

3 units

- COMMERCE 2MA3 - Introduction to Marketing

3 units

- ECON 1BB3 - Introductory Macroeconomics

3 units

- ENGMGT 2AA3 - Communication Skills

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

13 units

- MATLS 2B03 - Introduction to the Thermodynamics of Materials
- MATLS 2D03 - Thermodynamics of Alloys and Phase Diagrams
- MATLS 2H04 A/B - Integrated Materials Engineering Laboratory
- MATLS 2X03 - Crystalline Structure of Materials

**LEVEL III: 35-37 UNITS**9 units

- COMMERCE 1AA3 - Introductory Financial Accounting (or 2AA3)
- COMMERCE 1BA3 - Organizational Behaviour (or 2BA3)
- COMMERCE 2FA3 - Introduction to Finance

7 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- ENGINEER 2P04 - Engineering Mechanics

13 units

- MATLS 2Q03 - Electronic Properties of Materials
- MATLS 3B03 - Manufacturing Engineering of Multifunctional and Biomedical Materials
- MATLS 3E04 - Mass Transfer
- MATLS 3M03 - Mechanical Behaviour of Materials

6-8 units

from

- MATLS 3C03 - Applied Thermodynamics
- approved Level III or IV technical electives

**LEVEL IV: 38-40 UNITS**4 units

- CHEMENG 3A04 - Heat Transfer

12 units

- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- ENGMGT 4A03 - Innovation Driven Project Development and Management

10 units

- MATLS 3J03 - Statistical Methods for Materials Engineers
- MATLS 3M03 - Mechanical Behaviour of Materials
- MATLS 3T04 - Phase Transformations

6-8 units

- approved Level III or IV technical electives

**LEVEL V: 35-36 UNITS**6 units

- COMMERCE 4QA3 - Operations Modelling and Analysis
- COMMERCE 4QX3 - Special Topics in Operations Management

13 units

- ENGINEER 4T04 - Materials Selection in Design and Manufacturing
- MATLS 4I03 - Sustainable Manufacturing Processes
- MATLS 4Z06 A/B - Materials Engineering Capstone

4 units

from

- MATLS 4LA2 - Heat-Treatable Al Alloys
- MATLS 4LB2 - Synthesis and Characterization of Biomedical Coatings
- MATLS 4LF2 - Synthesis, Properties and Application of Thin Films
- MATLS 4LS2 - Physical Metallurgy of Steels

3 units

- ENGNMGT 5B03 - Engineering and Management Projects

3 units

- Commerce electives selected from Level III or IV Commerce

3-4 units

from

- ENGINEER 3MF3 - Materials Fabrication
- Approved Level III or IV technical electives

## Bachelor of Engineering and Society

### MATERIALS ENGINEERING AND SOCIETY, MATERIALS ENGINEERING AND SOCIETY CO-OP (B.ENG.SOCIETY)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

1. The Department of Materials Science and Engineering offers a common core with five streams of study in Levels III and IV. Students may complete the required units as listed in the calendar in Levels III and IV by choosing a course selection according to the following elective streams:

- Biomaterials
- Data Analytics & Computational Materials
- Materials Generalist
- Materials for Manufacturing & Infrastructure
- Smart Materials & Devices

A list of approved technical electives for each stream is available on the Department of Materials Science and Engineering website. Note that a course in a stream may not be taught when the enrollment is (expected to be) too low.

2. Students entering Level II should register in the Materials Science and Engineering program and follow the requirements outlined below. Students entering Levels III, IV or V should follow the program requirements as specified in the Undergraduate Calendar of the year of their entry into Level II. Such students are advised to refer to their degree audit for the program in which they are registered and to consult with the Department of Materials Science and Engineering for further information.
3. A minimum of 18 units of focus elective courses is required for the Engineering and Society program. (This does not include the six units of complementary studies elective in Level I.)
4. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

#### REQUIREMENTS FOR STUDENTS WHO ENTER THE PROGRAM IN 2020-2021 OR LATER

##### LEVEL II: 36 UNITS

8 units

- CHEMENG 2004 - Fluid Mechanics
- ENGINEER 2P04 - Engineering Mechanics

13 units

- MATLS 2B03 - Introduction to the Thermodynamics of Materials
- MATLS 2D03 - Thermodynamics of Alloys and Phase Diagrams
- MATLS 2H04 A/B - Integrated Materials Engineering Laboratory
- MATLS 2X03 - Crystalline Structure of Materials

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

6 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I
- ENGSOCTY 2Y03 - Case Studies in History and Technology

3 units

- Engineering and Society focus electives

##### LEVEL III: 33-36

8 units

- CHEMENG 2E04 - Numerical Methods and Computing for Chemical Engineers
- CHEMENG 3A04 - Heat Transfer

16 units

- MATLS 2Q03 - Electronic Properties of Materials
- MATLS 3B03 - Manufacturing Engineering of Multifunctional and Biomedical Materials
- MATLS 3E04 - Mass Transfer
- MATLS 3F03 - High-Temperature Materials Production
- MATLS 3M03 - Mechanical Behaviour of Materials

3 units

- ENGSOCTY 3Y03 - Technology and Society

6-9 units

- Engineering and Society focus electives

##### LEVEL IV: 31-37 UNITS

3 units

- ENGINEER 2B03 - Engineering Economics

7 units

- MATLS 3J03 - Statistical Methods for Materials Engineers
- MATLS 3T04 - Phase Transformations

6-8 units

- approved Level III or IV technical electives from approved List A or List B

3-4 units

- approved Level III or IV technical electives from approved List B (Interdisciplinary engineering courses)

6 units

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

6-9 units

- Engineering and Society focus electives

##### LEVEL V: 32-37 UNITS

13 units

- ENGINEER 4T04 - Materials Selection in Design and Manufacturing
- MATLS 4I03 - Sustainable Manufacturing Processes
- MATLS 4Z06 A/B - Materials Engineering Capstone

4 units

from

- MATLS 4LA2 - Heat-Treatable Al Alloys
- MATLS 4LB2 - Synthesis and Characterization of Biomedical Coatings
- MATLS 4LF2 - Synthesis, Properties and Application of Thin Films
- MATLS 4LS2 - Physical Metallurgy of Steels

3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

3 units

- ENGSOCTY 4Y03 - Society Capstone Design

3-6 units

- Engineering and Society focus electives

### REQUIREMENTS FOR STUDENTS WHO ENTERED THE PROGRAM PRIOR TO 2020-2021

#### LEVEL II: 35 UNITS

##### 4 units

- CHEMENG 2004 - Fluid Mechanics

##### 13 units

- MATLS 2B03 - Introduction to the Thermodynamics of Materials
- MATLS 2D03 - Thermodynamics of Alloys and Phase Diagrams
- MATLS 2H04 A/B - Integrated Materials Engineering Laboratory
- MATLS 2X03 - Crystalline Structure of Materials

##### 6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

##### 6 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I
- ENGSOCTY 2Y03 - Case Studies in History and Technology

##### 6 units

- Engineering and Society focus electives

#### LEVEL III: 32-37

##### 7 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- ENGINEER 2P04 - Engineering Mechanics

##### 13 units

- MATLS 2Q03 - Electronic Properties of Materials
- MATLS 3B03 - Manufacturing Engineering of Multifunctional and Biomedical Materials
- MATLS 3E04 - Mass Transfer
- MATLS 3F03 - High-Temperature Materials Production

##### 6-8 units

from

- MATLS 3C03 - Applied Thermodynamics
- approved Level III or IV technical electives

##### 3 units

- ENGSOCTY 3Y03 - Technology and Society

##### 3-6 units

- Engineering and Society focus electives

#### LEVEL IV: 32-37 UNITS

##### 3 units

- ENGINEER 2B03 - Engineering Economics

##### 4 units

- CHEMENG 3A04 - Heat Transfer

##### 10 units

- MATLS 3J03 - Statistical Methods for Materials Engineers
- MATLS 3M03 - Mechanical Behaviour of Materials
- MATLS 3T04 - Phase Transformations

##### 6-8 units

- approved Level III or IV technical electives

##### 6 units

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

##### 3-6 units

- Engineering and Society focus electives

#### LEVEL V: 32-36 UNITS

##### 13 units

- ENGINEER 4T04 - Materials Selection in Design and Manufacturing
- MATLS 4I03 - Sustainable Manufacturing Processes
- MATLS 4Z06 A/B - Materials Engineering Capstone

##### 4 units

from

- MATLS 4LA2 - Heat-Treatable Al Alloys

- MATLS 4LB2 - Synthesis and Characterization of Biomedical Coatings
- MATLS 4LF2 - Synthesis, Properties and Application of Thin Films
- MATLS 4LS2 - Physical Metallurgy of Steels

##### 3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

##### 3 units

- ENGSOCTY 4Y03 - Society Capstone Design

##### 6-9 units

- Engineering and Society focus electives

##### 3-4 units

from

- ENGINEER 3MF3 - Materials Fabrication
- approved Level III or IV technical electives

## Department of Mechanical Engineering

### Faculty of the Department of Mechanical Engineering, as of January 15, 2020

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**Marilyn Lightstone**

ASSOCIATE CHAIR (UNDERGRADUATE PROGRAMS)

**Gregory Wohl**

ASSOCIATE CHAIR (GRADUATE STUDIES)

#### Chan Ching

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**Chan Y. Ching**/B.S. (*Perideniya*), Ph.D. (*Syracuse*), P.Eng.

**James Cotton**/B.Eng., M.Eng., Ph.D. (*McMaster*), P.Eng.

**Mohamed Elbestawi**/B.Sc. (*Alexandria*), M.Eng., Ph.D. (*McMaster*), P.Eng.

**Ali Emadi**/B.S., M.S., (*Sharif University of Technology*), Ph.D., (*Texas A & M*); Canada Excellence Research Chair in Hybrid Powertrain; Director, McMaster Institute for Automotive Research and Technology

**Saeid Habibi**/B.Sc. (*Dundee*), Ph.D. (*Cambridge*), P.Eng., NSERC/Ford Canada Industrial Research Chair in Hybrid/Electric Vehicle Powertrain Diagnostics

**Mohamed S. Hamed**/B.Sc., M.Sc. (*Alexandria*), Ph.D. (*Western Ontario*), P.Eng.

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**Philip Koshy**/B.E. (*Anna*), M.Tech., Ph.D. (*IIT Kanpur*), P.Eng.

**Marilyn F. Lightstone**/B.Sc. (*Queen's*), M.A.Sc., Ph.D. (*Waterloo*), P.Eng.

**Ishwar K. Puri**/B.Sc. (*Delhi*), M.S., Ph.D. (*California-San Diego*)

**Ponnambalam (Ravi) Selvaganapathy**/B.S. (*Madurai Kamaraj*), M.S., Ph.D. (*Michigan*), P.Eng., Canada Research Chair in Biomechanics

**Sumanth Shankar**/B.Tech., (*Banaras Hindu*), Ph.D. (*Worcester Polytechnic*)

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**Peidong Wu**/B.Sc. (*Zhejiang*), M.Eng. (*China University of Mining*), Ph.D. (*Delft*), P.Eng.

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B.Eng. (*Makerere*), M.Eng (*New South Wales*), PhD (*Calgary*), P.Eng.

## Bachelor of Engineering

### MECHANICAL ENGINEERING, MECHANICAL ENGINEERING CO-OP (B.ENG.)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng. Society program are required to submit a

statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

#### NOTES

1. Level IV Mechanical Engineering students must choose one of the following option areas and complete sufficient units of the listed required courses and technical electives.

2. PROGRAM OPTION COMPULSORY COURSES:

- **General:** five of any approved technical electives
  - **Mechanics and Design:** two approved technical electives; plus three of CHEMENG 4T03, ENGINEER 4T04, MATLS 4T03, MECHENG 4B03, 4BB3, 4CC3, 4E03, 4H03, 4I03, 4K03, 4L03, 4N03, 4T03, 4X04, 4Y03, 4Z03
  - **Manufacturing:** two approved technical electives; plus three of CHEMENG 4X03, ENGINEER 4J03, 4T04, MATLS 4T03, MECHENG 4B03, 4C03, 4D03, 4E03, 4H03, 4K03, 4N03, 4T03, 4X04, 4Y03, 4Z03
  - **Thermofluids and Energy Systems:** two approved technical electives; plus MECHENG 4S03; plus two of CHEMENG 4X03, ENGPYHS 3D03, 4D03, 4NE3, 4P03, MECHENG 4AA3, 4I03, 4J03, 4N03, 4O04, 4T03, 4U03, 4W03, 4X04, 4Y03
  - **Approved Technical Electives:** any of the required program option courses listed above, plus CIVENG 3K03, COMMERCE 4QA3, ENGINEER 3N03, 4EX3
3. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each 4 month work term.

#### REQUIREMENTS

##### LEVEL II: 40 UNITS

###### 3 units

- ENGINEER 2B03 - Engineering Economics

###### 6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

###### 31 units

- MECHENG 2A03 - Design Communication
- MECHENG 2B03 - Mechanical Engineering Measurements
- MECHENG 2C04 - Mechanical Engineering Design I
- MECHENG 2D03 - Mechanical Engineering Design Elements
- MECHENG 2P04 - Statics and Mechanics of Materials
- MECHENG 2Q04 - Engineering Mechanics: Kinetics and Dynamics
- MECHENG 2W04 - Thermodynamics
- MECHENG 3A03 - Engineering Mechanics
- MECHENG 3C03 - Manufacturing Engineering

##### LEVEL III: 37 UNITS

###### 3 units

- ENGINEER 2MM3 - Electrical Circuits and Power

###### 3 units

- MATLS 3M03 - Mechanical Behaviour of Materials

###### 3 units

- MATH 3I03 - Partial Differential Equations for Engineering

###### 25 units

- MECHENG 3E05 - Mechanical Engineering Design II
- MECHENG 3F04 - Modelling and Numerical Solutions
- MECHENG 3M03 A/B - Composite Laboratory
- MECHENG 3O04 - Fluid Mechanics
- MECHENG 3R03 - Heat Transfer
- MECHENG 4Q03 - Mechanical Vibrations
- MECHENG 4R03 - Control Systems



3 units

- STATS 3Y03 - Probability and Statistics for Engineering

**LEVEL IV: 36-37 UNITS**3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

6 units

- approved complementary studies electives

12 units

- MECHENG 4M06 A/B - Project
- MECHENG 4P03 A/B - Composite Laboratory
- MECHENG 4V03 - Thermo-Fluids Systems Design and Analysis

15-16 units

- Program option courses or approved technical electives.  
(See *Note 1* above.)

## Bachelor of Engineering and Biomedical Engineering

### MECHANICAL AND BIOMEDICAL ENGINEERING, MECHANICAL AND BIOMEDICAL ENGINEERING CO-OP (B.ENG.BME)

**ADMISSION TO LEVEL II IBEHS PROGRAMS**

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0.

All students who successfully complete the first year of the program will have a space in one of the two degree options. As enrolment is limited in each of the two degree options (HESE or BME), where there is more demand than spaces, competition will be based on first-year academic achievement.

Students seeking admission to the BME specialization will be admitted to one of eight Level II Engineering programs (Chemical, Civil, Electrical, Engineering Physics, Materials, Mechanical, Mechatronics, or Software). Admission to a Level II Engineering program is guaranteed for all students who meet the general progress requirements. All engineering programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on GPA.

Students who do not meet the requirements to proceed to Level II in May will have a *Pending* flag put on their allocation. The *Pending* flag will be removed in August if the student completes the requirements over the summer.

**NOTES**

1. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EE0. IBEHS 2ECO will be added to the academic record for each four month work term.
2. Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to eight units of research project or independent study courses. A full listing can be found on the IBEHS website.
3. Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

**REQUIREMENTS****LEVEL II: 39 UNITS**12 units

- HTHSCI 2E03 - Inquiry II: Biochemistry
- HTHSCI 2F03 - Human Physiology and Anatomy I
- HTHSCI 2FF3 - Human Physiology and Anatomy II

- IBEHS 2P03 - Health Solutions Design Projects II

27 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV
- MECHENG 2A03 - Design Communication
- MECHENG 2B03 - Mechanical Engineering Measurements
- MECHENG 2P04 - Statics and Mechanics of Materials
- MECHENG 2Q04 - Engineering Mechanics: Kinetics and Dynamics
- MECHENG 2W04 - Thermodynamics
- MECHENG 3A03 - Engineering Mechanics

**LEVEL III: 38 UNITS**16 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

22 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- MATH 3I03 - Partial Differential Equations for Engineering
- MECHENG 2D03 - Mechanical Engineering Design Elements
- MECHENG 3C03 - Manufacturing Engineering
- MECHENG 3M03 A/B - Composite Laboratory
- MECHENG 3O04 - Fluid Mechanics
- MECHENG 3R03 - Heat Transfer

**LEVEL IV: 38-39 UNITS**3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I

20 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics
- IBEHS 4C03 - Statistical Methods in Biomedical Engineering
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

12 units

- MATLS 3M03 - Mechanical Behaviour of Materials
- MECHENG 3E05 - Mechanical Engineering Design II
- MECHENG 3F04 - Modelling and Numerical Solutions

3-4 units

- approved IBEHS Technical Elective

**LEVEL V: 36-37 UNITS (2020-2021 ONLY)**9 units

- IBEHS 5A03
- IBEHS 5B06 A/B

12 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- MECHENG 4P03 A/B - Composite Laboratory
- MECHENG 4Q03 - Mechanical Vibrations
- MECHENG 4V03 - Thermo-Fluids Systems Design and Analysis

3 units

- approved IBEHS Technical Elective

6-7 units

- program option courses or approved technical electives

6 units

- Complementary Studies

**LEVEL V: 39-40 UNITS (2021-2022 ONLY)**9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

15 units

- ENGINEER 2MM3 - Electrical Circuits and Power
- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- MECHENG 4P03 A/B - Composite Laboratory
- MECHENG 4Q03 - Mechanical Vibrations
- MECHENG 4V03 - Thermo-Fluids Systems Design and Analysis

3-4 units

- approved IBEHS Technical Elective

6 units

- program option courses or approved technical electives

6 units

- Complementary Studies

**LEVEL V: 36-38 UNITS (EFFECTIVE 2022-2023)**9 units

- IBEHS 4QZ3 - Modelling of Biological Systems
- IBEHS 5P06 A/B - Biomedical Capstone Design Project

12 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- MECHENG 4P03 A/B - Composite Laboratory
- MECHENG 4Q03 - Mechanical Vibrations
- MECHENG 4V03 - Thermo-Fluids Systems Design and Analysis

3-4 units

- approved IBEHS Technical Elective

6-7 units

- program option courses or approved technical electives

6 units

- Complementary Studies

## Bachelor of Engineering and Management

### MECHANICAL ENGINEERING AND MANAGEMENT, MECHANICAL ENGINEERING AND MANAGEMENT CO-OP (B.ENG.MGT.)

**ADMISSION TO LEVEL II ENGINEERING PROGRAMS**

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives.

Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTES**

- Level IV and Level V Mechanical Engineering and Management students must choose one of the following option areas and complete sufficient units of the listed required courses and technical electives.
- PROGRAM OPTION COMPULSORY COURSES:
- **General:** four of any approved technical electives
- **Mechanics and Design:** one approved technical elective plus three of CHEMENG 4T03, ENGINEER 4T04, MATLS 4T03, MECHENG 4B03, 4BB3,

4CC3, 4E03, 4H03, 4I03, 4K03, 4L03, 4N03, 4T03, 4X04, 4Y03, 4Z03

- **Manufacturing:** one approved technical elective plus three of CHEMENG 4X03, ENGINEER 4J03, 4T04, MATLS 4T03, MECHENG 4B03, 4C03, 4D03, 4E03, 4H03, 4K03, 4N03, 4T03, 4X04, 4Y03, 4Z03
- **Thermofluids and Energy Systems:** one approved technical elective; plus MECHENG 4S03; plus two of CHEMENG 4X03, ENGPYHS 3D03, 4D03, 4NE3, 4P03, MECHENG 4AA3, 4I03, 4J03, 4N03, 4O04, 4T03, 4U03, 4W03, 4X04, 4Y03
- **Approved Technical Electives:** any of the required program option courses listed above, plus CIVENG 3K03, ENGINEER 3N03, 4EX3
- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2ECO will be added to the academic record for each four month work term.

**REQUIREMENTS**

- MATLS 3M03 - Mechanical Behaviour of Materials

**LEVEL II: 39 UNITS**9 units

- COMMERCE 1AA3 - Introductory Financial Accounting
- COMMERCE 1BA3 - Organizational Behaviour
- COMMERCE 2MA3 - Introduction to Marketing

3 units

- ECON 1BB3 - Introductory Macroeconomics

6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

18 units

- MECHENG 2A03 - Design Communication
- MECHENG 2C04 - Mechanical Engineering Design I
- MECHENG 2D03 - Mechanical Engineering Design Elements
- MECHENG 2P04 - Statics and Mechanics of Materials
- MECHENG 2W04 - Thermodynamics

3 units

- ENGNMGT 2AA3 - Communication Skills

**LEVEL III: 40 UNITS (2020-2021 ONLY)**3 units

- COMMERCE 2FA3 - Introduction to Finance

3 units

- ENGINEER 2MM3 - Electrical Circuits and Power

3 units

- MATH 3I03 - Partial Differential Equations for Engineering

3 units

- MATLS 3M03 - Mechanical Behaviour of Materials

25 units

- MECHENG 2B03 - Mechanical Engineering Measurements
- MECHENG 2C04 - Mechanical Engineering Design I
- MECHENG 2Q04 - Engineering Mechanics: Kinetics and Dynamics
- MECHENG 3A03 - Engineering Mechanics
- MECHENG 3F04 - Modelling and Numerical Solutions
- MECHENG 3O04 - Fluid Mechanics
- MECHENG 3R03 - Heat Transfer

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

**LEVEL III: 39 UNITS (EFFECTIVE 2021-2022)**3 units

- COMMERCE 2FA3 - Introduction to Finance

3 units

- ENGINEER 2MM3 - Electrical Circuits and Power

3 units

- MATH 3I03 - Partial Differential Equations for Engineering

3 units

24 units

- MECHENG 2B03 - Mechanical Engineering Measurements
- MECHENG 2Q04 - Engineering Mechanics: Kinetics and Dynamics
- MECHENG 3A03 - Engineering Mechanics
- MECHENG 3C03 - Manufacturing Engineering
- MECHENG 3F04 - Modelling and Numerical Solutions
- MECHENG 3O04 - Fluid Mechanics
- MECHENG 3R03 - Heat Transfer

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

**LEVEL IV: 38 UNITS**12 units

- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 3FA3 - Managerial Finance
- COMMERCE 3MC3 - Applied Marketing Management

3 units

- ENGNMGT 4A03 - Innovation Driven Project Development and Management

17 units

- MECHENG 3E05 - Mechanical Engineering Design II
- MECHENG 3M03 A/B - Composite Laboratory
- MECHENG 4Q03 - Mechanical Vibrations
- MECHENG 4R03 - Control Systems
- MECHENG 4V03 - Thermo-Fluids Systems Design and Analysis

6 units

- List B Program Option Courses or approved technical electives (See *Note 1* above.)

**LEVEL V: 36-37 UNITS**6 units

- COMMERCE 4PA3 - Business Policy: Strategic Management
- COMMERCE 4QA3 - Operations Modelling and Analysis

6 units

- Commerce electives selected from Level III or IV Commerce

3 units

- ENGNMGT 5B03 - Engineering and Management Projects

3 units

- ENGINEER 4A03 - Ethics, Equity and Law in Engineering

3 units

- approved complementary studies electives

9 units

- MECHENG 4M06 A/B - Project
- MECHENG 4P03 A/B - Composite Laboratory

6-7 units

- Program Option Courses or approved technical electives. (See *Note 1* above.)

## Bachelor of Engineering and Society

### MECHANICAL ENGINEERING AND SOCIETY, MECHANICAL ENGINEERING AND SOCIETY CO-OP (B.ENG.SOCIETY)

#### ADMISSION TO LEVEL II ENGINEERING PROGRAMS

Admission to Level II Engineering programs requires completion of all 31 units of required Engineering I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the student's Cumulative Grade Point Average.

Admission to a B.Eng. Management program is competitive and will be based on cumulative Grade Point Average. Students are required to complete ECON 1B03 - Introductory Microeconomics with a minimum grade of 5.0.

Students admitted to a B.Eng.Society program are required to submit a statement indicating the educational objectives for the focus electives. Students seeking admission to the Engineering and Management program, or the Engineering and Society program must first be admitted to the relevant department. Thereafter, they will be considered for admission to one of these two programs.

**NOTES**

- Level IV and Level V Mechanical Engineering and Society students must choose one of the following option areas and complete sufficient units of the listed required courses and technical electives.
- PROGRAM OPTION COMPULSORY COURSES:
- **General:** five of any approved technical electives
- **Mechanics and Design:** two approved technical electives; plus three of CHEMENG 4T03, ENGINEER 4T04, MATLS 4T03, MECHENG 4B03, 4BB3, 4CC3, 4E03, 4H03, 4I03, 4K03, 4L03, 4N03, 4T03, 4X04, 4Y03, 4Z03
- **Manufacturing:** two approved technical electives; plus three of CHEMENG 4X03, ENGINEER 4J03, 4T04, MATLS 4T03, MECHENG 4B03, 4C03, 4D03, 4E03, 4H03, 4K03, 4N03, 4T03, 4X04, 4Y03, 4Z03
- **Thermofluids and Energy Systems:** two approved technical electives; plus MECHENG 4S03; plus two of CHEMENG 4X03, ENGPYHS 3D03, 4D03, 4NE3, 4P03, MECHENG 4AA3, 4I03, 4J03, 4N03, 4O04, 4T03, 4U03, 4W03, 4X04, 4Y03
- **Approved Technical Electives:** any of the required program option courses listed above, plus CIVENG 3K03, COMMERCE 4QA3, ENGINEER 3N03, 4EX3
- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. ENGINEER 2EC0 will be added to the academic record for each 4 month work term.
- A minimum of 18 units of focus elective courses is required for the program. (This does not include the six units of complementary studies elective in Level I.)

**REQUIREMENTS****LEVEL II: 37 UNITS**6 units

- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

22 units

- MECHENG 2A03 - Design Communication
- MECHENG 2C04 - Mechanical Engineering Design I
- MECHENG 2D03 - Mechanical Engineering Design Elements
- MECHENG 2P04 - Statics and Mechanics of Materials
- MECHENG 2Q04 - Engineering Mechanics: Kinetics and Dynamics
- MECHENG 2W04 - Thermodynamics

6 units

- ENGSOCTY 2X03 - Inquiry in an Engineering Context I
- ENGSOCTY 2Y03 - Case Studies in History and Technology

3 units

- Engineering and Society focus electives

**LEVEL III: 38 UNITS**3 units

- MATLS 3M03 - Mechanical Behaviour of Materials

6 units

- ENGINEER 2B03 - Engineering Economics
- ENGINEER 2MM3 - Electrical Circuits and Power

3 units

- MATH 3I03 - Partial Differential Equations for Engineering

20 units

- MECHENG 2B03 - Mechanical Engineering Measurements
- MECHENG 3A03 - Engineering Mechanics

- MECHENG 3C03 - Manufacturing Engineering
- MECHENG 3F04 - Modelling and Numerical Solutions
- MECHENG 3O04 - Fluid Mechanics
- MECHENG 3R03 - Heat Transfer

3 units

- ENGSOCTY 3Y03 - Technology and Society

3 units

- Engineering and Society focus electives

**LEVEL IV: 38 UNITS (2020-2021 ONLY)**3 units

- MATLS 3M03 - Mechanical Behaviour of Materials

3 units

- STATS 3Y03 - Probability and Statistics for Engineering

17 units

- MECHENG 3E05 - Mechanical Engineering Design II
- MECHENG 3M03 A/B - Composite Laboratory
- MECHENG 4Q03 - Mechanical Vibrations
- MECHENG 4R03 - Control Systems
- MECHENG 4V03 - Thermo-Fluids Systems Design and Analysis

3 units

- Program option courses or approved technical electives  
(See *Note 1* above.)

6 units

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

6 units

- Engineering and Society focus electives

**LEVEL IV: 38 UNITS (EFFECTIVE 2021-2022)**3 units

- STATS 3Y03 - Probability and Statistics for Engineering

17 units

- MECHENG 3E05 - Mechanical Engineering Design II
- MECHENG 3M03 A/B - Composite Laboratory
- MECHENG 4Q03 - Mechanical Vibrations
- MECHENG 4R03 - Control Systems
- MECHENG 4V03 - Thermo-Fluids Systems Design and Analysis

3 units

- Program option courses or approved technical electives  
(See *Note 1* above.)

6 units

- ENGSOCTY 3X03 - Inquiry in an Engineering Context II
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives

9 units

- Engineering and Society focus electives

**LEVEL V: 30-37 UNITS**9 units

- MECHENG 4M06 A/B - Project
- MECHENG 4P03 A/B - Composite Laboratory

12-13 units

- Program option courses or approved technical electives  
(See *Note 1* above.)

3 units

- ENGSOCTY 4X03 A/B - Inquiry in an Engineering Context III

3 units

- ENGSOCTY 4Y03 - Society Capstone Design

3-9 units

- Engineering and Society focus electives

## Integrated Biomedical Engineering and Health Sciences (IBEHS) Program

Michael G. DeGroot Centre for Learning, Room 3513, ext. 28347

<http://ibiomed.mcmaster.ca/>

**Faculty as of January 15, 2020**

CO-DIRECTORS

**Hubert de Bruin**/B.Eng., M.Eng., Ph.D. (*McMaster*), P.Eng.

**Michelle L. MacDonald**/B.Sc., Ph.D. (*McMaster*)

ASSOCIATE DIRECTOR

**Colin McDonald**/B.Sc., Ph.D. (*Western Ontario*), P.Eng.

PROGRAM MANAGER

**Alexa Béhar-Bannelier**/B.Com. (Honours) (*McMaster*)

The Integrated Biomedical Engineering and Health Sciences (IBEHS) Programs are offered jointly by the Faculty of Engineering and the Faculty of Health Sciences. These programs lead to the B.Eng.BME or a B.H.Sc. (Honours) degree.

At McMaster, IBEHS students take a common Level I program comprising Mathematics, Materials, Physics, Chemistry, Cellular and Molecular Biology, Graphics Design, Introduction to Professional Engineering and Design, Computation and complementary studies electives. The specialized programs are entered at Level II.

All Level I students who wish to be reviewed for admission to a Level II program in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program in the following Fall/Winter term must submit an Application of Admission to Level II through MOSAIC by the University stated deadline. Students in the IBEHS program must rank both degree options in order of preference, and are permitted to rank up to twelve program choices in total. Rank ordering must be done very carefully because once admitted to a program, no further consideration is given to lower ranked choices. Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0. All Level II programs are limited enrollment and entry into a Level II program is competitive. The admission into each Level II program is determined by the Cumulative Grade Point Average (GPA) and order of ranked programs. All McMaster University courses completed (including electives and upper year courses) are calculated into Cumulative Grade Point Average (GPA) up to the time of Level II program admission review. Grades earned in summer school, after program admission review, will not change student Level II program eligibility. A student in IBEHS I with a Grade Point Average (GPA) less than 4.0 can no longer continue in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program.

Students must follow the program requirements of the Calendar in effect when they enter Level II.

Courses offered by the IBEHS program include two types of elective courses, which are governed by regulations, as follows:

- **Complementary Studies Electives** are broadening courses with subject matter that deals with central issues, methodologies and thought processes of the humanities and social sciences. In addition to ENGINEER 4A03, or equivalent, complementary studies electives are required in the IBEHS program.
- **IBEHS Technical Electives** are approved courses offered by the Integrated Biomedical Engineering & Health Sciences program or various departments throughout the University in subjects relevant to the particular program. A list is available on the program website.



**TRANSFERRING TO GRADUATE WITH A THREE-YEAR B.H.SC. DEGREE FROM THE B.H.SC. (HONOURS) HEALTH, ENGINEERING SCIENCE AND ENTREPRENEURSHIP (HESE) STREAM OF THE INTEGRATED BIOMEDICAL ENGINEERING AND HEALTH SCIENCES PROGRAM**

Students who successfully complete at least 90 units including all admission requirements and program-specific course requirements up to the end of Level III of the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) stream of the Integrated Biomedical Engineering and Health Sciences Program, with a minimum Grade Point Average of 4.0 may request permission from the Integrated Biomedical Engineering and Health Sciences office for transfer to graduate with the B.H.Sc. (exit) degree.

**TRANSFERRING TO GRADUATE WITH A THREE-YEAR B.A.SC. DEGREE FROM ONE OF THE B.ENG.BME BIOMEDICAL ENGINEERING STREAMS OF THE INTEGRATED BIOMEDICAL ENGINEERING AND HEALTH SCIENCES PROGRAM**

Students who successfully complete at least 90 units including all admission requirements and program-specific course requirements up to the end of Level III of one of the B.Eng.BME Biomedical Engineering streams of the Integrated Biomedical Engineering and Health Sciences Program, with a minimum Grade Point Average of 4.0 may request permission from the Office of the Associate Dean of Engineering (Academic) for transfer to graduate with the B.A.Sc. (exit) degree.

**IBEHS I:**

- Integrated Biomedical Engineering and Health Sciences (IBEHS) I/ Integrated Biomedical Engineering and Health Sciences (IBEHS) I Co-op

**LEVEL II PROGRAM(S) LEADING TO THE B.ENG.BME DEGREE INCLUDE:**

- Chemical and Biomedical Engineering, Chemical and Biomedical Engineering Co-Op (B.Eng.BME)
- Civil and Biomedical Engineering, Civil and Biomedical Engineering Co-Op (B.Eng.BME)
- Electrical and Biomedical Engineering, Electrical and Biomedical Engineering Co-Op (B.Eng.BME)
- Engineering Physics and Biomedical Engineering, Engineering Physics and Biomedical Engineering Co-Op (B.Eng.BME)
- Materials and Biomedical Engineering, Materials and Biomedical Engineering Co-Op (B.Eng.BME)
- Mechanical and Biomedical Engineering, Mechanical and Biomedical Engineering Co-Op (B.Eng.BME)
- Mechatronics and Biomedical Engineering, Mechatronics and Biomedical Engineering Co-Op (B.Eng.BME)
- Software and Biomedical Engineering, Software and Biomedical Engineering Co-Op (B.Eng.BME)

**LEVEL II PROGRAM(S) LEADING TO THE B.H.SC. (HONOURS) DEGREE INCLUDE:**

- Health, Engineering Science and Entrepreneurship (HESE) Specialization; Health, Engineering Science and Entrepreneurship (HESE) Specialization Co-Op (B.H.Sc.(Honours))

## W. Booth School of Engineering Practice and Technology

Engineering Technology Building (ETB), Room 509, ext. 26401

<https://www.eng.mcmaster.ca/sept>

DIRECTOR, W. BOOTH SCHOOL OF ENGINEERING PRACTICE AND TECHNOLOGY

**M. Elbestawi**/Ph.D., (McMaster), FCAE, P.Eng.

ASSOCIATE DIRECTOR, UNDERGRADUATE BACHELOR OF TECHNOLOGY DEGREE PROGRAM

**D. Centea**/B.Eng. (Brasov), M.Phil. (Bradford, England), PhD (McMaster)

**FOUR-YEAR DEGREE PROGRAMS**

PROGRAM CHAIR, AUTOMATION ENGINEERING TECHNOLOGY

**T. Wanyama**/B.Eng. (Makerere), M.Eng (New South Wales), PhD (Calgary), P.Eng.

PROGRAM CHAIR, AUTOMOTIVE AND VEHICLE ENGINEERING TECHNOLOGY

**T. (Ka-Ming) Yuen**/B.Eng. (McMaster), M.Eng. (McMaster), PhD (McMaster) P.Eng.

PROGRAM CHAIR, BIOTECHNOLOGY

**A. Rajabzadeh**/B.Sc., M.Sc.(Sharif), Ph.D. (Waterloo), P.Eng  
CHAIR, MANAGEMENT

**M. Justason**/B.Eng.Mgmt., M.Eng. (McMaster), MBA (Western), P.Eng.

**DEGREE COMPLETION PROGRAMS**

PROGRAM CHAIR, CIVIL ENGINEERING INFRASTRUCTURE TECHNOLOGY

**M. Justason**/B.Eng.Mgmt., M.Eng. (McMaster), MBA (Western), P.Eng.

PROGRAM CHAIR, MANUFACTURING ENGINEERING TECHNOLOGY

**E. Ng**/B.Eng. (Hons.), Ph.D. (Birmingham)

PROGRAM CHAIR, POWER AND ENERGY ENGINEERING TECHNOLOGY

**C. Tang**/B.A.Sc. (Waterloo), M.Eng. (Toronto), Ph.D. (McMaster), P.Eng., SMIEEE

PROGRAM CHAIR, SOFTWARE ENGINEERING TECHNOLOGY

**S. Srinivasan**/B.Eng. (Bombay), M.Sc., Ph.D. (Michigan), P.Eng.

CHAIR, MANAGEMENT

**M. Justason**/B.Eng.Mgmt., M.Eng. (McMaster), MBA (Western), P.Eng.

BUSINESS MANAGER

**M.Mantock**/B.A.

TEAM LEAD, ACADEMIC PROGRAMS

**S. Sullivan**/B.A.

ADMINISTRATIVE ASSISTANT

**S. Bernard**

The Bachelor of Technology (B.Tech.) programs, within the Faculty of Engineering's W. Booth School of Engineering Practice and Technology, provide a degree-level technological education that is distinct from that offered in Bachelor of Engineering programs. These programs are more oriented to applications in specific technologies, with less emphasis on broader mathematical and scientific foundations than a corresponding engineering program. Graduates will have considerably more breadth and depth in their area of technology than graduates of college technology diploma programs. For degree completion programs, a second objective is to provide a path for college diploma graduates to gain an education leading to a university degree. The programs are being offered in two specific configurations:

- **Four-year programs** with direct entry from secondary school leading to a Bachelor of Technology Degree from McMaster and both an Advanced Diploma in Technology and a Business Management Certificate from Mohawk College. The Four-Year Degree Programs are:
  - Automation Engineering Technology Co-op
  - Automotive and Vehicle Engineering Technology Co-op
  - Biotechnology Co-op
- **Degree-completion programs** for graduates of an Advanced Diploma in a Technology program leading to a Bachelor of Technology degree from McMaster and a Business Management Certificate from Mohawk College. The Degree Completion Programs are:
  - Civil Engineering Infrastructure Technology Co-op
  - Manufacturing Engineering Technology Co-op
  - Power and Energy Engineering Technology Co-op
  - Software Engineering Technology Co-op

**BREADTH OF LEARNING**

B.Tech. graduates will be functioning in an evolving world in which they will play an important role as "evolvers" or change agents. This means that their education cannot just be narrowly focused on technical and management topics but must also enable them to develop important complementary skills, including written and oral communication skills; as well as understanding the relationship between technology and society. The Four-year B.Tech. program has three courses which are designed to develop those unique skills

and broaden understanding of the complexities of technological-societal interrelationships.

### MANAGEMENT STUDIES

The Degree Completion Program includes a seven-course management studies component, and the Four-Year program has a 13 course management studies component with courses such as: financial systems, entrepreneurial thinking & innovation, project management and strategic management. This convergence of engineering technology and management education enables graduates to 'hit the ground running' and make significant contributions within the ever-changing business and technical environments.

### CO-OPERATIVE EDUCATION

The successful completion of Co-op work terms is a mandatory component of all B.Tech. degree programs; co-op work terms provide explicit experiential learning which is related to the technologically-oriented careers for which students are being prepared. Testing and enhancing their skills through a co-operative education experience is important in enabling graduates to function effectively in an industrial environment. All Co-op work terms must be completed prior to the start of the final academic term. The co-op component is managed by Engineering Co-op and Career Services.

## Four-Year B.Tech. Programs

### ACADEMIC REGULATIONS FOR FOUR-YEAR B.TECH. PROGRAMS

#### STUDENT ACADEMIC RESPONSIBILITY

You are responsible for adhering to the statement on student academic responsibility found in the *General Academic Regulations* of this calendar.

#### ACCESS TO COURSES

All undergraduate courses at McMaster have an enrolment capacity. The University is committed to making every effort to accommodate students in required courses so that their program of study is not extended. Unless otherwise specified, registration is on a first-come basis and in some cases priority is given to students from particular programs or Faculties. Students will be informed of their enrolment periods and are encouraged to enroll as soon as online enrolment is available to them in the Student Centre in Mosaic.

#### STUDENT COMMUNICATION RESPONSIBILITY

It is the student's responsibility to:

- maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- use the university provided e-mail address or maintain a valid forwarding e-mail address.
- regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.
- accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.

*Students enrolled in a Four-Year program for the B.Tech. degree, in addition to meeting the General Academic Regulations of the University, shall be subject to the following regulations.*

### MINIMUM REQUIREMENTS TO CONTINUE IN A PROGRAM BEYOND LEVEL I

In Level II and above, the student must maintain a Grade Point Average (GPA) of at least 3.5 to continue in the B.Tech. program.

### SEQUENCE OF COURSES

Courses must be taken in the sequence specified in the requirements for the program as outlined in this Calendar. Students must register for all outstanding work of one level before attempting work for a higher level.

### REPEATED COURSES

All failed courses must be repeated if they are required courses for the B.Tech. program or may be replaced if the courses are not explicitly required.

### LEVEL OF REGISTRATION

A student is required to register in the lowest level for which more than six units of work are incomplete. Work of a higher level may be undertaken only with the permission of the B.Tech. Academic Advisor, Office of the Associate Dean (Academic).

### MINIMUM WORK LOAD

The minimum workload for students registered in Level I of the Bachelor of Technology program is 30 units. The workload for students registered above Level I will range from 30 to 36 units per year and is specified within each academic program.

### REINSTATEMENT

A student who is ineligible to continue in a Bachelor of Technology program (*May not continue at university*) may normally not apply for reinstatement for one full academic year. Exceptions may be made where there are extenuating circumstances that are supported by documentation.

Students seeking reinstatement must complete the Reinstatement Request Form available at the Office of the Registrar. The completed form and the fee must be submitted to the Office of the Registrar by June 30. The form must be accompanied by a written explanation of the reason for the student's previous unsatisfactory academic performance, reasons for reinstatement at this time (including documentation of what has been done to correct previous academic problems), reasons why the student would expect to succeed in the desired program if reinstated (i.e. what was the previous problem and what has been done to correct it), activities since last registered at McMaster including all academic work. Letters of reference may be submitted but are not required.

### Reinstatement is not guaranteed.

A student who is reinstated after being ineligible to continue at a given level must repeat all courses of that level, unless specific course exemptions are granted explicitly in the letter of reinstatement. Students who are reinstated will be placed on program probation, and calculation of their Grade Point Average will begin anew. If at any review after reinstatement the student's Grade Point Average falls below 3.5, the student will be required to withdraw from the University for a period of at least 12 months.

### TRANSFERS FROM ENGINEERING

Students in good standing in Engineering I can apply to transfer directly to Level I B.Tech. Programs. (Automation Engineering Technology I, Automotive and Vehicle Engineering Technology I, Biotechnology I). Advanced credit will be given for Engineering I courses completed with minimum grade of C- which are equivalent to courses in the Bachelor of Technology program. Students who anticipate making such a transfer should consult with the B.Tech. Academic Advisor, Office of Associate Dean (Academic) at the earliest possible opportunity. Applications for transfer must be submitted to the Academic Advisor (Four-Year Bachelor of Technology Programs) no later than June 15.

### REQUIREMENTS FOR ADVANCED MOHAWK DIPLOMA

Students registered in the Four-Year Bachelor of Technology Program may elect to leave the Program upon the successful completion of Level III and 8 months of co-op. Students will be awarded a Mohawk College Advanced Diploma.

### STRUCTURE OF THE FOUR-YEAR B.TECH PROGRAM

	Fall (September - December)	Winter (January - April)	Summer (May - August)
<b>Year 1</b>	IA (15 units from Academic Level I)	IB (15 units from Academic Level I)	
<b>Year 2</b>	IIA (18 units from Academic Level II)	IIB (18 units from Academic Level II)	Co-op Work Term 1 ENGTECH 2EEO

<b>Year 3</b>	IIIA (18 units from Academic Level III)	Co-op Work Term 2 ENGTECH 3EEO	Co-op Work Term 3 ENGTECH 4EEO
<b>Year 4</b>	IIIB (18 units from Academic Level III)	IVA (16 units from Academic Level IV)	
<b>Year 5</b>	IVB (18 units from Academic Level IV)		

\*Co-op work-term possibilities for the summers in Years 1 and 4 should be discussed with Engineering Co-Op and Career Services.

## Degree Completion B.Tech. Programs

### ACADEMIC REGULATIONS FOR DEGREE COMPLETION B.TECH. PROGRAMS

#### STUDENT ACADEMIC RESPONSIBILITY

You are responsible for adhering to the statement on student academic responsibility found in the General Academic Regulations of this calendar.

#### STUDENT COMMUNICATION RESPONSIBILITY

It is the student's responsibility to:

- maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- use the university provided e-mail address or maintain a valid forwarding e-mail address.
- regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.
- accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.

*Students enrolled in a degree-completion program for the B.Tech. degree, in addition to meeting the General Academic Regulations of the University, shall be subject to the following regulations.*

#### ADVANCED STANDING

The Bachelor of Technology degree is a 4-year degree program. A minimum of 72 units of work must be completed at McMaster University in order to obtain a Bachelor of Technology degree.

#### SEQUENCE OF COURSES

Students in the degree completion program may register in any courses in the program for which they have achieved the specified prerequisite requirements.

#### REPEATED COURSES

All failed courses must be repeated if they are required courses for the B.Tech. program or may be replaced if the courses are not explicitly required.

#### LEVEL OF REGISTRATION

A student is required to register in the lowest level for which more than six units of work is incomplete.

#### WORK LOAD

Courses in the degree completion program are only offered on evenings (Monday through Friday) and on Saturdays. Students may elect to register in the program full-time or part-time. Students in these programs are considered to be full-time if registered for 9 units or more in an academic term. Students working full-time should not attempt more than two or three courses per academic term. The minimum number of units that may be taken in one academic term is three units (one course).

### REINSTATEMENT

A student who is ineligible to continue in a Bachelor of Technology program (*May not continue at university*) may normally not apply for reinstatement for one full academic year. Exceptions may be made where there are extenuating circumstances that are supported by documentation.

Students seeking reinstatement must complete the Reinstatement Request Form available at the Office of the Registrar. The completed form and the fee must be submitted to the Office of the Registrar by June 30. The form must be accompanied by a written explanation of the reason for the student's previous unsatisfactory academic performance, reasons for reinstatement at this time (including documentation of what has been done to correct previous academic problems), reasons why the student would expect to succeed in the desired program if reinstated (i.e. what was the previous problem and what has been done to correct it), activities since last registered at McMaster including all academic work. Letters of reference may be submitted but are not required. **Reinstatement is not guaranteed.**

A student who is reinstated after being ineligible to continue at a given level must repeat all courses of that level, unless specific course exemptions are granted explicitly in the letter of reinstatement. Students who are reinstated will be placed on program probation, and calculation of their Grade Point Average will begin anew. If at any review after reinstatement the student's Grade Point Average falls below 3.5, the student will be required to withdraw from the University for a period of at least 12 months.

#### ADMISSION TO DEGREE COMPLETION PROGRAMS

The minimum academic requirement for admission to a Bachelor of Technology degree completion program is successful completion of an advanced technology diploma from an Ontario college with a Grade Point Average of 75%.

The degree completion programs will accept students with diplomas in a related technology program. Applicants with educational background equivalent to those completing Ontario college diplomas (i.e. overseas technology diploma or degree graduates) are encouraged to apply; such applications will be considered on an individual basis. All applicants to the B.Tech. Degree Completion program are required to complete and submit an on-line supplementary form (in lieu of a resume) as part of the application/admission process: [https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real\\_supplementary\\_form.pdf](https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real_supplementary_form.pdf)

#### NOTE

**Co-op Education:** Students in the degree completion Bachelor of Technology programs who initially registered in a program in September 2006 or later will be required to complete eight months of co-op experience prior to the start of their final academic term. The eight months of co-op experience may be acquired through a combination of two four-month experience terms. These co-op work terms will be waived for diploma graduates whose programs are operated on a co-op basis (which would be the case for Mohawk College diploma graduates) and for diploma graduates who have achieved significant work experience in a related field through the completion of a Prior Learning Assessment conducted by the Engineering Co-op & Career Services Office.

As well as completing the academic requirements as specified in this Calendar, students in co-op must also complete the following courses prior to graduation:

- ENGTECH 1ETO - Introduction to the Technology Co-op Program
- ENGTECH 2ETO - Four Month Co-op Experience I
- ENGTECH 3ETO - Four Month Co-op Experience II

ENGTECH 1ETO must be completed at least one academic term prior to the term in which the first co-op placement is taken.

## Bachelor of Technology

### AUTOMATION ENGINEERING TECHNOLOGY CO-OP (B.TECH.)

#### ADMISSION TO LEVEL II

Admission to Level II of the Automation Engineering Technology Program requires completion of Automation Engineering Technology I, including ENGTECH 1AC3 and ENGTECH 1PR3 with a minimum Grade Point Average (GPA) of 3.5.

#### NOTE

**Co-Op Education:** Students in the Four-Year Bachelor of Technology programs will be required to complete 12 months of co-op experience prior to the start of their final academic term. The 12 months of co-op experience may be acquired through a combination of three four-month experience terms.

#### REQUIREMENTS

##### LEVEL II: 36 UNITS

###### 21 units

- PROCTECH 2CA3 - CAD for Design
- PROCTECH 2CE3 - Chemical Engineering I: Mass Balance
- PROCTECH 2EC3 - Chemical Engineering II: Energy Balance
- PROCTECH 2EE3 - Electricity and Electronics II
- PROCTECH 2IC3 - Instrumentation and Control
- PROCTECH 2I03 - Industrial Organic Chemistry
- PROCTECH 2PL3 - Introduction to PLC Programming

###### 6 units

- ENGTECH 2MA3 - Mathematics III
- ENGTECH 2MT3 - Mathematics IV

###### 9 units

- GENTECH 2EE3 - Engineering Economics
- GENTECH 2HR3 - Human Resource Fundamentals
- GENTECH 2MP3 - Management Principles

###### 2 courses

- ENGINEER 1EE0 - Introduction to the Engineering Co-op Program
- ENGTECH 2EE0 - Four Month Co-op Experience I

##### LEVEL III: 36 UNITS

###### 21 units

- PROCTECH 3CE3 - Chemical Engineering III: Unit and Process Design
- PROCTECH 3CT3 - Control Theory I
- PROCTECH 3MC3 - Motion Control and Robotics
- PROCTECH 3PL3 - Advanced PLC Programming and Control
- PROCTECH 4SS3 - System Specification and Design
- SMRTTECH 3CC3 - Cloud Computing and Internet of Things
- SMRTTECH 3DE3 - Digital Electronics

###### 3 units

- ENGTECH 3ES3 - Engineering Statistics

###### 12 units

- GENTECH 3ET3 - Entrepreneurial Thinking and Innovation
- GENTECH 3FF3 - Financial Systems
- GENTECH 3LS3 - Quality Control and Assurance Methods
- GENTECH 3MT3 - Project Management

###### 2 courses

- ENGTECH 3EE0 - Four Month Co-op Experience II
- ENGTECH 4EE0 - Four Month Co-op Experience III

##### LEVEL IV: 34 UNITS

###### 7 units

- PROCTECH 4IT3 - Internet Technologies and Databases
- PROCTECH 4TR1 - Capstone Design Project I
- PROCTECH 4TR3 - Capstone Design Project II

###### 9 units

- GENTECH 4FT3 - Strategic Management
- GENTECH 4OM3 - Operations Management
- GENTECH 4TE3 - Technology Ethics and Sustainability

###### 3 units

from

- GENTECH 4MB3 - Fundamentals of Marketing
- GENTECH 4TS3 - Technology and Society

###### 3 units

from

- PROCTECH 4MH3 - Machine Health and Remote Monitoring
- SMRTTECH 4HM3 - Human Monitoring and Smart Health Systems

#### INDUSTRIAL AUTOMATION SYSTEMS STREAM

(See *Note 1* above.)

###### 12 Units

- PROCTECH 4AS3 - Industrial System Components and Integration
- PROCTECH 4CT3 - Advanced Control Theory II
- PROCTECH 4IC3 - Industrial Networks and Controllers
- PROCTECH 4MS3 - Manufacturing Technologies

#### SMART SYSTEMS STREAM

(See *Note 1* above.)

###### 12 Units

- SMRTTECH 4AI3 - Artificial Intelligence and Machine Learning
- SMRTTECH 4ES3 - Embedded Systems
- SMRTTECH 4ID3 - IoT Devices and Networks
- SMRTTECH 4SC3 - Smart Cities and Communities

### AUTOMOTIVE AND VEHICLE ENGINEERING TECHNOLOGY CO-OP (B.TECH.)

#### ADMISSION TO LEVEL II

Admission to Level II of the Automotive and Vehicle Engineering Technology Program requires completion of Automotive and Vehicle Engineering Technology I, including ENGTECH 1ME3 and ENGTECH 1PR3 with a minimum Grade Point Average (GPA) of 3.5.

#### NOTE

**Co-Op Education:** Students in the Four-Year Bachelor of Technology programs will be required to complete 12 months of co-op experience prior to the start of their final academic term. The 12 months of co-op experience may be acquired through a combination of three four-month experience terms.

#### REQUIREMENTS

##### LEVEL II: 36 UNITS

###### 15 units

- AUTOTECH 2AC3 - Advanced CAD
- AUTOTECH 2AE3 - Design of Machine Elements
- AUTOTECH 2CD3 - Computer Aided Design
- AUTOTECH 2MT3 - Structure and Properties of Materials
- AUTOTECH 2TS3 - Thermodynamics and Heat Transfer

###### 12 units

- ENGTECH 2ES3 - Engineering Statistics
- ENGTECH 2MA3 - Mathematics III
- ENGTECH 2MS3 - Modelling and Numerical Solutions
- ENGTECH 2MT3 - Mathematics IV

###### 9 units

- GENTECH 2EE3 - Engineering Economics
- GENTECH 2HR3 - Human Resource Fundamentals
- GENTECH 2MP3 - Management Principles

###### 2 courses

- ENGINEER 1EE0 - Introduction to the Engineering Co-op Program
- ENGTECH 2EE0 - Four Month Co-op Experience I

##### LEVEL III: 36 UNITS

###### 21 units



- AUTOTECH 3AE3 - Automotive Engineering Technology
- AUTOTECH 3AV3 - Electric and Hybrid Vehicles
- AUTOTECH 3CT3 - Control Theory
- AUTOTECH 3MP3 - Manufacturing Processes and Systems
- AUTOTECH 3MV3 - Mechatronics
- AUTOTECH 3TS3 - Fluid Mechanics
- AUTOTECH 3VD3 - Mechanical Vibrations

3 units

- ENGTECH 3FE3 - Finite Element Analysis

12 units

- GENTECH 3ET3 - Entrepreneurial Thinking and Innovation
- GENTECH 3FF3 - Financial Systems
- GENTECH 3LS3 - Quality Control and Assurance Methods
- GENTECH 3MT3 - Project Management

2 courses

- ENGTECH 3EE0 - Four Month Co-op Experience II
- ENGTECH 4EE0 - Four Month Co-op Experience III

**LEVEL IV: 34 UNITS**16 units

- AUTOTECH 4CI3 - Robotics and Computer Integrated Manufacturing
- AUTOTECH 4DV3 - Vehicle Dynamics
- AUTOTECH 4EC3 - Electrical and Electronics Control Systems
- AUTOTECH 4MS3 - Kinematic and Dynamic Modelling and Simulation
- AUTOTECH 4TR1 - Capstone Design I
- AUTOTECH 4TR3 - Capstone Design II

9 units

- GENTECH 4FT3 - Strategic Management
- GENTECH 4OM3 - Operations Management
- GENTECH 4TE3 - Technology Ethics and Sustainability

3 units from

- GENTECH 4MB3 - Fundamentals of Marketing
- GENTECH 4TS3 - Technology and Society

6 units from

- AUTOTECH 4AE3 - Internal Combustion Engines
- AUTOTECH 4AT3 - Conceptual Design of Electric and Hybrid Vehicles
- MANTECH 4MM3 - Design and Manufacturing of Machine Elements
- PROCTECH 4MH3 - Machine Health and Remote Monitoring
- SFWRTECH 4AI3 - Artificial Intelligence

**BIOTECHNOLOGY CO-OP (B.TECH.)****ADMISSION TO LEVEL II**

Admission to Level II of the Biotechnology Program requires completion of Biotechnology I, including ENGTECH 1AC3 and ENGTECH 1BI3 with a minimum Grade Point Average (GPA) of 3.5.

**NOTE**

**Co-Op Education:** Students in the Four-Year Bachelor of Technology programs will be required to complete 12 months of co-op experience prior to the start of their final academic term. The 12 months of co-op experience may be acquired through a combination of three four-month experience terms.

**REQUIREMENTS****LEVEL II: 36 UNITS**24 units

- BIOTECH 2B03 - Biotechnology Concepts
- BIOTECH 2BC3 - Biochemistry
- BIOTECH 2CB3 - Cell Biology
- BIOTECH 2EC3 - Chemical Engineering Concepts
- BIOTECH 2GT3 - Genetics
- BIOTECH 2MB3 - Microbiology
- BIOTECH 2M03 - Molecular Biology
- BIOTECH 2OC3 - Organic Chemistry

3 units

- ENGTECH 2MA3 - Mathematics III

9 units

- GENTECH 2EE3 - Engineering Economics
- GENTECH 2HR3 - Human Resource Fundamentals
- GENTECH 2MP3 - Management Principles

2 courses

- ENGINEER 1EE0 - Introduction to the Engineering Co-op Program
- ENGTECH 2EE0 - Four Month Co-op Experience I

**LEVEL III: 36 UNITS**18 units

- BIOTECH 3BC3 - Bioprocess Control and Dynamics
- BIOTECH 3B03 - Industrial Biotechnology
- BIOTECH 3BP3 - Bioreactor Processes and Design
- BIOTECH 3FM3 - Food Microbiology
- BIOTECH 3IV3 - Immunology and Virology
- BIOTECH 3PM3 - Pharmacology

3 units

- ENGTECH 3ES3 - Engineering Statistics

3 units from

- BIOTECH 3CM3 - Computational Modeling of Biological Systems
- SFWRTECH 4AI3 - Artificial Intelligence
- SFWRTECH 4DA3 - Data Analytics and Big Data

12 units

- GENTECH 3ET3 - Entrepreneurial Thinking and Innovation
- GENTECH 3FF3 - Financial Systems
- GENTECH 3LS3 - Quality Control and Assurance Methods
- GENTECH 3MT3 - Project Management

2 courses

- ENGTECH 3EE0 - Four Month Co-op Experience II
- ENGTECH 4EE0 - Four Month Co-op Experience III

**LEVEL IV: 34 UNITS**22 units

- BIOTECH 4BI3 - Bioinformatics
- BIOTECH 4BL3 - Biomaterials and Biocompatibility
- BIOTECH 4BM3 - Biopharmaceuticals
- BIOTECH 4BS3 - Biotechnology Regulations
- BIOTECH 4GP3 - Genomics and Proteomics
- BIOTECH 4TB3 - Advanced Biotechnology
- BIOTECH 4TR1 - Capstone Project I
- BIOTECH 4TR3 - Capstone Project II

9 units

- GENTECH 4FT3 - Strategic Management
- GENTECH 4OM3 - Operations Management
- GENTECH 4TE3 - Technology Ethics and Sustainability

3 units from

- GENTECH 4MB3 - Fundamentals of Marketing
- GENTECH 4TS3 - Technology and Society

**CIVIL ENGINEERING INFRASTRUCTURE TECHNOLOGY CO-OP (B.TECH.)****ADMISSION**

Admission requires satisfactory completion of an advanced technology diploma in one of Architectural Engineering Technology, Civil Engineering Technology or Construction Engineering Technology. Applicants with educational backgrounds equivalent to those completing Ontario college diplomas (i.e. overseas technology diploma or degree graduates) are encouraged to apply; such applications will be considered on an individual basis. All applicants to the B.Tech. Degree Completion program are required to complete and submit an on-line supplementary form (in lieu of a resume) as part of the application/

admission process: [https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real\\_supplementary\\_form.pdf](https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real_supplementary_form.pdf)

#### NOTES

- WHMIS 1A00 must be completed in the first term of the program.
- Students may complete Level III or Level IV courses in any order, provided they meet the specific course prerequisites.

#### INFRASTRUCTURE ELECTIVES COURSE LIST A

- CIVTECH 3PM3 - Highway Design, Construction, and Maintenance
- CIVTECH 3TP3 - Transportation Planning and Modelling
- CIVTECH 4LU3 - Advanced Land Use Planning
- CIVTECH 4WT3 - Municipal and Environmental Engineering
- ENGTECH 4FA3 - Finite Element Analysis

#### INFRASTRUCTURE ELECTIVES COURSE LIST B

- CIVTECH 4BC3 - Building Science
- CIVTECH 4BD3 - Bridge Design, Maintenance and Repair
- CIVTECH 4UM3 - Asset Management
- SFWRTECH 4AI3 - Artificial Intelligence

#### REQUIREMENTS

##### LEVEL III: 36 UNITS

###### 24 units

- CIVTECH 3GE3 - Geotechnical Materials and Analysis
- ENGTECH 3MA3 - Mathematics V
- ENGTECH 3ML3 - Strength of Materials
- ENGTECH 3SD3 - Statics and Dynamics
- ENGTECH 3SP3 - Structure and Properties of Materials
- ENGTECH 3ST3 - Probability and Statistics
- ENGTECH 4MA3 - Advanced Mathematics
- ENGTECH 4TF3 - Mechanics of Fluids

###### 12 units

- GENTECH 3EE3 - Engineering Economics
- GENTECH 3FS3 - Financial Systems
- GENTECH 3MP3 - Management Principles
- GENTECH 4SE3 - Technology Ethics and Sustainability

###### 1 course

- WHMIS 1A00 - Introduction to Health and Safety (See *Note 2* above.)

##### LEVEL IV: 36 UNITS

###### 18 units

- CIVTECH 3GT3 - Geotechnical Design
- CIVTECH 3SA3 - Structural Analysis
- CIVTECH 4MH3 - Hydraulic Engineering
- CIVTECH 4RC3 - Reinforced Concrete and Masonry Design
- CIVTECH 4SD3 - Structural Steel Design
- ENGTECH 4ED3 - Senior Engineering Design Project

###### 3 units

- GENTECH 4PM3 - Project Management

###### 6 units

from

- GENTECH 3DM3 - Creativity, Innovation and Technology
- GENTECH 3EN3 - Entrepreneurial Thinking and Innovation
- GENTECH 3TC3
- GENTECH 4EM3 - Legal and Regulatory Issues
- GENTECH 4LM3 - Lean Thinking and Practices
- GENTECH 4MK3 - Fundamentals of Marketing
- GENTECH 4SF3 - Strategic Management
- GENTECH 4ST3 - Contemporary Issues in Management

###### 6 units

- from *Infrastructure Electives Course List A*

###### 3 units

- from *Infrastructure Electives Course List B* or an approved ENRTECH, MANTECH, or SFWRTECH course

## MANUFACTURING ENGINEERING TECHNOLOGY CO-OP (B.TECH.)

#### ADMISSION

Manufacturing Engineering Technology is open to graduates of an advanced technology diploma in one of Mechanical Engineering, Chemical Engineering Technology, Electro-Mechanical Engineering Technology and Manufacturing Engineering Technology. Applicants with educational backgrounds equivalent to those applicants completing Ontario college diplomas (i.e. overseas technology diploma or degree graduates) are encouraged to apply; such applications will be considered on an individual basis. All applicants to the B.Tech. Degree Completion program are required to complete and submit an on-line supplementary form (in lieu of a resume) as part of the application/admission process: [https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real\\_supplementary\\_form.pdf](https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real_supplementary_form.pdf)

#### NOTE

WHMIS 1A00 must be taken in the first term of the program.

#### REQUIREMENTS

##### LEVEL III: 36 UNITS

###### 15 units

- ENGTECH 3MA3 - Mathematics V
- ENGTECH 3ML3 - Strength of Materials
- ENGTECH 3SP3 - Structure and Properties of Materials
- MANTECH 3LS3 - Quality Control and Assurance Methods
- ENGTECH 4CT3 - Systems and Control

###### 3 units

- ENGTECH 4MA3 - Advanced Mathematics

###### 9 units

- ENGTECH 3SD3 - Statics and Dynamics
- ENGTECH 3TD3 - Thermodynamics
- MANTECH 3MF3 - Micro Manufacturing and Fabrication

###### 9 units

- GENTECH 3EE3 - Engineering Economics
- GENTECH 3FS3 - Financial Systems
- GENTECH 3MP3 - Management Principles

###### 1 course

- WHMIS 1A00 - Introduction to Health and Safety

(See *Note* above.)

##### LEVEL IV: 36 UNITS

###### 24 units

- ENGTECH 4FA3 - Finite Element Analysis
- ENGTECH 4TF3 - Mechanics of Fluids
- MANTECH 4DA3 - Design and Advanced Manufacturing
- MANTECH 4FM3 - CIM and Flexible Manufacturing
- MANTECH 4MM3 - Design and Manufacturing of Machine Elements
- MANTECH 4PM3 - Production Management
- MANTECH 4RM3 - Robot Mechanics and Mechatronics
- SFWRTECH 4AI3 - Artificial Intelligence

###### 6 units

- GENTECH 4PM3 - Project Management
- GENTECH 4SE3 - Technology Ethics and Sustainability

###### 6 units

from

- GENTECH 3DM3 - Creativity, Innovation and Technology
- GENTECH 3EN3 - Entrepreneurial Thinking and Innovation
- GENTECH 3TC3
- GENTECH 4EM3 - Legal and Regulatory Issues
- GENTECH 4LM3 - Lean Thinking and Practices
- GENTECH 4MK3 - Fundamentals of Marketing
- GENTECH 4SF3 - Strategic Management
- GENTECH 4ST3 - Contemporary Issues in Management

## POWER AND ENERGY ENGINEERING TECHNOLOGY CO-OP (B.TECH.)

### ADMISSION

The degree completion programs in Power and Energy Engineering Technology will accept graduates in one of Mechanical Engineering Technology, Electrical Engineering Technology, Electronics Engineering Technology, or Electro-Mechanical Engineering Technology. Graduates from Ontario university engineering programs who seek to develop careers in the power and energy technology sectors will also be accepted. Applicants with educational backgrounds at least equivalent to those applicants completing Ontario college diplomas (i.e. overseas technology diploma or degree graduates) are encouraged to apply; such applications will be considered on an individual basis. All applicants to the B.Tech. Degree Completion program are required to complete and submit an on-line supplementary form (in lieu of a resume) as part of the application/admission process: [https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real\\_supplementary\\_form.pdf](https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real_supplementary_form.pdf)

### NOTES

- WHMIS 1A00 be completed in the first term of the program.

### REQUIREMENTS

#### LEVEL III: 36 UNITS

##### 27 units

- ENRTECH 3EP3 - Power Systems and Electrical Machines
- ENRTECH 3IE3 - Industrial Electronics
- ENRTECH 3IN3 - Industrial Networks and Communication Systems
- ENRTECH 3MI3 - Measurements and Instrumentation
- ENRTECH 3PD3 - Power Distribution I
- ENGTECH 3MA3 - Mathematics V
- ENGTECH 3TD3 - Thermodynamics
- ENGTECH 4MA3 - Advanced Mathematics
- ENGTECH 4TF3 - Mechanics of Fluids

##### 9 units

- GENTECH 3EE3 - Engineering Economics
- GENTECH 3FS3 - Financial Systems
- GENTECH 3MP3 - Management Principles

##### 1 course

- WHMIS 1A00 - Introduction to Health and Safety

(See Note 3 above.)

#### LEVEL IV: 36 UNITS

##### 18 units

- ENGTECH 4CT3 - Systems and Control
- ENRTECH 4PD3 - Power System Analysis and Control
- ENRTECH 4PM3 - Power Protection and Maintenance I
- ENRTECH 4PP3 - Power Protection and Maintenance II
- ENRTECH 4RT3 - Renewable Power Generation from Wind, Solar and Hydro
- ENGTECH 4EP3 - Senior Engineering Project

##### 6 units

from

- ENRTECH 4EM3 - Transmission Lines and Electromagnetics
- ENRTECH 4PQ3 - Power Quality
- ENRTECH 4RE3 - Fuel Cell, Geothermal and Biomass Power Generation
- SFWRTECH 4AI3 - Artificial Intelligence

##### 6 units

- GENTECH 4PM3 - Project Management
- GENTECH 4SE3 - Technology Ethics and Sustainability

##### 6 units

from

- GENTECH 3DM3 - Creativity, Innovation and Technology
- GENTECH 3EN3 - Entrepreneurial Thinking and Innovation

- GENTECH 3TC3
- GENTECH 4EM3 - Legal and Regulatory Issues
- GENTECH 4LM3 - Lean Thinking and Practices
- GENTECH 4MK3 - Fundamentals of Marketing
- GENTECH 4SF3 - Strategic Management
- GENTECH 4ST3 - Contemporary Issues in Management

## SOFTWARE ENGINEERING TECHNOLOGY CO-OP (B.TECH.)

### ADMISSION

Admission requires satisfactory completion of an advanced technology diploma in one of Computer Engineering Technology, Computer Systems Technology, Software or Networking, or Computer Programmer/Analyst. Applicants with educational backgrounds equivalent to those applicants completing Ontario college diplomas (i.e. overseas technology diploma or degree graduates) are encouraged to apply; such applications will be considered on an individual basis. All applicants to the B.Tech. Degree Completion program are required to complete and submit an on-line supplementary form (in lieu of a resume) as part of the application/admission process: [https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real\\_supplementary\\_form.pdf](https://www.eng.mcmaster.ca/sites/default/files/uploads/booth/real_supplementary_form.pdf)

### NOTES

- Software Engineering diploma graduates must complete SFWRTECH 3IT3.
- Network Engineering Security Analyst diploma graduates must complete SFWRTECH 3PR3.
- WHMIS 1A00 must be completed in the first term of the program.

### REQUIREMENTS

#### LEVEL III: 36 UNITS

##### 3 units

from

- SFWRTECH 3IT3 - Fundamentals of Networking
- SFWRTECH 3PR3 - Procedural and Object Oriented Programming Concepts

(See Notes 1 and 2 above.)

##### 15 units

- SFWRTECH 3CS3 - Computer Security
- SFWRTECH 3OS3 - Operating Systems
- SFWRTECH 3RQ3 - Software Requirements and Specification
- SFWRTECH 4DS3 - Data Structures and Algorithms
- SFWRTECH 4NS3 - Advanced Network Security

##### 9 units

- ENGTECH 3DM3 - Discrete Mathematics
- ENGTECH 3MA3 - Mathematics V
- ENGTECH 3ST3 - Probability and Statistics

##### 9 units

- GENTECH 3EE3 - Engineering Economics
- GENTECH 3FS3 - Financial Systems
- GENTECH 3MP3 - Management Principles

##### 1 course

- WHMIS 1A00 - Introduction to Health and Safety

(See Note 3 above.)

#### LEVEL IV: 36 UNITS

##### 18 units

- ENGTECH 4FD3 - Senior Engineering Project
- SFWRTECH 4CC3 - Parallel Programming
- SFWRTECH 4DA3 - Data Analytics and Big Data
- SFWRTECH 4DM3 - Data Mining
- SFWRTECH 4ES3 - Real-Time Systems
- SFWRTECH 4MA3 - Numerical Linear Algebra and Numerical Optimization

##### 6 units

from

- SFWRTECH 4AI3 - Artificial Intelligence
- SFWRTECH 4CG3 - Computer Graphics
- SFWRTECH 4NN3 - Neural Networks and Deep Learning
- SFWRTECH 4SA3 - Software Architecture
- SFWRTECH 4VE3 - Visual Effects and Technology for Animated Production
- SFWRTECH 4WP3 - Advanced Web Programming

6 units

- GENTECH 4PM3 - Project Management
- GENTECH 4SE3 - Technology Ethics and Sustainability

6 units

from

- GENTECH 3DM3 - Creativity, Innovation and Technology
- GENTECH 3EN3 - Entrepreneurial Thinking and Innovation
- GENTECH 3TC3
- GENTECH 4EM3 - Legal and Regulatory Issues
- GENTECH 4LM3 - Lean Thinking and Practices
- GENTECH 4MK3 - Fundamentals of Marketing
- GENTECH 4SF3 - Strategic Management
- GENTECH 4ST3 - Contemporary Issues in Management

## Faculty of Health Sciences

<http://www.fhs.mcmaster.ca/>

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GRADUATE STUDIES (HEALTH SCIENCES)

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For information concerning Health Sciences education programs and admission requirements, contact:

**Office of the Registrar**

McMaster University

Gilmour Hall, Room 108

Hamilton, Ontario, L8S 4L8

Telephone (905) 525-4600

<http://future.mcmaster.ca>

### OVERVIEW

The concept of Health Sciences Education is based on the view that health is a broad subject encompassing both the problems of ill health and the impact of biology, environment and lifestyle on health. Each health sciences program has specific educational requirements, but by learning together in shared facilities there exists an opportunity to establish effective interprofessional working relationships.

The programs in the Faculty attempt to meet these goals through a variety of learning approaches. Emphasis is placed on problem-based, small group learning experiences and inquiry. Other approaches to learning, including interdisciplinary educational experiences, are used where appropriate. In July 1974, the School of Nursing and the School of Medicine were brought together to form the Faculty of Health Sciences. In 1989, the School of Occupational Therapy and Physiotherapy (School of Rehabilitation Science) was added and in 1993 the Midwifery Education Program was established. A further innovation was the implementation of the Bachelor of Health Sciences Program in 2000, followed by the establishment of the Bachelor of Health Sciences (Physician Assistant) in 2008. The Faculty introduced in 2014, the Biomedical Discovery and Commercialization Program, which has an optional fifth-year Masters degree component beyond the Bachelor's degree. The Faculty of Health Sciences joined with the Faculty of Engineering in 2017 to jointly offer the Integrated Biomedical Engineering and Health Sciences Program (IBEHS) which lead to a B.Eng.BME, or a B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) degree. In 2019, the Honours Biology and Pharmacology Co-Op transferred to the Faculty of Health Sciences from the Faculty of Science. The Faculty offers the following undergraduate degree programs: Doctor of Medicine (MD), Bachelor of Science in Nursing (B.Sc.N.), Bachelor of Health Sciences (Honours) (B.H.Sc. Honours) with specializations available in Biomedical Sciences and Child Health, Bachelor of Health Sciences in Midwifery (B.H.Sc.), Bachelor of Health Sciences in Physician Assistant (B.H.Sc.), Bachelor of Health Sciences (Honours) in



Biomedical Discovery and Commercialization (B.H.Sc. Honours) and most recently the Honours Biology and Pharmacology Co-Op Program (B.H.Sc. Honours).

In addition to its undergraduate programs, the Faculty of Health Sciences also has responsibility for Residency Programs in Postgraduate Medical Education. The Clinician Investigator Program (CIP) allows Residents in the Royal College of Physician and Surgeons of Canada (RCPC) specialty or subspecialty program to do research as a key component of their medical career. The CIP at McMaster University is one of the largest Clinical Investigator Training Programs in Canada.

The University offers nine distinct research-oriented graduate programs in Health Sciences. Both Masters and Ph.D. programs are offered in: Biochemistry, Biomedical Sciences, Biomedical Engineering, Chemical Biology, Health Research Methodology, Medical Sciences, Neurosciences, Nursing and Rehabilitation Sciences. Masters degrees are offered in: Biomedical Discovery and Commercialization, Child Life and Pediatric Psychosocial Care, eHealth, Global Health, Health Science Education, Occupational Therapy, Physiotherapy, Public Health and Speech-Language Pathology. A Ph.D. is also available in Health Policy.

The Faculty of Health Sciences developed the MD/PhD Program to bridge the gap between medical sciences and clinical application and train the future leaders of healthcare. The program is uniquely structured to allow optimal integration of medical education and research training that starts on the first day and extends throughout this 7 year program.

The Faculty of Health Sciences collaborates with the Division of Health Sciences at Mohawk College in educational programs for other health professions based at the College. Research programs encompassing the broad spectrum of health have been established, including basic and applied research and various aspects of health-care delivery. The graduate programs in medical sciences are related to the various areas of health research.

The Health Sciences Centre at McMaster provides educational and research facilities for medicine, nursing and other health professions. It includes a teaching hospital (the McMaster Site of Hamilton Health Sciences) with extensive ambulatory clinics for primary and specialized aspects of patient care. The building has been designed to bring into close proximity the programs for the various health professions and to integrate the facilities for education, research and patient care in the Faculty of Health Sciences.

In addition to the Health Sciences Centre, education, research and clinical programs are based at other Hamilton Health Sciences sites (Chedoke, General, Juravinski), St. Joseph's Centre for Mountain Health Services, St. Joseph's Hospital, St. Peter's Hospital, Juravinski Cancer Centre and the Health Sciences Education Centre, Mohawk College. Extensive use is made of a variety of community agencies. In accordance with the plan to coordinate the development of specialized health services among the Hamilton and District hospitals, the Postgraduate Education programs in medicine have been developed on a regional basis.

## Undergraduate Health Sciences Education Programs

### ADMISSION AND REGISTRATION

Application to any program in the Faculty of Health Sciences implies acceptance on the part of the applicant of the admission policies and procedures, and the methods by which applicants are chosen for the Health Sciences programs.

Registration in any program in the Faculty of Health Sciences implies acceptance on the part of the student of the objectives of that program and the methods by which progress toward the achievement of those objectives is evaluated.

The following describes the regulations governing admission and registration in the Health Sciences programs, and should be considered in conjunction with specific admission requirements described on the following pages

for: the Bachelor of Health Sciences (Honours) program (B.H.Sc. Honours), Bachelor of Health Sciences in Biomedical Discovery and Commercialization (Honours) program (B.H.Sc. Honours), Bachelor of Health Sciences in Health, Engineering Sciences and Entrepreneurship Specialization (Honours) in the Integrated Biomedical Engineering and Health Sciences program (B.H.Sc. Honours), Honours Biology and Pharmacology Co-Op Program (B.H.Sc.), School of Medicine (MD), Bachelor of Health Sciences, Midwifery Education program (B.H.Sc.), Bachelor of Science, Nursing (B.Sc.N.) and the Physician Assistant Education program (B.H.Sc.). The following application deadlines are strictly enforced. Deadline dates re for consideration of admission to a program in the following September.

PROGRAM		DEADLINE
<b>Bachelor of Health Sciences (Honours)</b>		
	(B.H.Sc. Honours) Level I	Mid-February (Supplementary Application deadline)- Details at bhsc.mcmaster.ca
	(B.H.Sc. Honours) Level II transfer	Early May (Supplementary Application deadline)- Details at bhsc.mcmaster.ca
<b>Bachelor of Health Sciences in Biomedical Discovery and Commercialization (B.H.Sc. (Honours))</b>		
	Current McMaster students	February 1
	External students	February 1
<b>Integrated Biomedical Engineering and Health Sciences (IBEHS) (B.Eng.BME or B.H.Sc.(Honours))</b>		
	IBEHS Level I	January 15
	Supplemental Application	January 31
	IBEHS Level II specialization transfer	Details online at ibiomed.mcmaster.ca
<b>Honours Biology and Pharmacology Co-Op Program (B.H.Sc.)</b>		
	Current McMaster Students	January 24
	External Students	January 24
<b>Medicine (MD)</b>		
	Final application deadline	October 1
	<b>Midwifery (B.H.Sc.)</b>	February 1
<b>Nursing (B.Sc.N.)</b>		
	Applicants directly from Ontario Secondary Schools	January 15
	Applicants to Accelerated	February 1
	Applicants with Other Qualifications	February 1
	<b>Physician Assistant (B.H.Sc.)</b>	February 1

*The University reserves the right to change the admission requirements at any time without notice.*

As places in the degree programs of the Faculty of Health Sciences are limited, admission is by selection, and possession of published minimum requirements does not guarantee admission. The University, therefore, reserves the right to

grant admission to a limited number of students, and to refuse readmission to any student whose academic performance or general conduct has been unsatisfactory, or who has withdrawn from the program for a period in excess of one academic year.

An evaluation of Unsatisfactory in the School of Medicine signifies that the student has failed to meet these objectives and the University may require the student to withdraw from the School at any time.

The University reserves the right to require the withdrawal of a student should his or her conduct so warrant.

#### **FALSIFICATION OF ADMISSION INFORMATION**

An applicant supplying documentation or evidence which, at the time, or subsequently, is found to be falsified will be withdrawn from consideration. Any student admitted to the program having submitted false evidence will be withdrawn.

#### **HEALTH SCREENING RECORD FOR ADMISSION**

Before registering in a clinically based program, students must submit a McMaster Faculty of Health Sciences Health Screening Record. This form details a student's immunization history and tuberculosis (TB) screening. It must be completed by a health care professional and submitted before the submission deadline. More detailed information will be provided upon acceptance into the program or visit <https://fhs.mcmaster.ca/healthscreening/index.html>.

#### **POLICE RECORDS CHECK**

Incoming students must provide an original Police Records Check, including Vulnerable Sector Screening (VSS). International or Visa students are required to provide an original Police Certificate from each country or territory they have resided for more than six months consecutively for the past five years. More detailed information will be provided upon acceptance into the program or visit [https://fhs.mcmaster.ca/pcbe/police\\_records\\_check.html](https://fhs.mcmaster.ca/pcbe/police_records_check.html).

#### **CLINICAL COURSE REQUIREMENTS**

Where the performance of the student in clinical practice may jeopardize or endanger the welfare of the patient or the patient's family, the student may be removed from clinical experience any time during the academic year, until continuation in the course is reviewed.

#### **INFORMATION AND ACADEMIC COUNSELING**

In certain programs, a faculty member is selected for each student in the September of entry to a degree program and provides each student with advice on evaluations, electives and other educational needs throughout the program. Changes in advisors may be entertained as each student becomes acquainted with Faculty well enough to choose his or her own advisor. The academic advisory role for B.Sc.N. students is fulfilled by the Coordinator of Studies (Nursing). Students are also encouraged to consult individual faculty members regarding career planning.

#### **TRANSPORTATION**

Students are responsible for expenses involved in transporting themselves to community agencies, making home visits, or in connection with clinical study.

#### **LICENSE TO PRACTICE**

All graduates who wish to engage in clinical practice in any of medicine, midwifery, nursing, occupational therapy and physiotherapy are subject to any qualifying examinations and other requirements by the licensing bodies for each of these professions. In addition students should be aware that a license may be denied if they have been convicted of a criminal offence for which a pardon has not been granted. A student in such a position should consult the respective licensing body about such a situation.

#### **TRANSFERRING TO GRADUATE WITH A THREE-YEAR B.H.SC. DEGREE FROM THE B.H.SC. (HONOURS) HEALTH, ENGINEERING SCIENCE AND ENTREPRENEURSHIP (HESE) STREAM OF THE INTEGRATED BIOMEDICAL ENGINEERING AND HEALTH SCIENCES PROGRAM**

Students who successfully complete at least 90 units including all admission requirements and program-specific course requirements up to the end of Level III of the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship

(HESE) stream of the Integrated Biomedical Engineering and Health Sciences Program, with a minimum Grade Point Average of 4.0 may request permission from the Integrated Biomedical Engineering and Health Sciences office for transfer to graduate with the B.H.Sc. (exit) degree.

### **Occupational Therapy Examination and Practice Preparation Project (OTepp)**

The OTepp Certificate Program, in partnership with the Canadian Association of Occupational Therapists (CAOT), aims to assist re-entry and internationally educated occupational therapists meet their learning needs in order to successfully transition into Canadian practice.

For students who are unable to join the online class in real time, the sessions are recorded and archived, and can be viewed at the student's convenience. This is an intense study experience where students are expected to complete readings in preparation for two 3 hour classes each week. Students who successfully complete the first four academic courses may engage in an eight-week practicum, supervised by a registered occupational therapist. Students who complete the entire program are awarded an undergraduate certificate from McMaster University. More information is available at <http://www.otepp.ca/>.

## **Bachelor of Health Sciences (Honours) Program**

Michael G. DeGroote Centre for Learning and Discovery, Room 3300, ext. 22815  
bhsc.mcmaster.ca

ASSISTANT DEAN, BACHELOR OF HEALTH SCIENCES (HONOURS)

**S.A. Ritz, B.Sc. (Hons), M.Ed., Ph.D.**

PROGRAM MANAGER

**T. M. Basilio**

### **Program Overview**

This program, first offered in September 2000, is an innovative interdisciplinary program in which students take responsibility for their learning and in which there is recognition that both the knowledge and skill sets developed by students are integral parts of preparing for either further study or entry into the workforce. The principles of independent learning and an emphasis on both content and process are central to the provision of education within the Faculty of Health Sciences, and are reflected in this program. In addition, this program reflects the established tradition within the Faculty of understanding health from biological, behavioural and population-based perspectives. The program will draw on individuals from within the Faculty of Health Sciences and the larger university community to provide students with exposure to basic and applied researchers as well as health care practitioners, enabling students to learn about and experience the study of health from these various perspectives. The program will utilize both a small group, inquiry-based format as well as traditional lecture, lab, and tutorial based teaching formats to provide students with a solid knowledge base in health-related sciences as well as the skills necessary to critically evaluate and synthesize health-related information.

The program is designed to emphasize flexibility, recognizing that students may use this program to prepare for a variety of post-graduate options including graduate work in medical sciences, professional schools and entry into the workforce. Beyond the first year, students may select to focus on one perspective of health and develop relative expertise in this area, while other students may find that their needs are better met by pursuing a broader-based program of study through their senior years.

The program begins in Level I and leads to the degree Bachelor of Health Sciences (Honours) upon successful completion of Level IV. The four-level program offers the opportunity for specialization and focus areas through

electives and through individual study or thesis courses.

### **SPECIALIZATIONS AND FOCUS AREAS**

The B.H.Sc. (Honours) Program offers a number of options to allow students to pursue a focused area of study on a particular topic. At the present time, we are offering a specialization for entry in Level II in Child Health. Two concurrent certificate programs are available in Biomedical Sciences and Immunology, Microbiology & Virology. As well, the Global Health curriculum is part of the Interdisciplinary Minor in Globalization Studies. Specialization and focus area offerings are reviewed regularly to ensure the student and program needs continue to be met, and may be revised or phased out.

### **CONCURRENT CERTIFICATE IN BIOMEDICAL SCIENCES**

Students in any program may complete a Concurrent Certificate in Biomedical Sciences, which will provide students with the option of concentrating their studies in biomedical science and research, building on the existing principles of excellence in the B.H.Sc. (Honours) program by addressing fundamental concepts and opportunities to develop knowledge and skills appropriate for biomedical research. This course of study will emphasize content in the biomedical sciences, along with the development of essential skills in problem-solving, critical thinking, scientific reasoning and logic, experimental design, and working independently and in teams. These transferable skills and principles in biomedical sciences will prepare students for a future in graduate-level research, industry, or professional school. Undergraduate degree students in any program may declare the Biomedical Sciences Certificate at the time of graduation provided that they have completed the course requirements. Course requirements and details are available in the *Certificate and Diploma Programs* section of the Calendar.

### **CONCURRENT CERTIFICATE IN IMMUNOLOGY, MICROBIOLOGY, & VIROLOGY**

Students in any program may complete a Concurrent Certificate in Immunology, Microbiology, & Virology (IMV), which will provide students with the option of concentrating their studies in these fields. Building on existing strengths of the B.H.Sc. (Honours) Program and expertise in the Faculties of Health Sciences, Science, and Engineering, this course of study will give students a solid grounding in the function of the mammalian immune system, the classification and life cycle of various microbes, and the mechanisms of host defense. Undergraduate degree students in any program may declare the IMV Certificate at the time of graduation provided that they have completed the course requirements. Course requirements and details are available in the *Certificate and Diploma Programs* section of the Calendar.

### **GLOBAL HEALTH**

Understanding the complex web of relationships and interactions in global health requires an interdisciplinary academic experience. The curriculum in global health in the Bachelor of Health Sciences (Honours) Program provides students with an environment that incorporates insight from the traditional academic fields of anthropology, philosophy, ethics and law, while drawing heavily on the expertise present within the Faculty of Health Sciences in the domains of biostatistics & epidemiology, health economics & policy, molecular medicine & pathology, and health research methodology while simultaneously exploring personal developmental and an academic skill set necessary for the role as contributors to global health issues. Students interested in focusing their studies around Global Health topics can pursue global health curriculum as part of the Interdisciplinary Minor in Globalization Studies, choosing courses from the theme list in Globalization & Health.

### **CHILD HEALTH SPECIALIZATION**

The Child Health Specialization offers students a unique opportunity to apply the Inquiry problem-based learning model within the dynamic context of child health, development and community involvement.

The Child Health Specialization curriculum based on three thematic pillars - education, research, and experiential/community learning - cuts across academic disciplines related to child health such as paediatrics, psychiatry,

psychology, social work, developmental rehabilitation, education, etc.

The Child Health Specialization utilizes existing expertise within the McMaster University and Hamilton communities; by doing so it allows for the integration of theory and knowledge with experiential learning and research skill development within the challenging context of child health. World-renowned teachers/facilitators, researchers and clinicians from across disciplines serve as supervisors/mentors for students with an interest in child health. Upon acceptance into the B.H.Sc. (Honours) program and the completion of Level I, students will apply to this specialization in March.

### **PROGRAM GOALS**

The overall goal of the program is to educate students in such a way that upon graduation students have a firm foundation in the health sciences, and the skills necessary to learn and adapt in subsequent educational or occupational environments.

### **KNOWLEDGE**

To acquire a broad knowledge base that reflects the Faculty's commitment to studying health from biological, behavioural and population-based perspectives. This should include an understanding of the structure, function and behaviour of the human body, the environmental determinants of health and the ways that these factors interact to result in disease or illness.

### **SKILLS**

To acquire and apply the following skills as a student and member of society:

- Self-directed learning skills: The ability to identify gaps in one's own knowledge that prevent solving a problem, to formulate a plan that uses appropriate educational resources, and to obtain and synthesize the information needed to solve that problem.
- Critical thinking skills: The ability to evaluate the merit of information obtained in various ways and to present information in a way that shows evidence of a critical, reflective approach to information and problems.
- Synthesizing skills: The ability to understand that most problems can be analyzed from a number of perspectives, to identify these perspectives and to formulate solutions that are comprehensive and adequate reflections of various levels of analysis.
- Communication skills: The ability to communicate an issue in oral and written form, both effectively and concisely.

### **PERSONAL QUALITIES**

Individuals who successfully complete this program should be prepared to accept responsibility for a life-long process of learning and personal and professional growth. They should respect the various approaches to the study of health, and the beliefs associated with these studies, and should be open to new ways of learning and understanding. They should understand that health is a multi-faceted discipline requiring collaboration and be capable of working collegially with others, while being prepared to contribute to the well-being of those around them.

## **Admission Procedures and Requirements**

Please note that the admission policy may be reviewed annually and the admission requirements may be changed in future years. As places in this program are limited, the admission process is competitive. Possession of the minimum requirements does not guarantee admission to the program. Application to the B.H.Sc. (Honours) Program of the Faculty of Health Sciences implies acceptance of the admission policies, procedures and methods by which applicants are chosen.

### **ADMISSION PROCEDURES**

#### **APPLICANTS FROM ONTARIO SECONDARY SCHOOLS**

Applicants currently completing Grade 12 U or M courses apply through the:

#### **Ontario Universities' Application Centre (OUAC)**

170 Research Lane  
Guelph, ON, N1G 5E2

[www.ouac.on.ca](http://www.ouac.on.ca)

Applicants to BHSc (Honours) Level 1 must apply to OUAC by the specified

deadline date. Secondary schools will forward mid-term and final transcripts directly to OUAC in support of applications.

Applicants are required to complete a mandatory Supplementary Application Form online by the specified deadline date. Supplementary Application details will be posted on the program website at: [bhsc.mcmaster.ca](http://bhsc.mcmaster.ca).

#### **APPLICANTS WITH QUALIFICATIONS EQUIVALENT TO ONTARIO SECONDARY SCHOOL**

Applicants from other provinces should contact the Ontario Universities' Application Centre (OUAC) for an application package for admission consideration. Please refer to the OUAC address above. Applicants must also have their official transcripts forwarded to:

##### **Office of the Registrar, Admissions**

McMaster University Gilmour Hall Room 108  
1280 Main Street West  
Hamilton, Ontario, L8S 4L8

Applicants are also required to complete a mandatory Supplementary Application Form online by the specified deadline date. Supplementary Application details will be posted on the program website at: [bhsc.mcmaster.ca](http://bhsc.mcmaster.ca).

Applicants from other countries should contact the Office of International Affairs at [www.mcmaster.ca/oia](http://www.mcmaster.ca/oia) or (905) 525-9140, ext 24211 for details.

#### **TRANSFER APPLICANTS**

Transfer applicants from McMaster University are required to complete a Program Application for Current Level I Students on-line via MOSAIC during March to April and a mandatory Supplementary Application online by the specified deadline date. Level 2 transfer applicants must apply for BHSc (Honours) in MOSAIC, **not** a sub-plan (for example; specialization). Applicants who apply for a sub-plan will not be reviewed for BHSc (Honours) and will be considered ineligible for this program. Applicants who receive and accept the admission offer to B.H.Sc. (Honours) and express their interest in the Child Health Specialization may be considered if they are eligible and if space permits. Supplementary Application details will be posted on the program website at: [bhsc.mcmaster.ca](http://bhsc.mcmaster.ca).

Applicants from other post-secondary institutions are required to apply through the *Ontario Universities' Application Centre (OUAC)* (please refer to the OUAC address above) by April 1st and complete a mandatory Supplementary Application by the specified deadline date. Supplementary Application details will be posted on the program website at: [bhsc.mcmaster.ca](http://bhsc.mcmaster.ca).

#### **SECOND DEGREE APPLICANTS**

Applicants who have completed a University undergraduate degree or have completed more than one year or the equivalent of University undergraduate studies are ineligible to apply to the B.H.Sc. (Honours) Program. This restriction does not apply for those applying through the Facilitated Indigenous Admission Process.

#### **CONCURRENT CERTIFICATE IN BIOMEDICAL SCIENCES**

Students in any Undergraduate degree program who are interested in this certificate may declare it at the time of graduation provided they have completed the course requirements, as outlined in the Certificate and Diploma Programs section of the Calendar.

#### **CONCURRENT CERTIFICATE IN IMMUNOLOGY, MICROBIOLOGY, & VIROLOGY**

Students in any Undergraduate degree program who are interested in this certificate may declare it at the time of graduation provided they have completed the course requirements as outlined in the Certificate and Diploma Programs section of the Calendar.

#### **GLOBAL HEALTH**

The Global Health Specialization has been restructured in collaboration with the Interdisciplinary Minor in Globalization Studies to create a theme in Globalization & Health. Students interested in pursuing a focus in global health can pursue the Interdisciplinary Minor in Globalization Studies with a focus on globalization and health.

#### **CHILD HEALTH SPECIALIZATION**

Students registered in Health Sciences I who are interested in this specialization will apply during March to April via MOSAIC by completing the Program Application for Current Level I Students. Applicants may be asked to submit a statement of interest and may be interviewed. Enrolment is limited to approximately 30 students entering in Level II.

#### **ADMISSION REQUIREMENTS**

##### **APPLICANTS FROM ONTARIO SECONDARY SCHOOLS**

The selection method for Ontario Secondary School applicants is by academic qualifications and a mandatory Supplementary Application. The majority of Level I offers of admission are made in early May. A minimum of 90% is required for consideration. In early May, the following grade information will be used: Semester schools: all final Grade 12 U and/or M courses from first semester or prior years, and second-semester mid-term grades for Grade 12 U and/or M courses.

Non-semester schools: second term grades for full-year Grade 12 U and/or M courses. Offers based on interim and/or mid-term grades will be conditional upon maintaining satisfactory performance on final grades. Supplementary Applications are to be submitted electronically via the web at: [bhsc.mcmaster.ca](http://bhsc.mcmaster.ca). A review of the mandatory Supplementary Application is a very important component of the admission selection process. Applicants who do not complete the Supplementary Application are not considered for admission.

#### **REQUIREMENTS**

The following are the minimum Grade 12 U and/or M requirements under the Ontario Secondary School curriculum:

- English U;
- Biology U;
- Chemistry U;
- one of Advanced Functions U, Calculus and Vectors U or Mathematics of Data Management U. For those applicants who present with more than one of these Mathematics courses, the highest grade on the transcript at the time of review will be used to calculate the admission average;
- One U or M non-math/non-science (**note: courses in technological education, science or mathematics are not acceptable**);
- One additional U or M course in any other subject area to total six courses.

##### **APPLICANTS WITH QUALIFICATIONS EQUIVALENT TO ONTARIO SECONDARY SCHOOL**

Applicants from other provinces and countries must achieve the equivalent to the qualifications listed in the Grade 12 U or M course requirements in their secondary school graduation year.

#### **TRANSFER APPLICANTS**

Transfer applicants will be admitted to the B.H.Sc. (Honours) Program from other programs at McMaster and from other post-secondary institutions. The process will be competitive and will be based on the student's academic qualifications and a Supplementary Application. Enrolment is limited. Students interested in being considered for admission to Level II of the B.H.Sc. (Honours) Program must have completed the equivalent of six units of university Level I Biology and six units of university Level I Chemistry. A Grade Point Average of at least 10.0 (minimum overall average of A-) will be required for admission consideration. Transfer applicants who receive an admission offer to BHSc (Honours) and express an interest in the BHSc Child Health Specialization may be considered on a case by case basis if space permits. However, there is no guarantee that space will be available in the specialization. In this case, Level 2 transfer students are admitted to the BHSc (Honours), core program.

#### **Bursaries**

B.H.Sc. (Honours) students are eligible to apply for one of the following bursaries provided they are Canadian citizens and demonstrate financial need. Applications are available in Mosaic each Fall. The following bursaries have been generously donated to assist Bachelor of Health Sciences (Honours)



students in financial need:

- Ruth Murray Memorial B.H.Sc. Bursary
- Loucks Family and Friends B.H.Sc. Bursary
- Ron and Gina Fraser Health Sciences Bursary

For further information about bursaries, please refer to the Financial Aid & Scholarships website.

## Academic Regulations

### STUDENT ACADEMIC RESPONSIBILITY

You are responsible for adhering to the statement on student academic responsibility found in the *General Academic Regulations* of this calendar.

### ACCESS TO COURSES

All undergraduate courses at McMaster have an enrolment capacity. The University is committed to making every effort to accommodate students in required courses so that their program of study is not extended. Unless otherwise specified, registration is on a first-come basis and in some cases priority is given to students from particular programs or Faculties. Students will be informed of their enrolment periods and are encouraged to enroll as soon as online enrolment is available to them in the Student Centre in Mosaic.

*In addition to the regulations in the General Academic Regulations section of this Calendar, the following Program regulations apply.*

### MINOR

*This information is directed to B.H.Sc. students who are interested in completing a minor in another subject area. A minor is not available in the B.H.Sc. (Honours) Program.*

A Minor is an option available to a student enrolled in a four- or five-level program. A Minor consists of a minimum of 24 units in the Minor subject. No more than six of these units can be at Level I, unless otherwise stated in the specific requirements of the Minor. A student is responsible for registering for courses to be applied towards a Minor using elective units only. In the case of cross-listed courses, students must ensure that they register in the appropriate subject for the Minor designation. Those who have the necessary requirements may apply for recognition of that Minor when they graduate. If recognition for a Minor is granted, this recognition will be recorded on the student's transcript. Minors cannot be revoked once approved. Students may return for a second degree in the subject in which they have obtained a Minor, but only at the Honours level. For further information please refer to Minors in the *General Academic Regulations* section in this Calendar.

### CONTINUATION IN THE PROGRAM

Students who have a minimum GPA of 6.0 may continue in the program.

If a GPA of 3.0 to 5.9 is obtained a student may remain in the program but will be placed on program probation for one reviewing period. A student may be on program probation only once.

Students previously on program probation who achieve a GPA between 3.0 and 5.4, may transfer to the B.H.Sc. General Program and, with permission, take B.H.Sc. required courses (for which all course prerequisites have been met).

Students in this situation must attend a mandatory preregistration academic advising session in the BHSc Program office. Students who, at next review, achieve a GPA of at least 5.5 may transfer to the B.H.Sc. (Honours) program.

Students who fail to meet the minimum requirements for transfer to B.H.Sc. (Honours) by the end of 90 units, must transfer to a non-BHSc program for which he/she qualifies or graduate with a B.H.Sc. three-year degree provided a minimum 3.5 GPA is achieved and all program requirements have been met.

Students whose GPA is less than 3.0 at any academic review may not continue at the University.

### CONCURRENT CERTIFICATES

Concurrent certificates are an option available to any student in an undergraduate degree program, and may be completed as part of a student's elective credit. Some concurrent certificates will require a student be admitted to this option, while others may involve completion of the course requirements and declaring the certificate at the time of graduation. Students should refer to the course requirements and details available in the Certificate and Diploma Programs section of the Calendar. Two concurrent certificate programs are administered by the B.H.Sc. (Honours) Program: Biomedical Sciences and Immunology, Microbiology, & Virology.

### LETTERS OF PERMISSION

Students enrolled in the B.H.Sc. (Honours) Program may apply to take courses at another university on a Letter of Permission via MOSAIC. Students must achieve a grade of at least C- to receive credit.

Students are responsible to forward the transcript from the other university directly to the Assistant Dean (MDCL-3300). If a grade of C- or better is attained, the transcript designation reads *T* indicating *transfer credit*, or NC indicating *not complete* if less than a C- grade is attained.

Courses taken at another university cannot be used to satisfy the university's minimum residence requirements, will not be included in the calculation of the Cumulative or Fall/Winter Averages, and therefore cannot be used to raise standing. Students may take up to six units of courses towards a Minor on a Letter of Permission.

Students must be in good standing to be eligible to take courses on a Letter of Permission.

### LEVEL OF REGISTRATION

A student with six or more units incomplete at any level may proceed to the next level of the program only with the permission of the B.H.Sc. (Honours) Program Office.

### REINSTATEMENT TO THE B.H. SC. (HONOURS) PROGRAM

**A student who may Not Continue at the University may apply for reinstatement. Students seeking reinstatement should complete the Reinstatement Request Form available at the Office of the Registrar (Gilmour Hall, Room 108). The completed form and the \$100 fee must be submitted to the Office of the Registrar by July 15 for September entry and November 30 for January entry.**

The form should explain the reasons for the student's inadequate performance, corroborated by two letters of support, and should also include relevant documentary evidence such as, for example, a physician's letter documenting an illness that may have impacted upon the student's prior academic performance. Reinstatement cases will be carefully screened and the evidence considered will include the student's academic performance before and following admission to McMaster, as well as the nature of the reasons cited in the letter, the letters of support and the accompanying documentation.

### Reinstatement is not guaranteed.

If students are reinstated to the University, their Grade Point Average will be re-set to 0.0 on zero units, although students may, at the discretion of the Faculty, retain credit for prior work. Following reinstatement, students will be on academic probation and must complete a minimum of 60 units of work after reinstatement to be eligible for graduation with Distinction or other recognition based on the Grade Point Average. If at any review after reinstatement the student's Grade Point Average falls below 3.5, the student will be required to withdraw from the University for a period of at least 12 months.

### REGISTRATION AND COURSE CHANGES

It is the responsibility of the student to ensure that the program of work undertaken meets the requirements for the degree. It is highly recommended that you review your advisement report in MOSAIC each time you drop or add courses and seek academic counselling from the B.H.Sc. (Honours) Program Office if you have any questions. Dates for final registration and course changes appear in the Sessional Dates section of this Calendar and are enforced.

**ACADEMIC COUNSELLING**

Academic counselling is available throughout the year from the B.H.Sc. (Honours) Program Office. It is recommended that students make an appointment with an advisor from the program office if they have any questions.

**GRADUATION**

A GPA of 5.0 is required for graduation.

Students who successfully complete Level III of the program may request permission from the B.H.Sc. (Honours) Program Office to graduate with a three-level B.H.Sc. degree. Please refer to the General Academic Regulations section in this Calendar for additional information related to graduation.

**Bachelor of Health Sciences (Honours)****BACHELOR OF HEALTH SCIENCES (HONOURS) (B.H.SC.)****NOTE**

Degree requirements listed below apply to Level I students entering the Program starting in **September 2020**.

**REQUIREMENTS**

*120 units total (Levels I to IV), of which no more than 48 units may be Level I courses*

*Maximum 9 units of project/thesis courses in Level 3*

*Maximum 18 units of project/thesis courses in Level 4*

**LEVEL I: 30 UNITS**

6 units

- HTHSCI 1I06 A/B - Cellular and Molecular Biology

6 units

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II

6 units

- HTHSCI 1E06 A/B - Inquiry I: Introduction

2 units

- HTHSCI 1G02 - Interdisciplinary Problem-Solving in Health

1 unit

- HTHSCI 1X01 A/B - Praxis Pathways 1

9 units

- Electives

1 course

- WHMIS 1A00 - Introduction to Health and Safety

**LEVEL II: 30 UNITS**

3 units

- HTHSCI 2E03 - Inquiry II: Biochemistry \*

3 units

- HTHSCI 2F03 - Human Physiology and Anatomy I

3 units

- HTHSCI 2FF3 - Human Physiology and Anatomy II

3 units

- HTHSCI 2G03 - Statistics & Epidemiology 1

3 units

- HTHSCI 2GG3 - Statistics & Epidemiology 2

3 units

- HTHSCI 2K03 - Cell Biology

3 units

- HTHSCI 2X03 A/B - Praxis Pathways 2

9 units

- Electives

**Note**

\* HTHSCI 2D06 A/B replaces HTHSCI 2E03 for Level 2 transfer students

**LEVEL III: 30 UNITS**

3 units

- HTHSCI 3E03 - Inquiry III: Advanced Inquiry in Health Sciences

3 units

- HTHSCI 3G03 - Critical Appraisal of the Medical Literature

3 units

- HTHSCI 3GG3 - Health Systems and Health Policy

3-6 units

- HTHSCI 3H03 A/B S - Inquiry Project

- HTHSCI 3H06 A/B S - Inquiry Project

1 course

- HTHSCI 3X00 A/B - Praxis Pathways 3

15-18 units

- Electives

**LEVEL IV: 30 UNITS**

6-15 units

from

- HTHSCI 4A09 A/B S - Thesis

- HTHSCI 4B06 A/B S - Senior Projects

- HTHSCI 4A12 A/B S - Thesis

- HTHSCI 4A15 A/B S - Thesis

- HTHSCI 4D06 A/B - Senior Project in Engaging the City

- HTHSCI 4D09 A/B - Thesis in Engaging the City

- HTHSCI 4D12 A/B - Thesis in Engaging the City

3 units

- HTHSCI 4XP3 A/B - Praxis Pathways 4

12-21 units

- Electives

**BACHELOR OF HEALTH SCIENCES (HONOURS) (B.H.SC.) - LEVEL 2 TRANSFER****NOTE**

Degree requirements listed below apply to Level 2 transfer students starting in **September 2020**.

**REQUIREMENTS**

*120 units total (Levels I to IV), of which no more than 48 units may be Level I courses*

*Maximum 9 units of project/thesis courses in Level 3*

*Maximum 18 units of project/thesis courses in Level 4*

**LEVEL I: 30 UNITS**

*30 units completed prior to admission to the B.H.Sc. (Hons) Program*

**LEVEL II: 30 UNITS**

2 units

- HTHSCI 1G02 - Interdisciplinary Problem-Solving in Health

1 unit

- HTHSCI 1X01 A/B - Praxis Pathways 1

6 units

- HTHSCI 2D06 A/B - Inquiry II: Introduction and Biochemistry \*

3 units

- HTHSCI 2F03 - Human Physiology and Anatomy I

3 units

- HTHSCI 2FF3 - Human Physiology and Anatomy II

3 units

- HTHSCI 2G03 - Statistics & Epidemiology 1

3 units

- HTHSCI 2GG3 - Statistics & Epidemiology 2

3 units

- HTHSCI 2K03 - Cell Biology

3 units

- HTHSCI 2X03 A/B - Praxis Pathways 2

3 units

- Electives

1 course

- WHMIS 1A00 - Introduction to Health and Safety (to be completed by Level 2 transfer students who have not already completed the safety training course)

Note

\*HTHSCI 2D06 A/B replaces HTHSCI 2E03-Inquiry II: Biochemistry

**LEVEL III: 30 UNITS**3 units

- HTHSCI 3E03 - Inquiry III: Advanced Inquiry in Health Sciences

3 units

- HTHSCI 3G03 - Critical Appraisal of the Medical Literature

3 units

- HTHSCI 3GG3 - Health Systems and Health Policy

3-6 units

- HTHSCI 3H03 A/B S - Inquiry Project
- HTHSCI 3H06 A/B S - Inquiry Project

1 course

- HTHSCI 3X00 A/B - Praxis Pathways 3

15-18 units

- Electives

**LEVEL IV: 30 UNITS**6-15 units

from

- HTHSCI 4A09 A/B S - Thesis
- HTHSCI 4A12 A/B S - Thesis
- HTHSCI 4A15 A/B S - Thesis
- HTHSCI 4B06 A/B S - Senior Projects
- HTHSCI 4D06 A/B - Senior Project in Engaging the City
- HTHSCI 4D09 A/B - Thesis in Engaging the City
- HTHSCI 4D12 A/B - Thesis in Engaging the City

3 units

- HTHSCI 4XP3 A/B - Praxis Pathways 4

12-21 units

- Electives

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**BACHELOR OF HEALTH SCIENCES (HONOURS) - BIOMEDICAL SCIENCES SPECIALIZATION (B.H.SC.)**


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**NOTES**

- Entry to this program begins in Level II with the final in-take occurring in September 2019. Students wishing to apply must successfully complete Health Sciences I.
- Degree requirements listed below apply only to Level II students entering the Biomedical Sciences Specialization in September 2019.
- While registration in HTHSCI 4X03 A/B S will occur in Level IV, students will begin studies in Level I.
- Biomedical Sciences Course List: Levels III and IV Biochemistry, HTHSCI 3BA3, 3FC3, 3I03, 3K03, 3SB3, 3U03, 3X03, 4BB3, 4G03, 4II3, 4J03, 4JJ3, 4K03, 4KK3, 4NU3, 4O03, MOLBIOL 4H03.
- The Biomedical Sciences Specialization will be replaced with a Concurrent Certificate in Biomedical Sciences (BMS) beginning September 2019.

**REQUIREMENTS**

120 units total (Levels I to IV), of which no more than 48 units may be Level I courses

**LEVEL II: 30 UNITS**6 units

from

- CHEM 20A3 - Organic Chemistry I
- CHEM 20B3 - Organic Chemistry II
- HTHSCI 2F03 - Human Physiology and Anatomy I

- HTHSCI 2FF3 - Human Physiology and Anatomy II

3 units

- HTHSCI 2E03 - Inquiry II: Biochemistry

3 units

- HTHSCI 2G03 - Statistics & Epidemiology 1

3 units

- HTHSCI 2GG3 - Statistics & Epidemiology 2

3 units

- HTHSCI 2K03 - Cell Biology

3 units

- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry

9 units

- Electives

Note

\*HTHSCI 2D06 A/B required for Level II transfer students

**LEVEL III: 30 UNITS**3 units

- HTHSCI 3E03 - Inquiry III: Advanced Inquiry in Health Sciences

3 units

- HTHSCI 3G03 - Critical Appraisal of the Medical Literature

3-6 units

- HTHSCI 3BM3 - Inquiry Project in Biomedical Sciences
- HTHSCI 3BM6 A/B S - Research Project in Biomedical Sciences

3 units

- HTHSCI 3V03 - Research and Experimental Design

3 units

- BIOCHEM 3G03 - Proteins and Nucleic Acids

9 units

from

- the *Biomedical Sciences Course List* (See Program Note 3 above.)

3-6 units

- Electives

**LEVEL IV: 30 UNITS**3 units

- HTHSCI 4AL3 - Model Systems

3 units

- HTHSCI 4X03 A/B S - Collaboration and Peer Tutoring

6-9 units

- from *The Biomedical Sciences Course List* (See Program Note 3 above.)

9-12 units

from

- HTHSCI 4R09 A/B - Thesis in Biomedical Sciences
- HTHSCI 4R12 A/B S - Thesis in Biomedical Sciences

3-9 units

- Electives

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**BACHELOR OF HEALTH SCIENCES (HONOURS) - CHILD HEALTH SPECIALIZATION (B.H.SC.)**


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**NOTES**

- Entry to this program begins in Level II. Students wishing to apply must successfully complete Health Sciences I.
- Degree requirements listed below apply to Level II students entering the Child Health Specialization starting in September 2020.

**REQUIREMENTS**

120 units total (Levels I to IV), of which no more than 48 units may be Level I courses

**LEVEL II: 30 UNITS**3 units

- HTHSCI 2E03 - Inquiry II: Biochemistry \*

3 units

- HTHSCI 2G03 - Statistics & Epidemiology 1

3 units

- HTHSCI 2GG3 - Statistics & Epidemiology 2

3 units

- HTHSCI 2K03 - Cell Biology

3 units

- HTHSCI 2X03 A/B - Praxis Pathways 2

6 units

- HTHSCI 2CH6 A/B - CHS Inquiry Fundamentals

3 units

- HTHSCI 2CH3 A/B - CHS Learning Modules

6 units

- Electives

Note

\*HTHSCI 2D06 A/B replaces HTHSCI 2E03 for Level II transfer students

#### **LEVEL III: 30 UNITS**

3 units

- HTHSCI 3G03 - Critical Appraisal of the Medical Literature

3 units

- HTHSCI 3GG3 - Health Systems and Health Policy

9 units

- HTHSCI 3CH9 A/B - CHS Inquiry Intermediate

6 units

- HTHSCI 3CH6 A/B S - CHS Research Practicum

1 course

- HTHSCI 3X00 A/B - Praxis Pathways 3

9 units

- Electives

#### **LEVEL IV: 30 UNITS**

6 units

- HTHSCI 4CH6 A/B - CHS Inquiry Advanced

6-15 units

from

- HTHSCI 4C06 A/B - Senior Project in Child Health
- HTHSCI 4C09 A/B - Thesis in Child Health
- HTHSCI 4C12 A/B S - Thesis in Child Health
- HTHSCI 4C15 A/B - Thesis in Child Health
- HTHSCI 4D06 A/B - Senior Project in Engaging the City
- HTHSCI 4D09 A/B - Thesis in Engaging the City
- HTHSCI 4D12 A/B - Thesis in Engaging the City

3 units

- HTHSCI 4XP3 A/B - Praxis Pathways 4

6-15 units

- Electives

## Honours Bachelor of Health Sciences in Biomedical Discovery and Commercialization Program

Health Sciences Centre, Room 4H30, ext. 27335

<http://bdcprogram-mcmaster.ca/>

<http://bdcstudent-mcmaster.ca/>

DIRECTOR

Andrew G. McArthur/(*Biochemistry and Biomedical Sciences*)B.Sc. (*Western Ontario*), Ph.D. (*Victoria*)

PROGRAM MANAGER

Nancy McKenzie/B.Sc., Ph.D. (*McMaster*)

## Program Overview

The Biomedical Discovery and Commercialization (BDC) program is a multidisciplinary training program, concentrated in the biomedical sciences that will produce graduates with the combined strengths of discovery research skills and business acumen. An important goal of the BDC program is the exposure of students to business curriculum in the DeGroot School of Business to complement a strong foundation in the biomedical sciences obtained in the Faculty of Health Sciences. Further, the program seeks to make strong connections with the health research business community in order to provide internships and community mentors for its trainees. With this unique combination of skills and knowledge, BDC graduates will be well positioned for employment in the biotechnology, pharmaceutical and other biomedical science sectors of the economy. Likewise they will be equipped to pursue further training in, for example, graduate studies in research, Master of Business Administration, Law or Medicine. The format of the BDC program is a '4+1' Bachelor plus Master program. It is a four-year undergraduate Bachelor's degree that begins in Level III, followed by a fifth year Master's degree. Thus candidates who successfully graduate from the four-year undergraduate BDC program may choose to apply for admission to the one-year non-thesis, course-based Master's program. Upon successful completion of each of the degree requirements, candidates will have graduated with an Honours Bachelor of Health Sciences degree in BDC and subsequently a Master of Biomedical Discovery and Commercialization.

### ADMISSION PROCEDURES AND REQUIREMENTS

Please note that the admission policy may be reviewed annually and the admission requirements may be changed in future years. As places in this program are limited, the admission process is competitive. Possession of the minimum requirements does not guarantee admission to the program.

### ADMISSION REQUIREMENTS

Selection will be based on academic achievement, a written statement of interest and an interview but requires, as a minimum, submission of an on-line application by the stated deadline, completion of Level II (or above) of a Science or Health Sciences program with a Grade Point Average of at least 8.0 on the McMaster 12-point scale (equivalent to a grade of B). Refer to the "Apply" tab on the BDC website ([bdcprogram-mcmaster.ca/apply](http://bdcprogram-mcmaster.ca/apply)) for further information and important dates and deadlines. Applicants from other disciplines may also be a good fit depending on their educational background. Successful completion of both CHEM 20A3 and 20B3 (or equivalent) is strongly recommended prior to entry into the program. CHEM 20A3 must be completed by the end of Level III and CHEM 20B3 must be completed by the end of Level IV. The program will be open to applicants who have completed equivalent Level II courses at another university. Applicants who have completed a University degree are also eligible to apply as a second degree student.

### ACADEMIC REGULATIONS

#### STUDENT ACADEMIC RESPONSIBILITY

You are responsible for adhering to the statement on student academic responsibility found in the *General Academic Regulations* of this calendar.

#### ACCESS TO COURSES

All undergraduate courses at McMaster have an enrolment capacity. The University is committed to making every effort to accommodate students in required courses so that their program of study is not extended. Unless otherwise specified, registration is on a first-come basis and in some cases priority is given to students from particular programs or Faculties. Students will be informed of their enrolment periods and are encouraged to enroll as soon as online enrolment is available to them in the Student Centre in Mosaic.

*In addition to the regulations in the General Academic Regulations section of this Calendar, the following Program regulations apply.*



**MINOR**

This information is directed to BDC students who are interested in completing a minor in another subject area. A minor is not available in the Honours Bachelor of Health Sciences in Biomedical Discovery and Commercialization Program.

A Minor is an option available to a student enrolled in a four or five-level program. A Minor consists of a minimum of 24 units in the Minor subject. No more than six of these units can be at Level I, unless otherwise stated in the specific requirements of the Minor. A student is responsible for registering for courses to be applied towards a Minor using elective units only. In the case of cross-listed courses, students must ensure that they register in the appropriate subject for the Minor designation. Those who have the necessary requirements may apply for recognition of that Minor when they graduate. If recognition for a Minor is granted, this recognition will be recorded on the student's transcript. Minors cannot be revoked once approved. Students may return for a second degree in the subject in which they have obtained a Minor, but only at the Honours level. For further information please refer to Minors in the General Academic Regulations section in this Calendar.

**CONTINUATION IN THE PROGRAM**

Students who have a minimum GPA of 6.0 may continue in the program.

If a GPA of 3.0 to 5.9 is obtained a student may remain in the program but will be placed on program probation for one reviewing period. A student may be on program probation only once.

Students previously on program probation who achieve a GPA between 3.0 and 5.4, may transfer to a non-BDC program for which he/she qualifies or graduate with a B.H.Sc. three year degree provided a minimum 3.5 GPA is achieved and all program requirements have been met.

Students whose GPA is less than 3.0 at any academic review may not continue at the University.

**LETTERS OF PERMISSION**

Students enrolled in the Honours Bachelor of Health Sciences in Biomedical Discovery and Commercialization Program may apply to take courses at another university on a Letter of Permission (LOP) by submitting an LOP request in MOSAIC. Students must achieve a grade of at least C- to receive credit.

Students are responsible to forward the transcript from the other university directly to the BDC Program Office (HSC-4H30). If a grade of C- or better is attained, the transcript designation reads *T* indicating *Transfer Credit*, or *NC* indicating *No Credit* if less than a C- grade is attained.

Courses taken at another university cannot be used to satisfy the university's minimum residence requirements, will not be included in the calculation of the Cumulative or Fall/Winter Averages, and therefore cannot be used to raise standing. Students may take up to six units of courses towards a Minor on a Letter of Permission. Students must be in good standing to be eligible to take courses on a Letter of Permission.

**LEVEL OF REGISTRATION**

A student with six or more units incomplete at any level may proceed to the next level of the program only with the permission of the BDC Program Office.

**REINSTATEMENT TO THE HONOURS BACHELOR OF HEALTH SCIENCES IN BIOMEDICAL DISCOVERY AND COMMERCIALIZATION PROGRAM**

A student who may Not Continue at the University may apply for reinstatement. Students seeking reinstatement should complete the Reinstatement Request Form available at the Office of the Registrar (Gilmour Hall, Room 108). The completed form and the \$100 fee must be submitted to the Office of the Registrar by July 15 for September entry and November 30 for January entry.

The form should explain the reasons for the student's inadequate performance, corroborated by two letters of support, and should also include relevant documentary evidence such as, for example, a physician's letter documenting an illness that may have impacted upon the student's prior academic performance. Reinstatement cases will be carefully screened and the evidence considered will include the student's academic performance before and

following admission to McMaster, as well as the nature of the reasons cited in the letter, the letters of support and the accompanying documentation.

Reinstatement is not guaranteed

If students are reinstated to the University, their Grade Point Average will be reset to 0.0 on zero units, although students may, at the discretion of the Faculty, retain credit for prior work. Following reinstatement, students will be on academic probation and must complete a minimum of 60 units of work after reinstatement to be eligible for graduation with Distinction or other recognition based on the Grade Point Average. If at any review after reinstatement the student's Grade Point Average falls below 3.5, the student will be required to withdraw from the University for a period of at least 12 months.

**REGISTRATION AND COURSE CHANGES**

It is the responsibility of the student to ensure that the program of work undertaken meets the requirements for the degree. It is highly recommended that you review your advisement report in MOSAIC on the working day following each time you drop or add courses and seek academic counselling from the Program Office if you have any questions. Dates for final registration and course changes appear in the *Sessional Dates* section of this Calendar and are enforced.

**ACADEMIC COUNSELLING**

Academic counselling is available throughout the year from the Program Office. It is recommended that students make an appointment with the Program Office if they have any questions.

**GRADUATION**

A GPA of 5.0 is required for graduation. Students who successfully complete Level III of the program may request permission from the BDC Program Office to graduate with a three-level B.H.Sc. degree. Please refer to the *General Academic Regulations* section in this Calendar for additional information related to graduation.

## Bachelor of Health Sciences (Honours)

### BACHELOR OF HEALTH SCIENCES (HONOURS) - BIOMEDICAL DISCOVERY AND COMMERCIALIZATION (B.H.SC.)

**PROGRAM NOTES**

- Students interested in pursuing a minor in Business should take COMMERCE 1AA3 and COMMERCE 2AB3 in place of COMMERCE 4AK3. For more information on completing a minor in Business, please refer to the *DeGroote School of Business (Faculty of Business)* section of the undergraduate calendar.
- Students who have already completed COMMERCE 1AA3 will be required to complete COMMERCE 2AB3 instead of COMMERCE 4AK3.
- Students interested in pursuing a minor in Business should take COMMERCE 2MA3 and COMMERCE 3MC3 in place of COMMERCE 3MD3. For more information on completing a minor in Business, please refer to the *DeGroote School of Business (Faculty of Business)* section of the undergraduate calendar.
- Students who have already completed COMMERCE 2MA3 will be required to complete COMMERCE 3MC3 instead of COMMERCE 3MD3.

**REQUIREMENTS**

*120 units total (Levels I to IV), of which no more than 48 units may be Level I courses*

**LEVEL III: 30 UNITS**18 units

- BIOMEDDC 3A03 - Road to Biomedical Discovery
- BIOMEDDC 3B06 A/B - Drug Discovery and Development
- BIOMEDDC 3C09 A/B - Research Skills Laboratory and Inquiry

6 units

- COMMERCE 1BA3 - Organizational Behaviour

- COMMERCE 4AK3 - Accounting Information for Decision Making

(see *Program Notes 1 and 2* above)

0-6 units

- BIOCHEM 3G03 - Proteins and Nucleic Acids (if BIOCHEM 2B03 and 2BB3 were not completed prior to entry into the program)
- CHEM 2OA3 - Organic Chemistry I (if not completed prior to entry into the program)

0-6 units

- Elective(s)

**LEVEL IV: 30 UNITS**

18 units

- BIOMEDDC 4A15 A/B - Senior Research Thesis
- BIOMEDDC 4B03 - Road to Biomedical Commercialization

6 units

- COMMERCE 3MD3 - Introduction to Contemporary Applied Marketing (see *Program Notes 3 and 4* above)
- COMMERCE 4FW3 - Finance for Entrepreneurs

0-3 units

- CHEM 2OB3 - Organic Chemistry II (if not completed prior to entry into the program)

3-6 units

- Elective(s)

## Honours Biology & Pharmacology Co-op Program (B.H.Sc.)

Health Sciences Centre, Room 2E21A, ext. 22312

<https://healthsci.mcmaster.ca/biopharm>

[biopharm@mcmaster.ca](mailto:biopharm@mcmaster.ca)

DIRECTOR

**Jan D. Huizinga**/B.Sc., M.Sc., Ph.D.

ADMINISTRATOR

**Stephanie Cusick**

### Program Overview

The Honours Biology & Pharmacology Coop Program is the longest-standing undergraduate co-operative education program at McMaster University, offered jointly between the Faculties of Health Sciences and Science.

Highlights of the program include:

- limited enrolment program guarantees class sizes of less than 20 students
- Biology and Health Sciences offerings with specialized Pharmacology courses that explore human pharmacodynamics, pharmacokinetics and pharmacogenetics: what drugs do to the body and what the body does to drugs.
- a dedicated laboratory course
- a full-time research thesis
- three semesters of paid coop work terms in industry, academia or government, in Hamilton, surrounding area or world-wide.

The program equips students with a wide spectrum of skills and experiences and provides excellent preparedness for graduate and professional schools such as medicine, pharmacy, veterinary or employment in industry or government.

### Admission Requirements

Selection will be based on academic achievement, a written statement of interest and an interview but requires, as a minimum, submission of an on-line application by the stated deadline, completion of Level II (or above) of a Science or Health Sciences program with a Grade Point Average of at least

5.0 on the McMaster 12-point scale (Note: normally, a Grade Point Average of at least 8.0 is required). Refer to the “**Apply**” tab on the Honours Biology and Pharmacology Co-op program website (<https://healthsci.mcmaster.ca/biopharm/education/prospective-students/apply>) for further information and important dates and deadlines. Applicants from other disciplines may also be a good fit depending on their educational background. Successful completion of courses from the following areas of study are strongly recommended: human or animal physiology, genetics, organic chemistry, cell biology, microbiology and biotechnology, ecology, bio-analytical chemistry, physical chemistry.

A required Level II course for admission is BIOLOGY 2A03 since this is a prerequisite for our course BIOLOGY 3P03. If it is not possible to take BIOLOGY 2A03, a very similar course is essential.

The program will be open to applicants who have completed equivalent Level I and/or II courses at another university. Applicants who have completed a University degree are also eligible to apply as a second degree student.

## Academic Regulations

### STUDENT ACADEMIC RESPONSIBILITY

You are responsible for adhering to the statement on student academic responsibility found in the *General Academic Regulations* of this calendar.

### ACCESS TO COURSES

All undergraduate courses at McMaster have an enrolment capacity. The University is committed to making every effort to accommodate students in required courses so that their program of study is not extended. Unless otherwise specified, registration is on a first-come basis and in some cases priority is given to students from particular programs or Faculties. Students will be informed of their enrolment periods and are encouraged to enroll as soon as online enrolment is available to them in the Student Centre in Mosaic.

*In addition to the regulations in the General Academic Regulations section of this Calendar, the following Program regulations apply.*

### Minor

This information is directed to Honours Biology and Pharmacology Co-op students who are interested in completing a minor in another subject area. A Minor is an option available to a student enrolled in a four or five-level program. A Minor consists of a minimum of 24 units in the Minor subject. No more than six of these units can be at Level I, unless otherwise stated in the specific requirements of the Minor. A student is responsible for registering for courses to be applied towards a Minor using elective units only. In the case of cross-listed courses, students must ensure that they register in the appropriate subject for the Minor designation. Those who have the necessary requirements may apply for recognition of that Minor when they graduate. If recognition for a Minor is granted, this recognition will be recorded on the student's transcript. Minors cannot be revoked once approved. Students may return for a second degree in the subject in which they have obtained a Minor, but only at the Honours level. For further information please refer to Minors in the General Academic Regulations section in this Calendar. A minor is not available in Biology and Pharmacology.

### Continuation in the Program

Students who have a minimum Grade Point Average (GPA) of 6.0 may continue in the program.

If a GPA of 3.0 to 5.9 is obtained a student may remain in the program but will be placed on program probation for one reviewing period. A student may be on program probation only once.

Students previously on program probation who achieve a GPA between 3.0

and 5.4, may transfer to a program for which he/she qualifies or graduate with a B.H.Sc. three year degree provided a minimum 3.5 GPA is achieved and all program requirements have been met.

Students whose GPA is less than 3.0 at any academic review may not continue at the University.

### Letters of Permission

Students enrolled in the Honours Biology and Pharmacology Co-op program may apply to take courses at another university on a Letter of Permission (LOP) by submitting an LOP request in MOSAIC. Students must achieve a grade of at least C- to receive credit.

Students are responsible to forward the transcript from the other university directly to the Honours Biology and Pharmacology Co-op Program Office (HSC-2E21A). If a grade of C- or better is attained, the transcript designation reads *T* indicating *Transfer Credit*, or *NC* indicating *Not Complete* if less than a C- grade is attained.

Courses taken at another university cannot be used to satisfy the university's minimum residence requirements, will not be included in the calculation of the Cumulative or Fall/Winter Averages, and therefore cannot be used to raise standing. Students may take up to six units of courses towards a Minor on a Letter of Permission. Students must be in good standing to be eligible to take courses on a Letter of Permission.

### Reinstatement to the Honours Biology and Pharmacology Co-op Program

A student who may Not Continue at the University may apply for reinstatement. Students seeking reinstatement should complete the Reinstatement Request Form available at the Office of the Registrar (Gilmour Hall, Room 108). The completed form and the \$100 fee must be submitted to the Office of the Registrar by July 15 for September entry.

The form should explain the reasons for the student's inadequate performance, corroborated by two letters of support, and should also include relevant documentary evidence such as, for example, a physician's letter documenting an illness that may have impacted upon the student's prior academic performance. Reinstatement cases will be carefully screened and the evidence considered will include the student's academic performance before and following admission to McMaster, as well as the nature of the reasons cited in the letter, the letters of support and the accompanying documentation. Reinstatement is not guaranteed.

If students are reinstated to the University, their Grade Point Average will be reset to 0.0 on zero units. Following reinstatement, students will be on academic probation and must complete a minimum of 60 units of work after reinstatement to be eligible for graduation with Distinction or other recognition based on the Grade Point Average. If at any review after reinstatement the student's Grade Point Average falls below 3.5, the student will be required to withdraw from the University for a period of at least 12 months.

### Registration and Course Changes

It is the responsibility of the student to ensure that the program of work undertaken meets the requirements for the degree. It is highly recommended that students review their advisement report in MOSAIC on the working day following each time courses are dropped or added and seek academic counselling from the Program Office if they have questions. Dates for final registration and course changes appear in the Sessional Dates section of this Calendar and are enforced.

### Academic Counselling

Academic counselling is available throughout the year from the Director of the Honours Biology and Pharmacology (Co-op) Program. It is recommended that students make an appointment with the Director if they have any questions.

## Graduation

A GPA of 5.0 is required for graduation. Please refer to the *General Academic Regulations* section in this Calendar for additional information related to graduation.

## Bachelor of Health Sciences (Honours)

### HONOURS BIOLOGY AND PHARMACOLOGY CO-OP (B.H.SC.)

#### ADMISSION

Selection will be based on academic achievement, a written statement of interest and an interview but requires, as a minimum, submission of an online application by the stated deadline, completion of Level II (or above) of a Science or Health Sciences program with a Grade Point Average of at least 5.0 on the McMaster 12-point scale (Note: normally, a Grade Point Average of at least 8.0 is required). Refer to the **"Apply"** tab on the Honours Biology and Pharmacology Co-op program website for further information and important dates and deadlines. Applicants from other disciplines may also be a good fit depending on their educational background. Successful completion of courses from the following areas of study are strongly recommended: human or animal physiology, genetics, organic chemistry, cell biology, microbiology and biotechnology, ecology, bio-analytical chemistry, physical chemistry.

A required Level II course for admission is BIOLOGY 2A03 since this is a prerequisite for our course BIOLOGY 3P03. If it is not possible to take BIOLOGY 2A03, a very similar course is essential.

The program will be open to applicants who have completed equivalent Level I and/or II courses at another university. Applicants who have completed a University degree are also eligible to apply as a second degree student.

#### NOTE

Information about this program and the selection procedure can be obtained from Science Career and Cooperative Education and the Director of the Honours Biology and Pharmacology Co-op Program.

#### PROGRAM NOTES

- This is a five-level (year) co-op program, three terms of which must be spent in work related to biology or pharmacology placements under the auspices of the Science Career & Cooperative Education office in the Faculty of Science.
- A senior thesis, PHARMAC 4T12, will be completed in the Fall term of Level V. Work terms must be completed in the Spring/Summer term of Level III, Fall term of Level IV and Spring/Summer term of Level V. See Co-op program chart below.
- PHARMAC 3A06 A/B, 3B06 A/B, 4A03, 4AA3, 4C03, 4D03 and 4E03 will use a self-directed problem-based learning approach.
- Students must be registered full-time and take a full academic workload as prescribed by Level and Term.
- Students are required to complete SCIENCE 2C00 and SCIENCE 3C00 before the first work placement and are strongly recommended to complete SCIENCE 2C00 in Level II.
- Students should seek academic advising for this program from the Director of the Honours Biology and Pharmacology Co-op Program.
- If BIOCHEM 2B03 and 2BB3 have not been completed at the time of admission, BIOCHEM 3G03 must be completed in Level III. Students with credit in BIOCHEM 2B03 and 2BB3 are not required to complete further Biochemistry courses.

#### COURSE LIST

- BIOCHEM 3D03 - Metabolism and Regulation
- BIOCHEM 3H03 - Clinical Biochemistry
- BIOCHEM 4E03 - Gene Regulation in Stem Cells and Development
- BIOCHEM 4M03 - Cellular and Integrated Metabolism

- BIOCHEM 4N03 - Molecular Membrane Biology
- All Levels III and IV Biology and Molecular Biology courses
- CHEM 2I13 - Introductory Inorganic Chemistry: Structure and Bonding
- CHEM 4IB3 - Bio-Inorganic Chemistry
- CHEM 4OA3 - Natural Products
- CHEMBIO 2P03 - Physical Chemistry Tools for Chemical Biology
- CHEMBIO 3OA3 - Organic Mechanistic Tools for Chemical Biology
- CHEMBIO 3P03 - Biomolecular Interactions and Kinetics
- CHEMBIO 4A03 - Bio-Analytical Chemistry and Assay Development
- CHEMBIO 4IB3 - Bio-Inorganic Chemistry
- CHEMBIO 4OA3 - Natural Products
- CHEMBIO 4OB3 - Medicinal Chemistry: Drug Design and Development
- EARTHSC 4EA3
- ENVIRSC 3B03 - Ecosystems and Global Change
- ENVIRSC 4EA3 - Environmental Assessment
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 2K03 - Cell Biology
- HTHSCI 3BA3 - Symptomatology
- HTHSCI 3I03 - Introductory Immunology
- HTHSCI 3K03 - Introductory Virology
- HTHSCI 3U03 - Medical Genetics
- HTHSCI 4I13 - Advanced Concepts in Immunology
- HTHSCI 4J03 - Immunological Principles In Practice
- LIFESCI 3AA3 - Human Pathophysiology
- STATS 2D03 - Introduction to Probability

#### REQUIREMENTS

129 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

Completed prior to admission to the program

#### LEVEL II: 30 UNITS

30 units

- Completion of any Level II program including courses as outlined in Admission statement  
(See *Admission* above.)

#### LEVEL III

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 27 units:

#### 0-3 units

- BIOCHEM 3G03 - Proteins and Nucleic Acids

(See *Program Note 7* above.)

#### 3-6 units

from

- *Course List*

#### 6 units

- BIOLOGY 3P03 - Cell Physiology
- BIOLOGY 3U03 - Animal Physiology - Homeostasis

#### 12 units

- PHARMAC 3A06 A/B - Introduction to Pharmacology
- PHARMAC 3B06 A/B - Methods in Pharmacology

#### 3 units

- Electives

#### 2 courses

- SCIENCE 2C00 - Skills for Career Success in Science
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Spring/Summer Term:

Work Term

#### 1 course

- SCIENCE 3WW0 - Science Co-op Work Term

#### LEVEL IV

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and completion of senior thesis (Spring/Summer Term)

Fall Term:

Work Term

#### 1 course

- SCIENCE 4WW0 - Science Co-op Work Term

Winter Term: 15 units:

#### 6 units

- PHARMAC 4A03 - Receptor-Drug Interactions
- PHARMAC 4C03 - Principles of Toxicology

#### 0-3 units

- STATS 2B03 - Statistical Methods for Science

#### 6 units

from

- *Course List*

#### 0-3 units

- Electives

Spring/Summer Term:

Work Term

#### 1 course

- SCIENCE 5WW0 - Science Co-op Work Term

#### LEVEL V

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term: 12 units:

#### 12 units

- PHARMAC 4T12 - Senior Thesis

(See *Program Note 2* above.)

Winter Term: 15 units:

#### 6 units

from

- HTHSCI 4TE3 - The Teaching Hospital
- PHARMAC 4AA3 - Advanced Topics in Pharmacology
- PHARMAC 4D03 - Drug Design
- PHARMAC 4E03 - Social Pharmacology

#### 3 units

from

- *Course List*

#### 6 units

- Electives

#### CO-OP PROGRAM CHART

	FALL TERM (September to December)	WINTER TERM (January to April)	SPRING/SUMMER TERM (May to August)
<b>Level III</b>	Academic Term Level III + SCIENCE 2C00 (if not completed) and SCIENCE 3C00	Academic Term Level III	Work Term SCIENCE 3WW0
<b>Level IV</b>	Work Term SCIENCE 4WW0	Academic Term Level IV	Work Term SCIENCE 5WW0
<b>Level V</b>	Senior Thesis	Academic Term Level IV	



# Integrated Biomedical Engineering and Health Sciences Program (IBEHS)

Michael G. DeGroot Centre for Learning, Room 3513, ext. 28347

<http://ibiomed.mcmaster.ca/>

**Faculty as of January 15, 2020**

## CO-DIRECTORS

**Hubert de Bruin**/B.Eng., M.Eng., Ph.D. (*McMaster*), P.Eng.

**Michelle L. MacDonald**/B.Sc., Ph.D. (*McMaster*)

## ASSOCIATE DIRECTOR

**Colin McDonald**/B.Sc., Ph.D. (*Western Ontario*), P.Eng.

## PROGRAM MANAGER

**Alexa Béhar-Bannelier**/B.Com. (Honours) (*McMaster*)

The Integrated Biomedical Engineering and Health Sciences (IBEHS) Programs are offered jointly by the Faculty of Engineering and the Faculty of Health Sciences. These programs lead to the B.Eng.BME or a B.H.Sc. (Honours) degree.

At McMaster, IBEHS students take a common Level I program comprising Mathematics, Materials, Physics, Chemistry, Cellular and Molecular Biology, Graphics Design, Introduction to Professional Engineering and Design, Computation and complementary studies electives. The specialized programs are entered at Level II.

All Level I students who wish to be reviewed for admission to a Level II program in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program for the following Fall/Winter term must submit an Application of Admission to Level II through MOSAIC by the University stated deadline. Students in the IBEHS program must rank both degree options in order of preference, and are permitted to rank up to twelve program choices in total. Rank ordering must be done very carefully because once admitted to a program, no further consideration is given to lower ranked choices. Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0. All Level II programs are limited enrollment and entry into a Level II program is competitive. The admission into each Level II program is determined by the Cumulative Grade Point Average (GPA) and order of ranked programs. All McMaster University courses completed (including electives and upper year courses) are calculated into Cumulative Grade Point Average (GPA) up to the time of Level II program admission review. Grades earned in summer school, after program admission review, will not change student Level II program eligibility. A student in IBEHS I with a Grade Point Average (GPA) less than 4.0 can no longer continue in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program.

Students must follow the program requirements of the Calendar in effect when they enter Level II.

Courses offered by the IBEHS program include two types of elective courses, which are governed by regulations, as follows:

- **Complementary Studies Electives** are broadening courses with subject matter that deals with central issues, methodologies and thought processes of the humanities and social sciences. In addition to ENGINEER 4A03, or equivalent, complementary studies electives are required in the IBEHS program.
- **IBEHS Technical Electives** are approved courses offered by the Integrated Biomedical Engineering & Health Sciences program or various departments throughout the University in subjects relevant to the particular program. A list is available on the program website.

## TRANSFERRING TO GRADUATE WITH A THREE-YEAR B.H.SC. DEGREE FROM THE B.H.SC. (HONOURS) HEALTH, ENGINEERING SCIENCE AND ENTREPRENEURSHIP (HESE) STREAM OF THE INTEGRATED BIOMEDICAL ENGINEERING AND HEALTH SCIENCES PROGRAM

Students who successfully complete at least 90 units including all admission requirements and program-specific course requirements up to the end of Level III of the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) stream of the Integrated Biomedical Engineering and Health Sciences Program, with a minimum Grade Point Average of 4.0 may request permission from the Integrated Biomedical Engineering and Health Sciences office for transfer to graduate with the B.H.Sc. (exit) degree.

## TRANSFERRING TO GRADUATE WITH A THREE-YEAR B.A.SC. DEGREE FROM ONE OF THE B.ENG.BME BIOMEDICAL ENGINEERING STREAMS OF THE INTEGRATED BIOMEDICAL ENGINEERING AND HEALTH SCIENCES PROGRAM

Students who successfully complete at least 90 units including all admission requirements and program-specific course requirements up to the end of Level III of one of the B.Eng.BME Biomedical Engineering streams of the Integrated Biomedical Engineering and Health Sciences Program, with a minimum Grade Point Average of 4.0 may request permission from the Office of the Associate Dean of Engineering (Academic) for transfer to graduate with the B.A.Sc. (exit) degree.

### IBEHS I:

- Integrated Biomedical Engineering and Health Sciences (IBEHS) I/  
Integrated Biomedical Engineering and Health Sciences (IBEHS) I Co-op

### LEVEL II PROGRAM(S) LEADING TO THE B.ENG.BME DEGREE INCLUDE:

- Chemical and Biomedical Engineering, Chemical and Biomedical Engineering Co-Op (B.Eng.BME)
- Civil and Biomedical Engineering, Civil and Biomedical Engineering Co-Op (B.Eng.BME)
- Electrical and Biomedical Engineering, Electrical and Biomedical Engineering Co-Op (B.Eng.BME)
- Engineering Physics and Biomedical Engineering, Engineering Physics and Biomedical Engineering Co-Op (B.Eng.BME)
- Materials and Biomedical Engineering, Materials and Biomedical Engineering Co-Op (B.Eng.BME)
- Mechanical and Biomedical Engineering, Mechanical and Biomedical Engineering Co-Op (B.Eng.BME)
- Mechatronics and Biomedical Engineering, Mechatronics and Biomedical Engineering Co-Op (B.Eng.BME)
- Software and Biomedical Engineering, Software and Biomedical Engineering Co-Op (B.Eng.BME)

### LEVEL II PROGRAM(S) LEADING TO THE B.H.SC. (HONOURS) DEGREE INCLUDE:

- Health, Engineering Science and Entrepreneurship (HESE) Specialization;  
Health, Engineering Science and Entrepreneurship (HESE) Specialization Co-Op (B.H.Sc.(Honours))

## Bachelor of Health Sciences (Honours)

### HEALTH, ENGINEERING SCIENCE AND ENTREPRENEURSHIP (HESE) SPECIALIZATION; HEALTH, ENGINEERING SCIENCE AND ENTREPRENEURSHIP (HESE) SPECIALIZATION CO-OP (B.H.SC.(HONOURS))

#### ADMISSION TO LEVEL II IBEHS PROGRAMS

Admission to either the B.H.Sc. (Honours) Health, Engineering Science and Entrepreneurship (HESE) specialization or the B.Eng.BME Biomedical Engineering (BME) specialization requires successful completion of all non-elective Level I IBEHS courses with a minimum Grade Point Average (GPA) of 4.0.

All students who successfully complete the first year of the program will have

a space in one of the two degree options. As enrolment is limited in each of the two degree options (HESE or BME), where there is more demand than spaces, competition will be based on first-year academic achievement. Students seeking admission to the BME specialization will be admitted to one of eight Level II Engineering programs (Chemical, Civil, Electrical, Engineering Physics, Materials, Mechanical, Mechatronics, or Software). Admission to a Level II Engineering program is guaranteed for all students who meet the general progress requirements. All engineering programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on GPA. Students who do not meet the requirements to proceed to Level II in May will have a *Pending* flag put on their allocation. The *Pending* flag will be removed in August if the student completes the requirements over the summer.

#### NOTES

- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EE0. IBEHS 2E00 will be added to the academic record for each 4 month work term.
- Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to eight units of research project or independent study courses. A full listing can be found on the IBEHS website.
- Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

#### REQUIREMENTS

##### LEVEL II: 30 UNITS

###### 21 units

- CHEM 1AA3 - Introductory Chemistry II
- HTHSCI 2E03 - Inquiry II: Biochemistry
- HTHSCI 2F03 - Human Physiology and Anatomy I
- HTHSCI 2FF3 - Human Physiology and Anatomy II
- IBEHS 2P03 - Health Solutions Design Projects II
- MATH 2Z03 - Engineering Mathematics III
- MATH 2ZZ3 - Engineering Mathematics IV

###### 6 units

- IBEHS 2E06 A/B - Health, Engineering Science and Entrepreneurship I

###### 1 course

- IBEHS 2R00 A/B - Current Research Initiatives I

###### 3 units

- electives

##### LEVEL III: 31 UNITS

###### 3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I

###### 13 units

- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 3G03 - Critical Appraisal of the Medical Literature
- IBEHS 3A03 - Biomedical Signals and Systems
- IBEHS 3P04 - Health Solutions Design Projects III: Analysis and Decision Making

###### 9 units

- HTHSCI 2K03 - Cell Biology
- IBEHS 3E06 A/B - Health, Engineering Science and Entrepreneurship II

###### 1 course

- IBEHS 3R00 A/B - Current Research Initiatives II

###### 6 units

- electives

##### LEVEL IV: 32 UNITS

###### 17 units

- IBEHS 4A03 - Biomedical Control Systems
- IBEHS 4B03 - Biomechanics
- IBEHS 4D03 - Introduction to Medical Imaging
- IBEHS 4F04 - Biomedical Instrumentation and Measurement
- IBEHS 4P04 - Health Solutions Design Projects IV: Economics and Project Management

###### 9 units

- HTHSCI 3E03 - Inquiry III: Advanced Inquiry in Health Sciences
- IBEHS 4E06 A/B - Health, Engineering Science and Entrepreneurship III

###### 1 course

- IBEHS 4R00 A/B - Current Research Initiatives III

###### 6 units

- electives

##### LEVEL V: 36 UNITS

###### 3 units

- IBEHS 4QZ3 - Modelling of Biological Systems

###### 21 units

- IBEHS 5E15 A/B - Health, Engineering Science and Entrepreneurship (Capstone)
- IBEHS 5R06 A/B - Current Research Initiatives IV

###### 12 units

- electives

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### INTEGRATED BIOMEDICAL ENGINEERING AND HEALTH SCIENCES (IBEHS) I/INTEGRATED BIOMEDICAL ENGINEERING AND HEALTH SCIENCES (IBEHS) I CO-OP

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#### NOTES

- As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete IBEHS 1EE0. IBEHS 2E00 will be added to the academic record for each 4 month work term.
- Admission to Level II Engineering and Biomedical Engineering programs requires completion of all 34 units of required IBEHS I courses. Students must maintain a Cumulative Grade Point Average (GPA) of 4.0. All programs have limited enrolment; should there be more applicants than the limiting number in any program, admission to that program will be based on the students Cumulative Grade Point Average. A student in IBEHS I whose Grade Point Average (GPA) is less than 4.0 can no longer continue in IBEHS.
- Students enrolled in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program may take up to 8-units of research project or independent study courses. A full listing can be found on the IBEHS website.
- Students enrolled in a B.Eng.BME program wishing to enrol in a research project or independent study course must have a faculty member supervisor or co-supervisor from the Faculty of Engineering.

#### REQUIREMENTS

##### 37 units total

##### LEVEL I: 37 UNITS

###### 10 units

- IBEHS 1P10 A/B - Health Solutions Design Projects I

###### 3 units

- CHEM 1E03 - General Chemistry for Engineering I

###### 6 units

- HTHSCI 1I06 A/B - Cellular and Molecular Biology

###### 9 units

- MATH 1ZA3 - Engineering Mathematics I
- MATH 1ZB3 - Engineering Mathematics II-A
- MATH 1ZC3 - Engineering Mathematics II-B

###### 6 units

- PHYSICS 1D03 - Introductory Mechanics
- PHYSICS 1E03 - Waves, Electricity and Magnetic Fields

### 3 units

- Complementary Studies  
(See *Elective Courses Available To Level I Students*)

### 2 courses

- BIOSAFE 1BS0 - Biosafety Training
- WHMIS 1A00 - Introduction to Health and Safety

## Michael G. DeGroot School of Medicine

Michael G. DeGroot Centre for Learning and Discovery, Room 3101, ext. 22141  
<https://mdprogram.mcmaster.ca>

### ASSOCIATE DEAN

**R.A. Whyte**, M.D., M.Ed., F.R.C.P.C.

REGIONAL ASSISTANT DEAN - NIAGARA REGIONAL CAMPUS

**A. Bell**, B.Arts.Sc., M.D., M.Sc., CCFP, FCFP

REGIONAL ASSISTANT DEAN - WATERLOO REGIONAL CAMPUS

**M. Mountjoy**, MD, PhD, CCFP(SEM), FCFP

PROGRAM MANAGER

**G. Pepper**

REGIONAL PROGRAM ADMINISTRATOR - NIAGARA REGIONAL CAMPUS

**C. Henderson**

REGIONAL PROGRAM ADMINISTRATOR - WATERLOO REGIONAL CAMPUS

**T. Everding**

The School of Medicine, established in 1965 and renamed the Michael G. DeGroot School of Medicine in 2004, offers major programs in undergraduate, postgraduate and graduate medical education. The clinical programs use not only the teaching hospital and ambulatory care and research facilities at the McMaster University Medical Centre division of Hamilton Health Sciences, but also the clinical teaching units at several of the major Hamilton hospitals and community health-care centres.

The Undergraduate Medical Program for the MD degree was initiated in 1969, graduating its first students in May 1972. Currently, 203 students will be admitted to the program.

### WATERLOO REGIONAL AND NIAGARA REGIONAL CAMPUSES

For the incoming classes, 28 of the 203 positions are designated to the Waterloo Regional Campus and 28 positions are designated to the Niagara Regional Campus. All applicants invited to the McMaster Multiple-Mini Interview (MMI) will be asked to rank their site choice (Hamilton, Waterloo Region or Niagara Region) as 1, 2, 3 or no preference. Offers of admission to the medical school will be made from the master rank list irrespective of geographical preference. Subsequent to filling the 203 positions, registrants to the class will be offered a position based on their preference and geographical background.

### The offer of admission is binding to a specific site.

Students accepted into the Waterloo Regional Campus and the Niagara Regional Campus will spend the first Medical Foundation in Hamilton. The costs associated with transportation and/or accommodation will be covered by the student. Each Regional Campus is approximately a one-hour drive from Hamilton.

The academic program operates on an 11 months-a-year basis in first and second year, and 8 months in third year and students qualify for the MD degree at the end of the third academic year. The curriculum has been designed to involve medical students in a broad range of human health problems throughout their education and to prepare them for effective working relationships with patients, colleagues and society.

Postgraduate training programs currently include: Anesthesia (and subspecialties), Clinical Investigator Program, Family Medicine (and

subspecialties), Internal Medicine (and subspecialties), Laboratory Medicine (and subspecialties), Obstetrics and Gynecology (and subspecialties), Oncology (and subspecialties), Pediatrics (and subspecialties), Psychiatry (and subspecialties), Public Health, Radiology (and subspecialties), and Surgery (and subspecialties).

More details on these postgraduate programs are available from the Postgraduate Medical Education Office.

## Three-Year Program

### UNDERGRADUATE MEDICAL (MD) PROGRAM

The three-year program in Medicine uses a problem-based approach to learning that should apply throughout the physician's career. The components have been organized in sequential blocks with early exposure to patients and case management.

### UNDERGRADUATE MD PROGRAM GOALS

The Undergraduate MD Program at McMaster University fosters a cooperative, supportive and respectful environment. The curriculum evolves continuously, responsive to the changing needs of Ontario society, nurturing the development of the following competencies at the time of graduation:

- **Medical Expert:** Students will be able to apply scientific principles from human biology, behaviour and population health to the solution of health problems; they will have the ability to seek out new information and evaluate this information critically.
- **Communicator/Collaborator:** Students will demonstrate effective communication skills, sensitive to the needs of patients and cognizant of the roles of other members of the health care team in delivering patient care.
- **Advocate/Resource Manager:** Graduating students will be knowledgeable about the determinants of health and be proactive advocates for their individual patients and for healthy public policy within the context of the health care system.
- **Scholar/Learner:** Students will be self-directed lifelong learners, whose exposure at McMaster to role models in research and clinical care will encourage them to apply innovative approaches to solving health care problems.
- **Self-Reflective Practitioner:** Graduating students will be expected to have developed an awareness of the influence of their attitudes, values and assumptions, how these affect their practice of medicine and the impact of the practice of medicine on themselves as individuals.

### THE PRE-CLERKSHIP CURRICULUM

The Pre-Clerkship curriculum focuses on the mastery of fundamental concepts in medicine. It continues the McMaster tradition of problem-based learning and incorporates important research findings from cognitive psychology. The curriculum is structured on the integration of critical concepts and each step of the curriculum is based on the growth of important concepts learned previously. The central focus of the pre-clerkship program is the tutorial. Tutorial problems are selected to illustrate concepts in a clinical setting and when students are exploring tutorial problems, they will be directed towards asking questions of "what", "why" and "how".

The Pre-Clerkship curriculum is divided into five foundations: four Medical Foundations that provide an introduction to all major organ systems and an Integration Foundation that focuses on the purposeful and structurally-supported consolidation of important concepts to improve readiness for Clerkship. A novel feature of the curriculum is a horizontal Professional Competencies curriculum which runs throughout the three years of the program. There is also elective time.

## LEARNING METHODS

In the Pre-Clerkship Foundations, the students are presented with a series of tutorial problems, requiring the understanding of underlying biological, population and behavioural principles, the appropriate collection of data and the critical appraisal of evidence. Learning by a process of inquiry is stressed. The class is divided into small groups of approximately 6-8 students, each with a tutor. In the tutorial session students develop a series of learning objectives from each tutorial case and negotiate how they will approach their learning tasks. They then acquire the knowledge and skills to meet the objectives of the Foundation in which they are working. They also learn to work as a team, helping and learning from peers. The study habits and sense of responsibility to self and others provide a basis for lifelong working and learning habits.

In the Professional Competencies curriculum, students work in groups of 8 to 10, with two facilitators, one an MD, the other a clinician from an allied health care field. Learning formats include large group sessions, small group tutorials, work with Standardized patients, role-plays, written projects and reflections which are collected as the student's Reflective Physician Portfolio.

To achieve the objectives of the Undergraduate Medical Program, students are introduced to patients within the first Foundation of the curriculum. In this way, students understand the relevance of what they are learning, maintain a high degree of motivation and begin to understand the importance of responsible professional attitudes.

Students admitted to the Undergraduate Medical Program have the responsibility and privilege of taking an active role in the planning and evaluation of the education program. Through representation on most policy-making and implementing committees, students can influence decisions in such areas as education, philosophy, faculty recruitment and curriculum design. It is expected that all students will participate in the continuing reappraisal and improvement of the program. Such participation is a hallmark of the Program.

## STUDENT ASSESSMENT METHODS

The assessment format has been designed to complement learning in the Undergraduate Medical Program. Assessment methods have been developed to measure how well the student achieves the stated educational objectives in the various components of the program. Continual assessment of the student occurs within the tutorial setting with input from their peers, faculty preceptors and the tutor.

Several short assessment exercises are required during each Foundation and at regular intervals during the Professional Competencies component of the program. At the completion of the Foundation or the Professional Competencies assessment period, the tutor or facilitator is responsible for the final summary statement of student learning progress. The tutor prepares a summary of the student's performance in the tutorials and all associated activities during that Foundation. The summary is available electronically to the student and to the student advisor electronically.

In addition to the tutorial-based assessment, the accumulation of medical knowledge is assessed at regular intervals by means of the Personal Progress Index. This is in a multiple-choice format. Results are available to the students for self-assessment and, in summary form, to the Student Advisor. The Personal Progress Index is in addition to, and does not replace, tutorial- and performance-based evaluation. The Program monitors student progress, and responds to students showing persistently low progress.

The acquisition of clinical and professional skills is assessed by clinical skills preceptors in each Foundation and in Clerkship. Also, students participate in an Objective Structured Clinical Evaluation (OSCE) on an annual basis.

The Program Evaluation and Student Assessment Committee (PESA) has the responsibility of working with the Medical Program to assist with the development and implementation of valid and reliable assessment methods to provide timely and helpful information to assist students and faculty in assessing progress and performance. Continuation in the Program is subject to satisfactory performance.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC														
02	04	06	08	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52
												Introduction to Profession & Orientation to Program		PROFESSIONAL COMPETENCIES				Medical Foundation 1 Resp - Cardio		Medical Foundation 2 Renal Heme & Neoplasia		VACATION			
			Midwinter Break	Medical Foundation 3 GI - Nutrition Endocrinology Reproduction				Medical Foundation 4 MSK - Neuro - Brain & Behaviour				Post-MF 4 Elective		Summer Break		Integration Foundation Systems Review Complex & Chronic Care Immunology - Host Defence Neoplasia				Clerkship	VACATION				
PROFESSIONAL COMPETENCIES												PROFESSIONAL COMPETENCIES													
Clerkship												Summer Break		Clerkship				Wellness Weekend		Clerkship	VACATION				
Clerkship Reflective Interviews	PROFESSIONAL COMPETENCIES				Clerkship		PROFESSIONAL COMPETENCIES				Concept Integration & Review														

## CURRICULUM PLAN - COMPASS CURRICULUM

### MEDICAL FOUNDATION 1:

This 11-week Foundation begins with an in-depth introduction to:

- areas of personal and professional development that will be required to study medicine;
- the pedagogies and assessments that are employed in the Program;
- the healthcare systems in which students will be learning and working; and
- the policies and practices of the MD Program.

Students' knowledge- and skill-development then focuses on the respiratory and cardiovascular systems' contributions to concepts of oxygenation and homeostasis. All students study in Hamilton for this Foundation.

### MEDICAL FOUNDATION 2:

This 8-week Foundation focuses on the renal and hematologic systems' contribution to concepts of oxygenation and homeostasis. Students' knowledge- and skill-development also addresses the immunologic, and neoplastic aspects of hematology. Students study in their assigned campus for this Foundation and subsequent Foundations.

### MEDICAL FOUNDATION 3:

This 12-week Foundation focuses on concepts of nutrition, energy, homeostasis, and reproduction through knowledge- and skill-development that centers on the digestive, endocrine, and reproductive systems. Following this Foundation, students have a one-week break from study.

### MEDICAL FOUNDATION 4:

This 12-week Foundation focuses on concepts of locomotion and of neurosensory and behavioural responses to the environment through knowledge- and skill-development that centers on the musculoskeletal system, the neurological system, and psychiatric (brain & behaviour) medicine.

### INTEGRATION FOUNDATION:

This 12-week Foundation focuses on review of key concepts from the four Medical Foundations in the context of

- complex, multi-system diseases;
- chronic illness; and,
- concepts centering on immunology, host defense, and neoplasia.

The Integration Foundation allows students to consolidate medical concepts and skills, clinical skills, and professional competencies, offering an opportunity to enhance clinical transfer and support students' transition to and readiness for Clerkship.

### PROFESSIONAL COMPETENCIES

The Professional Competencies curriculum is longitudinal. There are seven learning domains of this component of the curriculum: effective communication; health



equity and determinants of health; interprofessional education; medical decision-making; moral reasoning and ethical judgment; professionalism and self-awareness; and social, cultural, and humanistic dimensions of health. During the Pre-Clerkship, students are assigned to a small group of 8-11 students at the beginning of MF1 and they remain with this group until the end of MF5. Each group is co-facilitated by a physician and an allied health professional who bring a complementary skill and model inter-professional relationships.

During the Clerkship, the curricular content relating to the Professional Competencies domains becomes integrated into the core teaching in each clerkship rotation and is developed by the clerkships in their own formats.

#### THE CLERKSHIP

Clerkship is the prime opportunity for students to participate in the direct care of patients while continuing to learn the knowledge, skills and attitudes required to become a physician. The Clerkship curriculum is firmly linked to the Pre-clerkship concept-based curriculum and includes continuation of the Professional Competencies curriculum. The student moves from “virtual” tutorial cases to experiencing the care of real patients and populations. Students integrate good habits of learning and assessment into the hospital and clinic environments. Students continue to have periods of dedicated teaching time throughout the core clerkship program. This clerkship-specific teaching includes: small group tutorials, web-based group tutorials, e-modules, and guided self-study. The core Clerkship program consists of rotations in Internal Medicine, Specialty Selective, Orthopedic Surgery, Surgery, Family Medicine, Anesthesia, Psychiatry, Pediatrics, Obstetrics and Gynecology, and Emergency Medicine. Clerkship Electives allow students to hone their skills in a variety of clinical areas as well as have the opportunity for dedicated research time. The Clerkship rotations take place in hospitals and clinics in the Hamilton, Niagara, Brant, Haldimand-Norfolk, Waterloo, and Halton regions. In the winter of their third year of medical school, students have a three-week break aligning with the national residency interview period.

#### ELECTIVES

Elective studies form an integral part of the Curriculum Plan. They may be considered the epitome of self-directed learning, since students must define goals for electives which are appropriate for their own learning objectives. These objectives represent specific areas of educational need or interest. The responsibility for planning electives rests with each student in collaboration with the student advisor.

The two types of electives in the Undergraduate Medical Program are:

- **Block Electives:** These are blocks of curriculum time dedicated to full-time elective activities. Their satisfactory completion is a mandatory component of the Undergraduate Medical Program. Block Electives occur after Medical Foundation 4 and during the Clerkship, for a total of 24 weeks. To achieve diversification, students must adhere to the National Diversification Policy. [https://mdprogram.mcmaster.ca/docs/default-source/general-resourcespage/electives/electives\\_diversification\\_policy.pdf?sfvrsn=4](https://mdprogram.mcmaster.ca/docs/default-source/general-resourcespage/electives/electives_diversification_policy.pdf?sfvrsn=4)
- **Horizontal Electives:** These observership/shadowing experiences are undertaken concurrently with other parts of the curriculum. Horizontal electives are entirely optional, not being required for completion of the program, but are used to explore or review a specific area of knowledge or practice in more detail.

It is particularly important that the student’s advisor be involved in all decisions concerning the selection and carrying out of horizontal electives.

#### CONCEPT INTEGRATION AND REVIEW (CIR)

Concept Integration and Review (CIR) is the final 6-week block of the Program, after Clerkship and before graduation. The goals of the block are to help students review and synthesize important concepts that are essential for transition to residency and to help prepare students for the MCCQE Part 1 Exam through concept review and exposure to sample questions. Dedicated self-study time throughout the 6-week block is provided and students are

expected to review area content prior to attending scheduled sessions. Large group sessions focus on highlighting key concepts and exam writing skills are provided by content experts.

#### ENRICHMENT PROGRAM

The purpose of the Enrichment Program is to stimulate an interest in research and scholarly activity among medical students and to attract some to careers in academic medicine and medical research. These experiences will not normally begin until the Pre-Clerkship is completed. Applications will not be considered for the Post-Clerkship period.

#### MD/PH.D. PROGRAM

The McMaster MD/PhD Program has been training future clinician-scientists since 2007. The rapid pace of healthcare-related research and discovery requires exceptional people who are trained to bridge the gap between basic sciences and clinical application. The McMaster MD/PhD program combines the strength of a unique, patient-oriented medical education with a strong, internationally renowned healthcare research environment.

At present time, students enrolled in the MD/PhD program may carry out the PhD component of their studies in one of the following graduate programs affiliated with the Faculty of Health Sciences at McMaster University: Medical Sciences, Biochemistry, Health Research Methodology, Neurosciences, Biomedical Engineering, Chemical Biology and Health Policy.

Minimum criteria for admission is a 4-year Honours BSc or BHSc with a Grade Point Average (GPA) of 3.8 or greater on a 4 point scale in the final two years of Bachelor’s degree study (with an overall 4-year GPA of at least 3.00/4.00), and a score of 127 or higher on the Critical Analysis and Reasoning (CARS) section of the MCAT. The MCAT must be written within five years of the application year. Please note that McMaster will use the most recent MCAT score for those who write the MCAT more than once.

As some PhD programs may have additional requirements specific to their program, applicants should review the relevant sections of the McMaster School of Graduate Studies Calendar.

Eligible students will have a proven record of research involvement at the undergraduate or graduate level. Existing in-program Master’s students or students in their first year of PhD training in an eligible Health Sciences Affiliated Graduate program at McMaster University are also welcome to apply to the MD/PhD Program with the written consent of his or her research supervisor. Students from other Universities may apply if they will finish their graduate degree requirement before enrolling in the McMaster MD/PhD program. Existing McMaster MD students with a strong research background are also welcome to apply in their first year of medical school.

To apply to the MD/PhD Program, applicants must submit a separate application in the McMaster MOSAIC system, in addition to the OMSAS application. To gain admission, applicants must be accepted to both the MD Program at the Michael G. DeGroote School of Medicine and one of the PhD programs listed above. Application to the MD component is through OMSAS and must be submitted by the deadline they set. The PhD component of the application is due on November 1st of the application year. Further information and the PhD application can be found at: <http://fhs.mcmaster.ca/mdphd/>

#### REGULATIONS FOR LICENCE TO PRACTISE

A degree in medicine does not in itself confer the right to practise medicine in any part of Canada. To acquire this right, university graduates in medicine must hold a certificate of the College of Physicians and Surgeons of the province in which they elect to engage in practice. Students in Ontario medical schools will be required to register with the College of Physicians and Surgeons of Ontario (CPSO). Students intending to practise outside Ontario are urged to consult the licensing body of that province regarding registration. Licensing requirements vary somewhat among the provinces. The current Ontario requirements for issuance of a Certificate of Registration Authorizing Independent Practice are:

- Certification by the Royal College of Physicians and Surgeons of Canada

or the College of Family Physicians of Canada;

- Parts I and II of the Medical Council of Canada Qualifying Examination;
- Canadian Citizenship or Landed Immigrant Status.
- In general, students are expected to obtain a certificate from either the College of Family Physicians of Canada or from the Royal College of Physicians and Surgeons of Canada in order to be licensed in the province of Ontario.

#### **CANADIAN RESIDENT MATCHING SERVICE (CARMS)**

The Matching Service is a clearing-house designed to help final year medical students obtain the post-MD program of their choice, and to help program directors obtain the students of their choice. It provides an orderly method for students to decide where to train and for program directors to decide which applicants they wish to enroll. For both students and directors, it removes the factors that generate unfair pressures and premature decisions. In the winter of their third year of medical school, students have a three-week break aligning with the national residency interview period.

#### **BASIC LIFE SUPPORT TRAINING**

All students are required to provide evidence of a current Basic Life Support (BLS) for Health Care Providers (C) certificate (i.e. Red Cross CPR/AED Level HCP; St. John Ambulance Level C HCP; Heart and Stroke BLS for Healthcare Provider C) by July 31st of the year of entry. Information is sent to successful applicants prior to registration. The cost of this course is the responsibility of the student. Courses are readily available in most communities.

#### **HEALTH SCREENING**

The Ontario Public Hospitals Act requires that all persons working in a hospital setting meet certain criteria regarding surveillance for infectious diseases. In order for the requirement of the legislation to be met, students are required to complete the health screening process prior to registration in the medical program and annual recertification before starting each academic year. Failure to do so will result in suspension of clinical work. Information will be sent to successful applicants prior to registration.

#### **POLICE RECORDS CHECK**

Through the course of their medical school program, all medical students will serve vulnerable populations. In an effort to protect these vulnerable people against potential risk of harm, the Ontario Faculties of Medicine and many clinical agencies require that all medical students provide an annual Vulnerable Sector Check (VSC). As a condition of continued registration, students must submit an original VSC by July 31st of their incoming year and on an annual basis each academic year for which they are registered. VSCs are site specific therefore McMaster University must be listed as the requesting institution.

A Vulnerable Sector Check will include the following information:

- Criminal convictions from the National Canadian Police Information Centre (CPIC) database and/or local databases
- Summary convictions, for five years, when identified
- Findings of Guilt under the Youth Criminal Justice Act within the applicable disclosure period and only for persons applying for a position with a government agency (federal, provincial, municipal)
- Outstanding entries, such as charges and warrants, judicial orders, Peace Bonds, Probation and Prohibition Orders
- Absolute and conditional discharges for 1 or 3 years respectively
- Non-conviction dispositions including, but not limited to, Withdrawn and Dismissed and where it meets the Exceptional Disclosure Assessment
- Not Criminally Responsible by Reason of Mental Disorder
- All record suspensions as authorized for release by the Minister of Public Safety

Files of applicants who have presented a Not Clear Vulnerable Sector Check will result in consideration by the Police Records Check Advisory Panel as outlined in the FHS Police Record Check Policy (<https://fhs.mcmaster.ca/pcbe/documents/FHSPoliceRecordCheckPolicyJune262019.pdf>).

#### **LAPTOP REQUIREMENT**

The MD Program delivers lectures and course materials online, and communications with students and faculty between the three campuses through the use of email as well as various software programs, including web conferencing capabilities.

#### **TRANSPORTATION COSTS**

Students are expected to travel outside their home campus area for mandatory teaching sessions, clinical placements and clerkship rotations. Students are responsible for their own transportation and associated costs in order to complete program requirements. It is anticipated that further rotations will be developed in rural, under-served and remote areas. In certain cases, there will be some external funding available.

For students who are accepted into the Waterloo Regional Campus and the Niagara Regional Campus, the first Medical Foundation will be spent in Hamilton and students will be expected to cover the cost of commuting and/or accommodations. Each Regional Campus is approximately a one-hour drive from Hamilton.

The elective experience can be spent in various activities utilizing local, regional or distant resources. Students are expected to cover all transportation and associated costs for electives. Funding may be available for elective travel expenses through a number of funding programs.

#### **ADMISSION POLICY FOR THE UNDERGRADUATE MEDICAL PROGRAM**

The official admission policy and deadlines for the Undergraduate Medical Program shall be as published in the Ontario Medical School Information Booklet. This booklet is available through:

#### **Ontario Medical School Application Service (OMSAS)**

170 Research Lane  
Guelph, Ontario, N1G 5E2  
(519) 823-1063  
<http://www.ouac.on.ca/omsas>  
[omsas@ouac.on.ca](mailto:omsas@ouac.on.ca)

Please note that the admission policy is reviewed annually, and the admission requirements from the previous year may not apply. Because of the nature of the selection procedures, deadlines are strictly enforced. All relevant documentation must be provided by the specified deadlines. Applicants must follow the instructions precisely. All applicants should be aware that the Admissions Office is committed to the protection of personal information. Use of personal information is strictly limited to the appropriate handling of applications, record-keeping for those admitted to the program, and research intended to further the efficacy of Medical Education Program procedures. **The University reserves the right to change the admission requirements at any time without notice.**

#### **ADMISSION AND REGISTRATION**

Registration in the Undergraduate Medical Program implies acceptance by the student of the objectives of the program, and the methods which evaluate progress toward the achievement of those objectives. The following describes the regulations governing admission and registration in the Undergraduate Medical Program. The final application deadline is October 1st. **The deadline is strictly enforced.**

#### **ADMISSION POLICY AND PROCEDURE**

The intention of the McMaster Undergraduate Medical Program is to prepare students to become physicians who have the capacity and flexibility to select any area in the broad field of medicine. The applicant is selected with this goal in mind. Faculty, medical students and members of the community are involved in the admissions process.

Application to the medical program implies acceptance by the applicant of the admission policies and procedures, and the methods by which candidates are chosen for the program. Applicants who will not be ready or able to begin studies as expected may withdraw their applications without prejudice.

Application fees cannot be refunded.

Several hundred applicants will be invited for interviews in Hamilton in March

or April. From this group a class of 203 is selected.

All applicants are notified in writing, by McMaster University, of the results of their application. These letters will be sent electronically to applicants on the second Tuesday in May.

#### **FALSIFICATION OF ADMISSION INFORMATION**

Applicants should understand that where it is discovered that any application information is false or misleading, or has been concealed or withheld, the application will be deemed to be invalid. This will result in its immediate rejection. If the applicant has already been admitted and registered as a student, withdrawal from the University may be required. The MD Admissions Committee will normally not allow the applicant to reapply to the Medical Program for seven (7) years.

#### **ESSENTIAL SKILLS AND ABILITIES REQUIRED FOR ENTRY TO A MEDICAL DEGREE PROGRAM**

The Ontario Faculties of Medicine are responsible to society to provide a program of study that graduates Doctors of Medicine with the knowledge, skills, professional behaviours and attitudes necessary for postgraduate medical training and independent medical practice in Canada. Graduates must be able to diagnose and manage health problems and provide comprehensive, compassionate care to their patients. For this reason, students in the MD program must possess the cognitive, communication, sensory, motor, and social skills necessary to interview, examine, and counsel patients, and competently complete certain technical procedures in a reasonable time while ensuring patient safety.

In addition to obtaining an MD degree, and completing an accredited residency training program, an individual must pass the licensure examinations of the Medical Council of Canada (MCC) in order to practice medicine in Canada. Therefore, MD programs have embedded expectations of both knowledge- and skills-based competencies. Prospective candidates should be aware that, cognitive abilities, physical examination proficiencies, management skills, communication ability, and professional behaviours are all evaluated in timed simulations of patient encounters.

All students must therefore have the required skills and abilities described in the Section on Technical Standards. These are standards that are necessary for success in the MD Program, and to be sufficiently competent to participate in supervised residency training. All individuals are expected to review this document to assess their ability to meet these standards. The document can be found at <https://mdprogram.mcmaster.ca/md-program-admissions/who-should-apply>.

#### **ACADEMIC ELIGIBILITY REQUIREMENTS**

All applicants must fulfill the requirements described below:

- By May of the year of entry, applicants must have completed a minimum of three years of undergraduate work. To satisfy the minimum requirements, academic credentials obtained from a Canadian University must be from an institution with academic standards and performance consistent with those of member institutions of the Council of Ontario Universities (COU). The applicant must be able to demonstrate a high level of academic achievement consistently throughout their undergraduate career.
- A minimum of 15 full-courses, or 30 half-courses (three years) of Undergraduate university work from a recognized university is required. There is no requirement that applicants carry a full course load. Marks from supplementary and summer courses will be included in the grade point average calculation. If requested, applicants must provide evidence that this requirement has been met by May 30th of the year of entry. Courses graded only by the assignment of Pass or Credit are counted for credit, but will not be included in the GPA calculation. In this case, a minimum of five half-year or five full year courses with letter or numerical grades is required.
- An applicant who has completed a diploma at a CEGEP must have completed by May of the year of entry, at least two additional full

academic years of degree credit work at an accredited university.

- Applicants who have completed the requirements for a baccalaureate degree in less than three years by the October 1st deadline, are also eligible.
- By October 1st, applicants must have achieved an overall simple average of at least a 3.0 on the OMSAS 4.0 scale. While an overall simple average of at least 3.0 on the OMSAS 4.0 scale meets the minimal criterion for consideration for admission, prospective applicants should be aware that given the rapidly rising level of competition for a limited number of positions, a significantly higher GPA would provide them with a more reasonable chance of admission. Due to changes from year to year in the level of competitiveness, an exact figure in this regard cannot be provided.
- Medical College Admissions Test (MCAT) - The MCAT is required for application and must be written within five years of the application year. The score from the Critical Analysis and Reasoning section will be used in both formulae (offer of interview and offer of admission). A minimum score of 123 on the Critical Analysis and Reasoning component is required. All other MCAT component scores **will not be considered** in the selection process. For those applicants who write the MCAT more than once, the score from the most recent MCAT will be used.
- Computer-based Assessment for Sampling Personal characteristics (CASPer): All applicants to the Michael G. DeGroote School of Medicine, McMaster University will be required to complete a 90 minute computer-based test, called CASPer, as part of the selection process. CASPer is a web-based assessment of interpersonal skills and decision-making, to be completed at a computer. Applicants must register for CASPer, which is offered in the Fall of each application year, at [www.takecasper.com](http://www.takecasper.com).

No other aspects of the application will be considered if these requirements are not met.

#### **INDIGENOUS APPLICANTS**

With an understanding that Indigenous learners can face specific barriers or challenges when pursuing higher education, schools and programs within McMaster's Faculty of Health Sciences have facilitated admissions streams for applicants with Indigenous North American (First Nations, Inuit or Métis) ancestry. This process is intended to provide equitable access to Indigenous applicants and aligns with the intent of the Truth and Reconciliation Commission of Canada Calls to Action. Applicants wishing to apply through McMaster's FIAP need to complete the self-identification application in addition to the McMaster University and program specific application processes. The FIAP application is submitted to McMaster's Indigenous Health Task Force (IHTF) through the ISHS office website.

Information on the policy, application requirements and the online application can be found at: <https://ishs.mcmaster.ca/admissions/self-identification>.

**One** self-identification application is used for all Faculty of Health Sciences programs that have a facilitated Indigenous admissions stream, and should only be completed once even if an applicant applied to multiple programs. Applicants identify the program(s) they applied to on the Self-identification Application. The applicant is responsible for ensuring the Self-identification Application is submitted by the application deadline(s) for the program(s) they applied to in addition to completing any other application required for that program(s). If you applied to multiple Faculty of Health Sciences programs, the Self-identification Application must be completed by whatever the earliest deadline date is for the programs for which you have applied to.

Indigenous applicants are also required to complete the Undergraduate MD Program application package as provided by the Ontario Medical School Application Service (OMSAS).

Applicants must meet the same minimum academic criteria for admission as set out for the general pool of candidates and have three or more years of undergraduate degree-level courses by May of the year of entry with an overall GPA of at least 3.0 as calculated on the OMSAS 4.0 scale and a minimum score

of 123 on the Critical Analysis and Reasoning component of the MCAT written within five years of the application year (\*see notation below) and CASPer.

\* In order to reduce barriers for Indigenous applicants, provision of MCAT critical analysis and reasoning score may be deferred beyond October 1st. Those Indigenous applicants wishing to delay taking the MCAT until after invitations to interview are sent out are free to do so, but should be aware that they **MUST** forward a minimum MCAT critical analysis and reasoning score of 123 to the Admissions Office by the offer date (the second Tuesday in May), in order to maintain eligibility. Indigenous applicants wishing to explore this option should book their MCAT in the Fall to be certain of a spot. A cancellation fee would be applied by MCAT if the applicant is not successful in obtaining an interview and subsequently cancels their MCAT test.

#### **GEOGRAPHICAL CONSIDERATION**

The geographical status of the applicant is determined from the Autobiographic Sketch. Applicants may be asked to provide evidence of geographical status. In selecting applicants for interview, the bona fide place of residence will be based upon: 1) the province of Ontario; or 2) the rest of Canada and other countries. To qualify for Ontario status, an applicant must be a Canadian citizen or permanent resident of Canada by October 1st, and have resided for at least three years in the province of Ontario since the age of 14 by the date of possible entry into the program.

#### **TRANSCRIPT REQUIREMENTS AND TRANSCRIPT REQUEST FORMS (TRF)**

All transcripts must be ordered by OMSAS via the Transcript Request Form (TRF) where that procedure has been established. Applicants must request all other transcript materials prior to September 15th, to allow adequate time for processing requests and for receipt at OMSAS by the prescribed deadline. If an applicant is registered at a post-secondary institution at the time of the application deadline and that registration is not reported on the transcript, the applicant must arrange to have the Registrar of the institution send a **Statement of Registration** to OMSAS by October 1st. This statement must indicate the in-progress course name(s) and number(s). Evidence to show that applicants requested transcripts and Registrar statements in a timely fashion may be requested by McMaster University. Applicants should retain all receipts and correspondence related to their transcript request.

It is **entirely the applicant's responsibility** to ensure that all of the above are received at OMSAS by October 1st. **Failure by the applicant to meet these requirements will result in the disqualification of the application.**

All transcripts must be submitted directly to OMSAS by the post-secondary institutions attended. McMaster requires that applicants provide transcripts of all courses/programs attended at any post-secondary institution. This includes community colleges, CEGEPs, junior colleges, pre-university programs, etc. Failure by the applicant to comply with the instructions or to meet the deadlines will result in disqualification of the application.

#### **GRADUATE STUDENTS**

Those applicants with a completed and conferred Master's or Ph.D. at the time of application will receive a small amount of extra weighting in the formula used to determine the likelihood of invitation to an interview. Individual grades for course work taken as part of a graduate degree will not be included in the calculation of the grade point average.

Graduate students enrolled in a graduate program at the time of application must arrange for their Supervisor, a member of their Supervisory Committee, or the Chair of the Department to provide a letter indicating they are aware the applicant is intending to apply to medical school. Applicants should arrange for this letter to be received at OMSAS by October 1st. If the applicant's graduate degree supervisor is acting as one of their references, a second letter is not required.

#### **CREDENTIALING OF NON-CANADIAN GRADES**

Applicants, Canadian or non-Canadian, who have not met the minimum course **number** criterion utilizing their Canadian data and require inclusion of their international education data to meet the minimum course number criterion

are required to have their foreign transcript assessed by World Education Services (WES). Credentialing assessment means converting foreign academic credentials into their Ontario educational equivalents. A course-by-course evaluation along with the calculation of an overall GPA is required. Applicants must have their transcripts sent directly from their university to WES *and* OMSAS and be able to prove (with dated letter and dated post office receipt) that an attempt was made to have the transcript issued by their university and sent to OMSAS by October 1st. Those requiring WES assessment must also ensure that transcripts are received by WES in time for their assessment to reach OMSAS by October 1st. A WES Assessment is not required for courses or programs completed on foreign exchanges.

#### **ENGLISH LANGUAGE PROFICIENCY**

Applicants whose first language is not English must satisfy by October 1st, at least one of the following conditions:

- Provide evidence of a combined score on the TOEFL iBT test with an overall score of at least 86 with minimum scores of 20 in each of the four components, or the equivalent on other recognized tests has been achieved (McMaster University code for TOEFL test score submissions is #0936); or
- Have attended an educational institution, where instruction was in English, for at least three years; or
- Have resided for at least four years in an English-speaking country.

#### **INTERVIEWS**

Several hundred applicants will be invited to Hamilton for an interview. Because the interviews involve many other people, applicants must attend on the date and time specified. Attendance at an in-person interview is mandatory in order to be considered for admission. Applicants are responsible for their own travel expenses.

The interview process entitled the Multiple Mini Interview (MMI), is primarily composed of a series of ten-minute encounters over a two-hour period. Due to the nature of the MMI, videoconference or telephone interviews are not possible.

#### **SELECTION**

All the information resulting from the process described above, as well as the Confidential Assessments from referees, may be reviewed and used in the final selection. Applicants will be notified in writing, by McMaster University, of the results of their application. These letters are sent electronically to applicants on the second Tuesday in May. Anyone accepting an offer of admission must provide, within two weeks of acceptance, a deposit in the amount of \$1,000 (Canadian), non-refundable, which will subsequently be applied towards tuition. The MD Program begins in mid-August. Students accepting their offer of admission must be available to begin the program on the schedule start date and must attend all day-time program-related sessions.

#### **APPLICATION FOR DEFERRED REGISTRATION**

Deferred registration may be granted **only** under **exceptional** circumstances. The request for deferral must normally be submitted within two weeks of the offer of admission and will be considered by the UGME Deferral Board. Deferral for parental/family, illness or other personal/compassionate reasons may be considered if received after this deadline where circumstances did not allow the applicant to meet the deadline.

#### **INTERNATIONAL APPLICANTS**

Interested International applicants may apply through the regular process. International (Visa) students should be aware that admission to the Undergraduate MD Program does not confer eligibility to apply subsequently through the Canadian Residency Matching Service (CaRMS) for a residency training position in Canada. Applicants should check the CaRMS web site (<http://www.carms.ca/>) for further information.

#### **ADVANCED STANDING/TRANSFER**

The structure of the McMaster Program requires that all students begin in Medical Foundation 1. There is no provision for advanced standing or transfer into the program.



### UNSUCCESSFUL APPLICANTS

Application files, including transcripts, from one year are not held over to another year. If an unsuccessful applicant wishes to reapply, a new application package, including supporting documentation must be submitted, using the OMSAS Application and the OMSAS Information Booklet, for the new admission selection cycle.

### RETENTION OF DOCUMENTS

All documentation submitted in support of an application for admission becomes the property of the University and is not returnable. If an applicant is not accepted, or fails to enroll following acceptance, the identifiable documentation will be destroyed at the end of the admissions cycle in keeping with university policy.

### FINANCIAL INFORMATION

Financial difficulties are among the most frequent problems experienced by students in undergraduate medical schools. At McMaster, these are intensified by the lack of opportunity for summer employment.

In this situation, it is incumbent on students admitted to the MD Program to clarify immediately their personal financial situation and to secure or identify sufficient support to meet their financial obligations over the subsequent three years. The Undergraduate MD Program cannot assume this responsibility.

In 2019-2020, the academic fees (tuition and student supplementary fees) for a student in the McMaster Undergraduate Medical Program were:

### CANADIAN CITIZENS AND LANDED IMMIGRANTS

<b>Year I</b>	\$26,115.13
<b>Year II</b>	\$26,115.13
<b>Year III</b>	\$26,115.13

### INTERNATIONAL (VISA) STUDENTS

<b>Each Year</b>	\$95,985.17
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In addition, the cost of books and diagnostic equipment for a Year I student was approximately \$3,000. It is strongly recommended that students purchase the full complement of medical equipment necessary for clinical skills.

Equipment lists and special prices will be offered to medical students within the first few months of medical school. Students are also responsible for their transportation costs related to their training.

Financial assistance is available to Ontario residents from the federal and provincial governments through the Ontario Student Assistance Program (OSAP). To be eligible a student must be a Canadian Citizen or permanent resident of Canada and fulfill certain requirements for residency in Ontario. Students who are legal residents of other provinces need to check with their respective provincial financial aid programs about eligibility for support prior to acceptance. In addition, the following sources of funding are available to undergraduate medical students:

### BURSARIES

There is a bursary program which has been developed by the Faculty of Health Sciences and the central University campus. Bursaries are awarded to students who are Canadian citizens and demonstrate financial need. All bursaries are distributed during the late fall of each year. Bursaries are intended to offset provincial financial assistance and cannot supplement the full cost of medical education.

### DONOR BURSARIES AND ELECTIVE TRAVEL AWARDS

The Undergraduate Medical Program has in the past indicated its preparedness to recognize students who distinguish themselves and the University by virtue of their scholarship and their contribution to the university community. At the same time, the School has indicated that the terms of reference for such awards should neither compromise the spirit of cooperative scholarship which characterizes its MD Program nor replace its priority of concern for financial assistance awards.

A growing number of estates and agencies have donated funds to the University and the Undergraduate Medical Program for purposes of recognizing scholastic merit among medical students. In order to meet the requirements of these awards within the spirit of cooperative scholarship, these funds are available to support individual students in their pursuit of specific elective projects or activities. Both bursaries and elective travel awards can be accessed through MOSAIC during the annual UGME Bursary Program in September/October.

## School of Nursing

Health Sciences Centre, Room 2J36, ext. 22140

<http://www.fhs.mcmaster.ca/nursing>

VICE-DEAN (HEALTH SCIENCES) AND EXECUTIVE DIRECTOR, SCHOOL OF NURSING

**S. Carroll**/B.Sc. (Toronto), Ph.D. (McMaster), R.N.

ASSISTANT DEAN, UNDERGRADUATE NURSING EDUCATION

**J. Pierazzo**/B.Sc.N. (Western Ontario), B.Ed. (Brock), M.Sc.N., Ph. D. (Western Ontario), R.N.

PROFESSORS

**Andrea Baumann**/B.Sc.N. (Windsor), M.Sc.N. (Western Ontario), Ph.D. (Toronto), R.N.

**Maureen Dobbins**/B.Sc.N. (McMaster), Ph.D. (Toronto), R.N.

**Sharon Kaasalainen**/B.Sc.N. (McMaster), M. Sc. (Toronto), Ph.D. (McMaster), R.N.

**Susan Jack**/B.Sc.N. (Alberta), Ph.D. (McMaster), R.N.

**Maureen Markle-Reid**/B.Sc.N. (McMaster), M.Sc.N. (Toronto), Ph.D. (McMaster), R.N.

**Jenny Ploeg**/B.Sc.N., M.Sc.N. (Western Ontario), Ph.D. (Toronto), R.N.

**Ruta Valaitis**/B.A., B.Sc.N. (Windsor), M.H.Sc. (McMaster), Ph.D. (Toronto), R.N.

ASSOCIATE PROFESSORS

**Noori Akhtar-Danesh**/B.Sc., M.Sc. (Iran), Ph.D. (Newcastle-upon-Tyne)

**Pamela Baxter**/B.A. (Wilfrid Laurier), B.Sc.N, M.Sc., Ph.D. (McMaster), R.N.

**Denise Bryant-Lukosius**/B.Sc.N. (McMaster), M.Sc. (D'Youville), Ph.D. (McMaster), R.N.

**Michelle Butt**/B.Sc., B.N. (Memorial), M.Sc. (Queen's), Ph.D. (McMaster), R.N.

**Sandra Carroll**/B.Sc. (Toronto), Ph.D. (McMaster), R.N.

**Nancy Carter**/B.Sc.N. (McMaster), M.Sc. (D'Youville), Ph.D. (McMaster), R.N.

**Ruth Chen**/B.A. (California-Berkeley), M.Sc. (Yale), Ph.D. (McMaster), R.N.

**Michael McGillion**/B.Sc.N. (McMaster), Ph.D. (Toronto), R.N.

**Joanna Pierazzo**/B.Sc.N. (Western Ontario), B.Ed. (Brock), M.Sc.N., Ph.D. (Western Ontario), R.N.

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**Jennifer Skelly**/M.H.Sc., M.Sc. (McMaster), Ph.D. (Toronto), R.N.

**Patricia Strachan**/B.Sc.N. (McMaster), M.Sc. (Guelph), Ph.D. (McMaster), R.N.

**Olive Wahoush**/M.Sc. (Ulster), Ph.D. (Toronto), R.N.

ASSISTANT PROFESSORS

**Lynda Bentley Poole**/B.Sc.N. (McMaster), M.Sc.N. (Toronto), R.N.

**Kirsten Culver**/B.Sc. (Queen's), Ph.D. (McMaster)

**Bernice Downey**/B.Sc.N. (Ottawa), M.A., Ph.D. (McMaster)

**Michele Drummond-Young**/B.Sc.N., M.H.Sc. (McMaster), R.N.

**Kathy Fisher**/B. Comm. (McMaster), M.A.Sc. (Waterloo), M.Sc. (Toronto), Ph.D. (McMaster)

**Rebecca Ganann**/B.Sc.N., M.Sc., Ph.D. (McMaster)

**Ruth Hannon**/B.N.Sc. (Queen's), M.H.A. (Wales), M.S.F.N.P. (D'Youville), N.P.-P.H.C.

**Peter Helli**/B.Sc. (Guelph), Ph.D. (McMaster)

**Tracey Jewiss**/B.Sc.N. (Lakehead), M.Sc. (D'Youville), R.N.

**Yvonne Lawlor**/B.N. (New Brunswick), M.Ed. (Brock), R.N.

**Lynn Martin**/B.Sc.N. (*McMaster*), M.Sc.N. (*Western Ontario*), D.Ed. (*Toronto*), R.N.

**Terry McCurdy**/B.Sc. (*Waterloo*), M.Sc., Ph.D. (*McMaster*)

**Iris Mujica**/B.Sc.N., M.Sc.N., Ph.D. (*McMaster*), R.N.

**Amy Palma**/B.Sc., B.Sc.N. (*Toronto*), M.H.Sc. (*McMaster*), R.N.

**Maria Pratt**/B.A., B.Sc.N. (*McMaster*), M.Sc.N. (*Western Ontario*), Ph.D. (*McMaster*)

#### PROGRAM MANAGER

**C. Gibson**/B.A.

#### ACADEMIC ADVISORS

**L. Thornton**/B.A., M.Ed.

**A. van Baalen**/B.A.

#### **NOTE**

The School of Nursing has a large number of part-time faculty appointed from community health-care agencies. A complete list is available from the office of the Vice-Dean (Health Sciences) and Executive Director, School of Nursing.

## **The B.Sc.N. Program**

In 1942, McMaster University began its first program in Nursing, a cooperative effort between the University and the Hamilton General Hospital. Since the establishment of McMaster University's School of Nursing in 1946, students have received a Bachelor of Science in Nursing (B.Sc.N.) degree upon graduation. The program has functioned completely under the supervision of the University, while enjoying the full cooperation of community hospitals and agencies in the operation of its professional practice courses. In July 1974, the Schools of Nursing and Medicine became the Faculty of Health Sciences.

The B.Sc.N. Program promotes the development of nursing as a caring, client-centered, scientific and humanistic profession. With an emphasis on person-based learning within a problem-based approach, and group and self-directed learning, the program provides a general baccalaureate education in nursing for the preparation of professional nurses who will practise in a variety of health-care settings. Central to our mission is the preparation of nurses who will work to advance the health and well-being of individuals, families, communities and society. In fulfilling its mission, the B.Sc.N. Program promotes skills in its graduates to prepare them for life-long, self-directed learning, critical thinking, evidence informed decision making, advocacy and collective action.

Provincial legislation on entry to practice requires all new graduating nurses to have a baccalaureate degree in nursing. In response, McMaster University, Mohawk College and Conestoga College have formed an educational consortium to offer the McMaster Nursing degree through the McMaster Mohawk Conestoga B.Sc.N. Program. Currently the Basic (A) and Accelerated (F) Streams are offered at the McMaster site. Students wishing to register in the B.Sc.N. Program at McMaster should pay particular attention to the information which immediately follows this introduction. The Basic (A) and Post Diploma R.P.N. (E) Streams are offered at the Mohawk and Conestoga sites. Students who wish to register in the B.Sc.N. Program at either Mohawk or Conestoga College should refer to the Collaborative B.Sc.N. (A) and (E) Stream references throughout the School of Nursing section of the Calendar. Students are also advised to contact the Office of the Registrar at either Mohawk or Conestoga College for additional information.

**Please note that any information that is site specific is noted in the appropriate section of the Calendar; otherwise, information can be assumed to apply to students at all sites and in all streams of the B.Sc.N. Program.** In 2014 the B.Sc.N. Program and the Schools of Nursing at McMaster, Mohawk and Conestoga all received seven-year accreditation from the Canadian Association of Schools of Nursing, the highest level of accreditation possible.

In 2009, the B.Sc.N. Curriculum was renewed and is now called the

Kaleidoscope Curriculum. All streams share a common curriculum in their final year of the program.

Students will be expected to meet the program goals that were in place the year in which they entered. All students from all years have seen a change in emphasis in small group, tutorial classes with a renewed focus on the McMaster model of nursing and nursing education which has been in place since 1989. Consistent with the philosophy, the person is re-emphasized as the central focus for learning, and person-based learning within a problem-based approach has been adopted. In addition, students are exposed to different ways of knowing including empirical, ethical, personal, aesthetic and emancipatory.

Four types of courses are taken within the curriculum: (1) nursing (NURSING) courses (professional practice and problem-based nursing concept courses); (2) required health sciences (HTHSCI) courses (e.g. anatomy, physiology, biochemistry); (3) elective courses (i.e. course taken from subjects of a student's choosing). Additionally, students in the Basic (A) Stream are required to complete psychology (PSYCH) courses as part of their program.

As students move through the program the focus of learning progresses in the following ways. In Levels I and II students are provided with a strong basis in the health and social sciences and are able to choose a variety of electives. They learn about themselves and their clients as individuals. The focus is on health, health assessment and the promotion of health. In Levels II and III students begin to consider the family and the community as client. Students begin to deal with more acute and complex situations. In Levels III and IV, there is a strong focus on nursing and the integration and appraisal of knowledge based on the different ways of knowing into client care in both the classroom and professional practice setting. Students also begin to consider health care from the national and global perspective. Students initially learn about the roles of nursing in health care and, through inter-professional education opportunities, they gain greater understanding of the interprofessional health care team.

There are three themes that encompass the concepts in the BScN Kaleidoscope Curriculum: 1) Personhood and Caring, 2) Context, Health and Healing, and 3) Learning and Knowing. It is acknowledged that a great deal of overlap exists across concepts and themes. A concept-based approach needs to be conceptual not only in structure, but also in process. Conceptual learning is a process by which students learn how to organize information in logical mental structures, thus challenging students to become increasingly skilled at thinking. Conceptual teaching and learning complement the constructivist paradigm in fostering critical inquiry and deep understanding through the connections students make to past learning, their application of concepts in multiple contexts, and their development of an understanding of interrelated concepts.

#### **BSCN PROGRAM GOALS**

The concepts and themes inform the goals for the BScN Program. Graduates of the McMaster University BScN Program will be prepared to provide competent professional practice in a variety of health care contexts and with diverse clients across the lifespan (individual, family, group, communities, populations) who have stable and unstable outcomes and multi-factorial influences (internal and external) on their health status.

Graduates will:

- Provide competent care with a holistic awareness of the impact of the internal and external context on health and healing.
- Integrate an understanding of the client's unique perspective on his/her health, and how this perspective influences participation in one's health care.
- Identify the need for appropriate change in health care. Create a climate for adopting change. Contribute to effecting and evaluating change.
- Build relationships in a team environment and be actively engaged in team decision making around client care.
- Contribute to the body of nursing knowledge through demonstrating an

inquiring approach to practice.

- Provide technologically appropriate care in a variety of contexts.
- Contribute to the future of the nursing profession through a commitment to lifelong learning and professional growth. Integrate critical inquiry into professional practice.
- Assume leadership roles in partnership with clients and the health care team.
- Assume advocacy roles in partnership with clients and the health care team and challenge inequities that impact on the health of clients.
- Practice within the professional standards, guidelines, legislation and values of the nursing profession.
- Establish therapeutic partnerships with clients to enhance health and healing. Communicate effectively in a variety of media.

### REGISTRATION TO PRACTISE NURSING IN ONTARIO

On receiving the B.Sc.N. degree after successful completion of the program, graduates are eligible to write the National Council Licensure Exam (NCLEX). The exam is administered by the College of Nurses of Ontario (CNO) as a requirement of registration to practice nursing in Ontario. To facilitate this process, the School of Nursing provides information to the CNO confirming each student's expected program completion term and verification of program completion. Students will be contacted in their final year of the program to consent to the release of this information to the CNO. If you have any questions related to practice as an R.N. or the Regulated Health Professions Act, please contact the College of Nurses of Ontario directly.

## Admission Policy, Procedure, and Requirements

### ADMISSION POLICY

**Enrolment in all B.Sc.N. programs is limited.** Possession of the minimum admission requirements does not guarantee an offer of admission.

Application to the B.Sc.N. Program in the Faculty of Health Sciences implies acceptance of admission policies, procedures and the methods by which applicants are chosen for the program. The selection method for all applicants is by academic qualifications and assessment of personal and professional characteristics.

There are three streams of study leading to the completion of the B.Sc.N. degree.

- **Basic (A) Stream** requires four years of full-time study, and is available to those applying directly from an Ontario secondary school with Grade 12 U or M courses; to those who have qualifications equivalent to Grade 12 U or M courses; and to applicants with other qualifications who meet the admission requirements. **Note:** *Any differences in the application process or course of studies are noted in the appropriate section below.*
- **Post Diploma R.P.N. (E) Stream** is available to diploma prepared Registered Practical Nurses only. Graduates of an approved Diploma Practical Nurse Program who are admitted are granted 30 units of advanced credit. This program requires three years of full-time study. **Note:** *The Post Diploma R.P.N. (E) Stream is offered only at Mohawk and Conestoga Colleges.*
- **Accelerated (F) Stream** is open to applicants who have completed another university degree or have completed a minimum of 54 units (2 years) of university degree credits. Applicants with a nursing background will not be considered for this Stream. This program is available on a full-time basis and requires five consecutive terms of study. **Note:** *The Accelerated (F) Stream is offered only at McMaster University.*

The requirements and application deadlines vary depending on the applicant's background. An applicant supplying documentation or evidence which, at the time or subsequently, is found to be falsified will be withdrawn from consideration. Any student admitted to the program having submitted false documentation will be withdrawn.

The School of Nursing is committed to equality of opportunity. Disability is not

grounds for exclusion from the School. Every attempt will be made to remove barriers and create accommodation provided any accommodation maintains the same academic and professional practice standards for all students and does not require significant program change. Applicants should consult Student Accessibility Services at (905) 525-9140, ext. 28652 or TTY (905) 528-4307. The College of Nurses of Ontario (CNO) has released a statement about Requisite Skills and Abilities for Nursing Practice in Ontario. This statement can be found at <https://www.cno.org/globalassets/docs/reg/41078-skillabilities-4pager-final.pdf>. The CNO states that "Individuals considering a career as a nurse in Ontario should review this document and assess their ability to meet the criteria. The requisite skills and abilities serve as a benchmark, outlining the requirements to meet the minimum standard necessary to ensure public safety." (CNO, pg 3)

### ADMISSION PROCEDURE

#### MCMASTER SITE B.SC.N. PROGRAM BASIC (A) AND ACCELERATED (F) STREAMS

##### Applicants From Ontario Secondary Schools to the Basic (A) Stream

Applicants currently completing Grade 12 U or M courses apply through the Ontario Universities' Application Centre (OUAC). <http://www.ouac.on.ca/> Application forms are available in secondary school guidance offices or on-line at <http://www.ouac.on.ca/101>. Applications for all studies beginning in September must be received by OUAC no later than **January 15**. Note that this is a limited enrolment program.

##### Applicants With Qualifications Equivalent to Ontario Secondary School to the Basic (A) Stream

Applicants apply online to the Ontario Universities' Application Centre (OUAC) at <http://www.ouac.on.ca/>. Applicants must also have official transcripts forwarded from their secondary school to the Office of the Registrar by **January 15** (recommended).

##### Applicants With Other Qualifications to (A) Stream and Accelerated (F) Streams

Applicants apply online to the Ontario Universities' Application Centre (OUAC) at <http://www.ouac.on.ca/mcmaster.ca/nursing> by February 1. Applications for all studies beginning in September must be received by **February 1**.

- **Ontario Universities' Application Centre (OUAC)**

170 Research Lane  
Guelph, ON, N1G 5E2  
<http://www.ouac.on.ca/>

- **Admissions Coordinator (Nursing)**

McMaster University, HSC-2J36  
1280 Main Street West  
Hamilton, ON, L8S 4L8

*Any applicant to the Accelerated (F) Stream who is a current or returning McMaster student should contact the Admissions Coordinator (Nursing) for specific directions.*

##### Facilitated Indigenous Admissions to Basic (A) Stream and Accelerated (F) Stream

In accordance with the Self-Identification policy of the Faculty of Health Sciences, Indigenous (First Nations, Inuit and Métis) applicants who wish to apply to a program that has a facilitated Indigenous admissions stream must complete the supplementary Self-identification Application. Information on the policy, application requirements and the online application can be found at: <https://ishs.mcmaster.ca/admissions/self-identification>.

One self-identification application is used for all Faculty of Health Sciences programs that have a facilitated Indigenous admissions stream, and should only be completed once even if an applicant applied to multiple programs. Applicants identify the program(s) they applied to on the Self-identification Application. The applicant is responsible for ensuring the Self-identification Application is submitted by the application deadline(s) for the program(s) they applied to in addition to completing any other application required for that program(s). If you applied to multiple Faculty of Health Sciences programs, the



Self-identification Application must be completed by whatever the earliest deadline date is for the programs for which you have applied to.

#### **MOHAWK AND CONESTOGA SITE B.SC.N. PROGRAM BASIC (A) AND POST-DIPLOMA R.P.N. (E) STREAMS**

Applicants must apply through the Ontario College Application Services (OCAS). Applicants should also forward all official academic documentation, including all university transcripts if applicable, to the College they wish to attend.

- **Ontario College Application Services (OCAS)**

370 Speedvale Ave. West  
P.O. Box 810  
Guelph, ON N1H 6M4  
<http://www.ocas.on.ca/>

#### **ADMISSION REQUIREMENTS**

##### **NON ACADEMIC REQUIREMENTS FOR ALL STREAMS**

In order to ensure the safety of all students and patients, the School of Nursing requires that all students adhere to Standards of Practice in Nursing. Specifically, the BScN Program requires:

- Police Clearance (CRC)
- Immunization Screening
- Influenza Immunization (as per placement site)
- Basic Life Support for Healthcare Providers (CPR - HCP with AED & BVM)
- Online Health and Safety modules available through Avenue to Learn
- Mask Fit Testing & Training (quiz)

The process for notification, submission and verification of NARs varies by site. Please see site-specific guidelines (<https://nursing.mcmaster.ca/current-students/non-academicrequirements>) and ensure you have met all requirements by the deadline. It is the student's professional responsibility to ensure this deadline is met.

Students must provide proof that ALL requirements have been met before practicing in a lab or professional practice setting. Students who fail to provide this proof will:

- Not be allowed to enter a lab or professional practice setting, or
- Be removed from a lab or professional practice setting until requirements are met.
- Be reviewed under the Faculty of Health Sciences Professionalism Policy for failing to meet a requirement in a professional program

##### **CASPERTM ASSESSMENT REQUIREMENT FOR ALL STREAMS**

All applicants to the B.Sc.N. Program are required to complete a mandatory, online 90-minute computer-based assessment called CASPerTM, as a component of the selection process.

##### **B.SC.N. BASIC (A) STREAM - MCMASTER SITE ADMISSION REQUIREMENTS**

###### Applicants Directly From Ontario Secondary Schools

To be considered to this category, applicants must not have attended **any** post secondary educational program prior to application.

The selection method for Ontario secondary school applicants is by academic qualifications and an assessment of personal characteristics. Early conditional offers of admission are made in mid to late April based on the following:

- six appropriate midterm/interim Grade 12 U or M course grades (see list of required courses below), or
- at least three final Grade 12 U or M course grades plus enrolment in the appropriate three additional Grade 12 U or M courses (see list of required courses below) and,
- CASPerTM assessment.

Offers based on interim grades will be conditional upon maintaining satisfactory performance on final grades.

##### **Required Courses:**

The following are the minimum Grade 12 U and M requirements under the Ontario Secondary School curriculum:

- English U;
- Biology U;

- Chemistry U;
- One of Advanced Functions U, Calculus and Vectors U or Mathematics of Data Management U;
- Two additional Grade 12 U or M courses to total six courses.

###### Applicants with Qualifications Equivalent to Ontario Secondary School

To be considered, applicants from other provinces and countries must achieve the equivalent to the qualifications listed above in their secondary school graduation year.

###### Applicants with a University Degree or with University Degree Credits

To be considered applicants must:

- achieve a Grade Point Average (GPA) of at least B- in all university degree credit courses taken. Possession of this GPA does not guarantee an offer of admission due to limited number of available spots and high number of applications. A minimum of 12 units with final grades or equivalent are required. (These courses may be taken as a full-time or part-time student. University correspondence degree courses are acceptable.);
- apply online to OUAC at <http://www.ouac.on.ca/> using Form 105D by February 1 (current McMaster students are not required to apply through OUAC and should contact the Admissions Coordinator-Nursing);
- submit all secondary and post-secondary transcripts to the Office of the Registrar at McMaster University by February 1. Applicants who are in the final year of their degree when applying or are applying as a second degree do not have to submit their high school transcript;
- complete the mandatory online 90-minute computer-based assessment called CASPerTM.

###### Applicants from a Pre-Health Sciences Program

Applicants who have successfully completed a pre-health sciences Advanced Diplomas and Degrees program at an Ontario College of Applied Arts and Technology (CAAT) will be considered for admission to Level I of the B.Sc.N. Program Basic (A) Stream. Applicants who are currently registered in a pre-health sciences program may be given a conditional offer of admission based upon interim grades. The offer of admission will be withdrawn if the applicant does not complete the full program or does not meet the required admission Grade Point Average (GPA).

To be considered applicants must:

- complete at least two semesters, including at least one full (two semesters) or two half courses in each of Biology, Chemistry, Mathematics and English. Applications will not be considered from applicants who possess one credit only in the required subjects. Please contact the Admissions Coordinator for the list of approved programs;
- achieve a GPA in the pre-health sciences program that meets the minimum cut-off average of Ontario secondary school applicants to the program of 85%;
- apply online to OUAC at <http://www.ouac.on.ca/> using Form 105D no later than February 1;
- submit all secondary and post-secondary transcripts to the Office of the Registrar at McMaster University by February 1;
- complete the mandatory online 90-minute computer-based assessment called CASPerTM.

**Note:** For admission consideration, completion of the full Pre-Health Science Certificate must be done within one year of the anticipated start date to the undergraduate Nursing 1 program. Transfer credit will not be granted for any pre-health sciences courses.

###### Applicants from Other Degree Nursing Programs

Applicants who are enrolled in a Nursing degree program at a university or in a college/university consortium may apply to transfer to the Mohawk and/or Conestoga sites to earn a McMaster B.Sc.N. degree. All potential applicants should contact the appropriate site to determine if there is space for transfer applicants. For the Mohawk College site, contact the Associate Dean, B.Sc.N. Program; for the Conestoga College site, contact the Chair, Nursing Programs.



### B.SC.N. BASIC (A) STREAM - MOHAWK AND CONESTOGA SITES ADMISSION REQUIREMENTS

Admission requirements for students applying to the Mohawk and Conestoga sites of the B.Sc.N. program Basic (A) Stream are equivalent to those for students applying to the B.Sc.N. Program Basic (A) Stream at the McMaster site (See *B.Sc.N. Basic (A) Stream - McMaster Site Admission Requirements*).

#### Applicants with Qualifications Equivalent to Ontario Secondary School

Applicants from other provinces and countries must achieve the equivalent to the qualifications listed above in their secondary school graduation year.

#### Applicants with a University Degree or with University Degree Credits

To be considered applicants must:

- achieve a Grade Point Average (GPA) of at least B- (70%) in all university degree credit courses taken. A minimum of 12 units or equivalent are required. (These courses may be taken as a full-time or part-time student. University correspondence degree courses are acceptable.) All university transcripts must be submitted to the College. Failure to do so will result in withdrawal of the offer of admission.
- apply to Ontario College Application Services (OCAS) along with the required fees by February 1. All applications must be **received** by OCAS on or before this date to be given equal consideration by the colleges. Please note that February 1 is **not** a deadline for submitting applications as OCAS will continue to process applications received after this date. You are encouraged, however, to submit your application **as early as possible**, especially in the case of oversubscribed programs where there are often enough qualified applications received by the equal consideration date (February 1) to fill the program.
- complete the mandatory online 90-minute computer-based assessment called CASPerTM.

#### Applicants from a Pre-Health Sciences Program

Applicants who have successfully completed a pre-health sciences Advanced Diplomas and Degrees program at an Ontario College of Applied Arts and Technology (CAAT) will be considered for admission to Level I of the B.Sc.N. Program Basic (A) Stream. Applicants who are currently registered in a pre-health sciences program may be given a conditional offer of admission based upon interim grades. The offer of admission will be withdrawn if the applicant does not complete the full program or does not meet the required admission Grade Point Average (GPA).

To be considered applicants must:

- complete at least two semesters, including at least one full (two semesters) or two half courses in each of Biology, Chemistry, Mathematics and English. Applications will not be considered from applicants who possess one credit only in the required subjects; Please contact the Admissions Coordinator for the list of approved programs.
- achieve at least a 85% GPA in the pre-health sciences program. Please note: a 75% is required in each of Biology, Chemistry, Mathematics and English. No exemption will be granted in the program for pre-health sciences courses. Students who have taken these required courses more than once will be considered on an individual basis;
- apply to Ontario College Application Services (OCAS) along with the required fees by February 1. All applications must be **received** by OCAS on or before this date to be given equal consideration by the colleges. Please note that February 1 is not a deadline for submitting applications as OCAS will continue to process applications received after this date. You are encouraged, however, to submit your application **as early as possible**, especially in the case of oversubscribed programs where there are often enough applications from qualified applicants received by the equal consideration date (February 1) to fill the program.
- All applications to the Nursing Program will be required to complete the mandatory online 90-minute computer-based assessment called CASPerTM, as a component of the selection process.

**Note:** For admission consideration, completion of the Pre-Health Science

Certificate must be done within one year of the anticipated start date to the undergraduate Basic Nursing 1 program. Transfer credit will not be granted for any pre-health sciences courses.

#### Applicants from Others Degree Nursing Programs

Applicants who are enrolled in a Nursing degree program at another university or in another college/university consortium may apply to transfer to the Mohawk and/or Conestoga sites to earn a B.Sc.N. degree. Transfer credits/course exemptions will be considered on a case-by-case basis upon acceptance; students must request transfer credit/course exemptions within one year of commencing their studies.

All potential applicants should contact the appropriate site to determine if there is space for transfer applicants. For the Mohawk College site, contact the Associate Dean, B. Sc.N. Program; for the Conestoga College site, contact the Chair, Nursing Programs.

Applicants must be currently enrolled in or have completed Level I of a B.Sc.N. Program with an overall GPA of at least B (75%) and at least a B- average in nursing and science courses.

Applications for transfer into the B.Sc.N. Program to commence studies in September must be received by the Ontario Colleges Application Service (OCAS) in Guelph no later than May 15.

Applicants must submit the following to the Registrar's Office at the appropriate College by May 15:

- official transcripts of all university work taken.
- an official letter from the Dean/Director of the program in which the applicant is currently enrolled stating that the applicant is in good standing in that program.
- course descriptions and outlines for all nursing and science courses for assessment of advanced credit.

### B.SC.N. POST DIPLOMA R.P.N. (E) STREAM - MOHAWK AND CONESTOGA SITES ADMISSION REQUIREMENTS

To be considered applicants must:

- possess a current CNO annual registration payment card or have written the Practical Nurses Registration Examinations by May 31 of the year of application;
- have a diploma in practical nursing (two year program) from an Ontario College of Applied Arts and Technology or equivalent with a minimum overall average of 75% or higher. Applicants who have satisfactorily completed a diploma practical nurse program but who have not achieved the required Grade Point Average (GPA) may become academically eligible by completing at least twelve units (two full courses or four half courses) of university degree credit in any subject area with a GPA of at least B (75%). This minimum GPA does not guarantee admission;
- apply to the Ontario College Application Services (OCAS) by February 1. All applications must be received by OCAS on or before February 1 to be given equal consideration by the college;
- complete the mandatory online 90-minute computer-based assessment called CASPerTM.

**Note:** Potential applicants who possess a certificate in practical nursing should seek upgrading to diploma practical nurse at a College of Applied Arts and Technology.

#### Indigenous Section of the Post Diploma R.P.N. (E) Stream - Mohawk Site

Mohawk College has targeted 5% of its enrolment to seats in Health Science, Human Services and Applied Arts postsecondary programs to qualified Indigenous students in oversubscribed programs. Barriers such as highly competitive grade-point averages or overall ranking was removed, while still ensuring all participating students met the minimum program admission requirements. By eliminating the competitive barriers with an oversubscribed program, an additional pathway for Indigenous students has been created in postsecondary education. Preference is given to Indigenous students in the Indigenous Section of the Post Diploma RPN (E) Stream, but if not completely filled, qualified non-Indigenous applicants are offered admission to this site to

facilitate integration of cultural learning and experiences for both Indigenous and non-Indigenous students. This mixture of Indigenous and non-Indigenous students ensures a full cohort to achieve financial sustainability and supports the partnership's goals of integrating learning opportunities for both groups of students, enriching the learning outcomes for all students and strengthening partnerships with our Indigenous Communities.

Applicants should contact the Associate Dean Nursing, Mohawk College for further information. Applicants should apply to Ontario College Application Services (OCAS) along with the required fees by February 1. All applications must be **received** by OCAS on or before this date to be given equal consideration by the colleges. Please note that February 1 is **not** a deadline for submitting applications as OCAS will continue to process applications received after this date. You are encouraged, however, to submit your application **as early as possible**, especially in the case of oversubscribed programs where there are often enough applications from qualified applicants received by the equal consideration date (February 1) to fill the program.

#### **B.SC.N. ACCELERATED (F) STREAM - MCMASTER SITE ADMISSION REQUIREMENTS**

The Accelerated (F) Stream is available to those students applying from a university science program of studies. Students may complete the program of studies in five academic terms.

**Note:** Admission to the Accelerated (F) Stream is not open to students currently enrolled/registered in the Basic (A) Stream or any other nursing program. Applicants with two undergraduate degrees will not be considered for the Accelerated (F) Stream. Please see the policy under the *General Academic Regulations* section of the Undergraduate Calendar.

To be considered applicants must:

- achieve a cumulative average of at least B- in the last 2 full years of university degree credit courses taken (minimum 54 units)
- applicants must achieve a grade of at least C- (60%) on each of the following required courses:
- six units of Psychology, 3 of which must be at the introductory level, the other 3 units must be from the approved list
- six units of Human Physiology **or** six units of Human Anatomy and Physiology
- three units of Statistics
- six units in the following: Biology, Chemistry, Biochemistry, Nutrition or Kinesiology

**Note:** We are not able to assess course prior to application. Please review the equivalency lists provided above.

**Note:** Six units are equivalent to one full credit or two half credits; three units are equivalent to one half credit.

**Note:** When choosing Biochemistry courses to meet the requirements, students are advised to select relevant courses that would facilitate success in a **nursing** program.

Students must have completed or be currently registered in the required courses at the time of application. Official transcripts **must** be submitted by February 1 otherwise the application will not be considered.

Normally, the required Human Anatomy and Physiology, Biochemistry and Nutrition courses must be completed within the last four years. If you have taken these courses more than four years ago, we encourage you to contact the Admission Coordinator-Nursing at (905) 525-9140 ext. 22232.

- apply online at <http://www.ouac.on.ca/> using Form 105D to OUAC no later than February 1; Current McMaster students are not required to apply through OUAC;
- submit all secondary and post-secondary transcripts to the Office of the Registrar at McMaster University by February 1. Applicants who are in their final year of their degree when applying or are applying as a second degree do not have to submit their high school transcript.
- complete the mandatory online 90-minute computer-based assessment

called CASPer™.

**Note:** A \$500 non-refundable tuition deposit will be required to secure your spot in the program.

#### **OFFERS OF ADMISSION**

Deadlines for acceptance of an offer are strictly enforced. Failure to meet the conditions and/or submit required documentation by the specified deadline outlined in the admission package will result in cancellation of the offer of admission. Applicants should ensure that they accept their offer of admission as directed well before the specified deadline.

#### **UNSUCCESSFUL APPLICANTS**

Applications are not held over from one year to another. An unsuccessful applicant may reapply to the B.Sc.N. Program by submitting a new application, including supporting documentation.

#### **APPLICATION FOR DEFERRED REGISTRATION**

Deferred registration is granted only under exceptional circumstances to those candidates who have been admitted and have accepted the offer. Registration may be deferred for one year only. The request for deferral, outlining the reasons for the request, must be postmarked no later than July 31 of the year for which deferral is requested.

## **Academic Regulations**

#### **STUDENT ACADEMIC RESPONSIBILITY**

You are responsible for adhering to the statement on student academic responsibility found in the *General Academic Regulations* of this calendar.

#### **ACCESS TO COURSES**

All undergraduate courses at McMaster have an enrolment capacity. The University is committed to making every effort to accommodate students in required courses so that their program of study is not extended. Unless otherwise specified, registration is on a first-come basis and in some cases priority is given to students from particular programs or Faculties. Students will be informed of their enrolment periods and are encouraged to enroll as soon as online enrolment is available to them in the Student Centre in Mosaic.

#### **STUDENT COMMUNICATION RESPONSIBILITY**

It is the student's responsibility to:

- Maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- Use the university provided e-mail address or maintain a valid forwarding e-mail address.
- Regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.
- Accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.

*In addition to meeting the General Academic Regulations of the University, students enrolled in the B.Sc.N. Program shall be subject to the following program regulations. Additionally, Mohawk and Conestoga B.Sc.N. students are also subject to the regulations of their respective sites.*

Registration in the B.Sc.N. Program implies acceptance on the part of the student of the objectives of that program and the methods by which progress toward the achievement of those objectives is evaluated. Since the academic regulations are continually reviewed, the University reserves the right to change the regulations.

#### **CONTINUATION IN THE B.SC.N. PROGRAM**

At the conclusion of the

Fall/Winter term and the Spring/Summer term, each student's academic record and performance will be reviewed by the School of Nursing to determine if

they have met the academic requirements. In order to continue in the B.Sc.N. Program a student must achieve the following academic requirements:

- **Minimum Grade Point Average:** A student must achieve a cumulative Grade Point Average (GPA) of at least 5.0 at the end of the Winter and/or Spring/Summer term(s) to be eligible to continue in the program.
- **Passing Grades in Required Health Science and Graded Nursing Courses:** A student must achieve a grade of at least C- in the required Health Science (HTHSCI) and graded Nursing (NURSING) courses. A student is permitted to repeat a total of only two required HTHSCI or graded NURSING course in which they failed to achieve the minimum passing grade requirement; if a student fails to meet the minimum passing grade requirement after repeating a course, the student may not continue in the program. If a student fails to meet the minimum passing grade requirement on more than two HTHSCI and/or graded NURSING course, the student may not continue in the program.
- **Passing Grades in Professional Practice Nursing Courses:** A student must achieve a Pass (i.e. P/C-/60%) designation in all professional practice Nursing (NURSING) courses (see *Professional Practice Regulations* for a complete list of NURSING courses designated as professional practice courses). A student is permitted to repeat only one professional practice NURSING course in which they failed to achieve a Pass designation; if a student fails to achieve the Pass designation requirement after repeating the course, the student may not continue in the program. If a student fails to achieve a Pass designation on more than one professional practice NURSING course, the student may not continue in the program.
- **Course Completion:** For required Nursing (NURSING) and Health Science (HTHSCI) courses, students must enroll in and successfully complete all the course work of one level before proceeding to the course work specified for the next level. For each of the streams (A, E and F), courses must be taken in the sequence specified by the program requirements.

**The following courses must be completed before the start of Level III course work of the Basic (A) Stream:**

- PSYCH 1X03 (McMaster and Mohawk) or PSYCH 1N03 (Conestoga): Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1XX3 (McMaster and Mohawk) or PSYCH 1NN3 (Conestoga): Foundations of Psychology, Neuroscience & Behaviour
- **Continuous Enrolment:** Students must enrol in at least one required Nursing (NURSING) or Health Science (HTHSCI) course in each academic year in order to continue in the program, unless they have been granted a Leave of Absence (see Leave of Absence regulations). Students have a maximum number of years from the time of initial enrolment in the program to complete the program requirements for graduation. The completion time for BScN (Stream A) and Post Diploma R.P.N.(Stream E) is 6 years and the Accelerated (F Stream) is 5 years.

**ACADEMIC STANDING AND PROGRAM PROBATION**

A student's academic performance is reviewed at the end of each term. To continue in the B.Sc.N. Program in good academic standing a student must obtain a cumulative GPA of at least 5.0. A student whose cumulative GPA is at least 4.5 may continue in the program and will be placed on program probation for the duration of one academic year. A student may be placed on program probation only once during the program.

**REMOVAL FROM PROGRAM**

A student whose cumulative GPA is less than 5.0, and who has not been granted program probation, may not continue in the program. A student who fails to raise their cumulative GPA to 5.0 at the completion of the program probation may not continue in the program. After repeating a required Health Science (HTHSCI) or Nursing (NURSING) course, a student who fails to meet the minimum passing grade requirement or Pass designation may not continue

in the program. A student may normally repeat a level of work only once. Students are permitted to repeat 2 graded HTHSCI/NURSING course and only 1 professional practice NURSING course. A student who fails to meet the minimum passing grade requirement, may not continue in the program. A student who does not maintain continuous enrollment in the program without having been granted a Leave of Absence and/or who fails to complete the program requirements for graduation within the maximum allowable time may not continue in the program.

**REINSTATEMENT TO THE PROGRAM AND UNIVERSITY**

A student who is ineligible to continue at the university may apply for reinstatement to the university and the B.Sc.N. Program after one full academic year. Students may only apply to be reinstated into the stream from which they were removed. Students seeking reinstatement must contact the Office of the Registrar at McMaster University to submit a Reinstatement Request Form and the required fee. Students are considered for reinstatement for September entry only and must apply by February 1. Students will be required to outline the reasons for previous unsatisfactory academic performance, reasons for requesting reinstatement at this time, reasons why the student would expect to succeed in the B.Sc.N. Program if reinstatement is granted (including documentation of what has been done to correct the previous problems/barriers), and an outline of their activities since last registered in the program including an outline of all academic work. Reinstatement is not automatic or guaranteed. Decisions are normally communicated between May and June for September entry. A student who is granted reinstatement to the B.Sc.N Program will be required to complete a reintegration course that will facilitate returning to the B.Sc.N. Program prior to enrollment of courses. Additionally, the student may be required to repeat any or all of their previously completed courses in the program, which will be explicitly outlined in the terms and conditions of their reinstatement.

Students who are granted reinstatement to the B.Sc.N. Program will be placed on program probation for a period of one academic year, and calculation of their Grade Point Average (GPA) will begin anew. If at any review after reinstatement the student's GPA falls below 5.0, the student will be removed from the program. Students who are approved for reinstatement to the program may not apply for subsequent re-entry or reinstatement if removed again.

**VOLUNTARY WITHDRAWAL FROM THE PROGRAM**

Students must follow the withdrawal procedures for McMaster University in addition to their respective college sites (if applicable).

**READMISSION AFTER VOLUNTARY WITHDRAWAL**

Former Nursing students who voluntarily withdrew from the B.Sc.N. Program must apply for readmission by February 1. Students previously admitted through McMaster University must apply for readmission through the Office of the Registrar; students previously admitted through Mohawk or Conestoga College must contact the Admission Office at the respective colleges for further information. Readmission requests are carefully reviewed by the Admissions Committee and the evidence considered will include the student's academic performance in the program, a letter outlining the decision to return and activities since last registered in the program. Readmission is not automatic or guaranteed. Decisions are normally communicated between May and June for September entry.

**LEAVE OF ABSENCE (LOA)**

The School of Nursing recognizes that students may need to suspend their studies from the program due to extenuating personal or medical reasons. Students can request one leave of absence (LOA) from the program for a period of up to 1 year. Requests for an LOA are made by submitting a Petition for Special consideration (Form A) (see Petitions for Special Consideration and Appeals Section). During a LOA, a student may enroll in elective courses; however, they will not be permitted to enroll in mandatory courses in the nursing program.

It is the student's responsibility to notify Academic Advising Services of their

intention to return to their studies at least 4 months prior to their return. Students who were on a LOA due to medical circumstances may be required to submit medical documentation from their physician indicating their ability to return to professional practice duties. All students returning from a LOA will be required to complete a Reintegration Plan in the term preceding their return.

#### **TRANSFER BETWEEN SITES**

Students attend the institution to which they are admitted for the entire program. Transfer from Mohawk College or Conestoga to McMaster University site is not an option. Similarly, transfer from McMaster University to Mohawk College or Conestoga Colleges is not an option. Transfers may be permitted between the College sites, based on availability of space in the B.Sc.N. Program at the desired site. Students are considered for transferring to their requested site for September entry only. To request transfer between College sites, the student must submit a Request for Transfer Between Sites petition to the Academic Advising Services by February 1, and apply to the desired site via OCAS by February 1.

Final decisions are at the discretion of the Mohawk College and Conestoga College Admissions Offices and the School of Nursing.

#### **TRANSFER BETWEEN STREAMS**

A transfer between streams of the B.Sc.N. Program is not permitted.

#### **DROPPING/WITHDRAWING FROM COURSES**

Please refer to the Sessional Dates outlined in the Undergraduate Calendar for specific deadlines for enrollment and changes, and for withdrawing from courses without failure by default. Students are able to add and drop courses without academic or financial penalty until the last day for enrollment changes. These dates are specific to each term and are different for single-term and multi-term courses.

Students who wish to add or withdraw from required nursing (NURSING) or health science (HTHSCI) courses after the last day for enrollment are strongly encouraged to contact Academic Advising Services to discuss the impact on their progression through the Program.

#### **TRANSFER CREDITS/COURSE EXEMPTIONS**

Students who have completed courses at the university level prior to commencing studies in the B.Sc.N. Program may be eligible to receive transfer credits/course exemption for requirements of their degree program. Only courses completed at a university are eligible for consideration. Courses completed at a college are not eligible for review. Courses completed through Advanced Placement (AP)/ International Baccalaureate (IB) will only be considered for transfer credits for Level I electives.

No course for which a grade of less than C- (60%) has been achieved will be considered for transfer credit/course exemption towards elective course requirements. No course for which a grade of less than B- (70%) has been achieved will be considered for transfer credit/course exemption towards mandatory HTHSCI or NURSING courses. Students who have completed AP exams through the College Board in acceptable courses and achieved a minimum grade of 4 will be considered for up to 18 units of transfer credit toward Level I electives. Students who have completed Higher Level (HL) courses and achieved final International Baccalaureate (IB) Diploma or Certificate grade of 5 or greater will be considered for up to 18 units of transfer credit toward Level I electives.

The following courses are not eligible for transfer credit/course exemption due to the professional, integrated nature of the B.Sc.N Program:

- Basic (A) Stream: NURSING 1F03, 1G03, 1I02, 1J02, 2L03, 2MM3, 2NN3, 2P03, 3QQ3, 3SS3, 3TT3, 3X04, 3Y04, 4J07, 4K10, 4P04, 4Q03
- Post Diploma RPN (E) Stream: NURSING 2A04, 2AA3, 3A04, 3QQ3, 3RS3, 3RT3, 3RY4, 4J07, 4K10, 4P04, 4Q03
- Accelerated (F) Stream: NURSING 2I04, 2J04, 2V04, 3QQ3, 3V03, 3ZA3, 3ZB3, 4J07, 4K10, 4P04, 4Q03

The following courses will only be considered eligible for review for transfer credit/course exemption if completed in an accepted Health Professional

Program:

- Basic (A) Stream: HTHSCI 2LA2 A/B, 3PA2 A/B
- Post Diploma RPN (E) Stream: HTHSCI 3C04, 3PA2 A/B
- Accelerated (F) Stream: HTHSCI 2PF3 A/B, 3C04, 3PF1

Mandatory HTHSCI and NURSING courses completed in one stream of the B.Sc.N. Program will not be considered for transfer credit/course exemption in another stream of the B.Sc.N. Program. Courses from another institution/program used to request transfer credit/course exemption for any eligible, mandatory HTHSCI or NURSING course in the B.Sc.N. Program must have been completed no more than 4 years prior to admission to the B.Sc.N. Program. Additionally, courses from another institution/program used to request transfer credit/course exemption for HTHSCI 2S03 must have been completed no more than 4 years prior to admission to the B.Sc.N. Program. Students who are interested in requesting transfer credit/course exemption for electives should refer to the guidelines regarding electives found in the Requirements for their stream. Students must submit a *Transfer Credit/Course Exemption* request form to Academic Advising Services within one year of program start-date to have their previous course work considered for the entirety of their program. Please see the McMaster University General Policy for Transfer Credits for additional information.

#### **LETTER OF PERMISSION**

All students in good academic standing who wish to attend another university to take courses for credit toward a McMaster degree must first request a Letter of Permission (LOP) through the Student Centre in Mosaic. The School of Nursing requires that students must achieve a minimum grade of C- (60%) in courses used for elective requirements, and B- (70%) in courses used for mandatory HTHSCI and NURSING course requirements to receive the transcript designation of 'T' indicating successful completion. Courses taken at another university cannot be used to satisfy McMaster University's minimum residence requirements, and will not be included in the calculation of the Grade Point Average. Any courses taken on LOP to satisfy mandatory HTHSCI or NURSING courses will be subject to the Academic Regulations of the B.Sc.N. Program: failure to successfully complete a mandatory HTHSCI or NURSING course taken on LOP may result in a change of academic standing or impact a student's ability to progress in the B.Sc.N. program.

The following courses are not eligible to be taken on LOP due to the professional, integrated nature of the B.Sc.N. Program:

- Basic (A) Stream: NURSING 1F03, 1G03, 1I02, 1J02, 2L03, 2MM3, 2NN3, 2P03, 3QQ3, 3SS3, 3TT3, 3X04, 3Y04, 4J07, 4K10, 4P04, 4Q03
- Post Diploma RPN (E) Stream: NURSING 2A04, 2AA3, 2T04, 3A04, 3QQ3, 3RS3, 3RT3, 3RY4, 4J07, 4K10, 4P04, 4Q03
- Accelerated (F) Stream: NURSING 2I04, 2J04, 2U04, 2V04, 3QQ3, 3V03, 3ZA3, 3ZB3, 4J07, 4K10, 4P04, 4Q03

The following courses will only be considered for completion on LOP if completed in an accepted Health Professional Program:

- Basic (A) Stream: NURSING 2LA2 A/B, HTHSCI 2LA2 A/B, NURSING 3PA2 A/B, HTHSCI 3PA2 A/B
- Post Diploma RPN (E) Stream: NURSING 3PA2 A/B, HTHSCI 3C04, 3PA2 A/B
- Accelerated (F) Stream: NURSING 2PF3 A/B, 3PF1, HTHSCI 2PF3 A/B, 3C04, 3PF1

Students who are interested in taking a course on LOP to satisfy elective requirements should refer to the guidelines regarding electives found in the Requirements for their stream. If approved, students should pay close attention to the Letter of Permission Approval email sent by Academic Advising Services outlining conditions of approval, process to follow when the course(s) are completed, and process to follow if student decides not to complete the course(s).



## PROFESSIONAL PRACTICE REGULATIONS

As a mandatory portion of the BScN programs, nursing students must fulfill unpaid training or work experience requirements during clinical courses.

**Before entering the professional practice setting**, every student who participates in a mandatory unpaid placement must sign a WSIB Declaration form at the orientation for the professional practice course in which they have registered.

If illness or an accident resulting in personal injury (e.g. needlestick injury, fall, actual or near miss, violence in the workplace) occurs during the unpaid training/placement program, the student must immediately:

- Seek first-aid or emergency services if needed. Follow agency/workplace procedures;
- Notify the faculty instructor and professional practice placement preceptor (who then notifies the supervisor);
- Notify the professional practice placement coordinator;
- Complete a McMaster University Injury/Incident Report.

## PROFESSIONAL PRACTICE COURSES

The following courses are designated professional practice Nursing (NURSING) courses:

- Basic (A) Stream: NURSING 1I02, 1J02, 1K02 A/B, 2K02 A/B, 2L03, 2P03, 3Q03, 3X04, 3Y04, 4J07, 4K10
- Post Diploma R.P.N. (E) Stream: NURSING 2A04, 2AA3, 3Q03, 3RY4, 4J07, 4K10
- Accelerated (F) Stream: NURSING 2J04, 2U03, 2U04, 3Q03, 3ZA3, 3ZB3, 4J07, 4K10

## REMOVAL FROM COURSES

The B.Sc.N. Program reserves the right to remove a student from a professional practice course or laboratory setting at any point during the term if the student exhibits unsafe professional practice or behaviour that places the patient or others at risk or is deemed a serious breach of professional behaviour. Such removal will result in the student receiving a grade of F in the course and may result in dismissal from the program. The professional practice activities associated with any professional practice course must be successfully achieved for attainment of a passing grade in the course.

## CLEARANCE TO PARTICIPATE

If the School of Nursing has substantiated concerns that a student's participation in a professional practice course may pose a risk to the health and safety of the student, their peers, instructors, clients/patients, or staff members of the professional practice setting the student may be required to produce documentation from a health care practitioner (typically the student's attending physician) indicating that the student is medically able to perform the full duties required in the professional practice placement. Students may be precluded from participating in the professional practice course until such time that they are able to produce the documentation, which may result in the student having to take the course in a different term if, as a result, the student is absent from the professional practice setting for a significant portion of the course.

## REINTEGRATION TO PROFESSIONAL PRACTICE

Any student who has either (a) failed a professional practice course, and/or (b) has experienced a gap of 2 terms between professional practice courses as a result of a leave of absence from the program, repeating mandatory NURSING/ HTHSCI course(s), or following a reduced course load, is required to complete a reintegration course in consultation with a faculty member designated by the School of Nursing. The purpose of the reintegration course is to re-familiarize the student course concepts and refresh their professional practice skills to ensure the student's return to a professional practice setting is safe and successful for all stakeholders. The reintegration course must be completed to the satisfaction of the faculty member over the term (approximately four months) immediately prior to the student commencing professional practice course(s). Students who are required to complete a reintegration plan will be contacted by the School of

Nursing with further instructions and guidelines.

## EXAMINATIONS

A Mohawk College or Conestoga College and a McMaster student photo identification card is required at all examinations.

## NON-ACADEMIC REGULATIONS

A student must comply annually before the start of classes with all non-academic requirements as outlined by the program. Failure to do so will result in removal from class and/or professional practice courses.

## NON-ACADEMIC REQUIREMENTS

In order to ensure the safety of all students and patients, the School of Nursing requires that all students adhere to Standards of Practice in Nursing. Specifically, the BScN Program requires:

- Police Clearance (CRC)
- Immunization Screening
- Influenza Immunization (as per placement site)
- Basic Life Support for Healthcare Providers (CPR - HCP with AED & BVM)
- Online Health and Safety modules available through Avenue to Learn
- Mask Fit Testing & Training (quiz)

The process for notification, submission and verification of NARs varies by site. Please see site-specific guidelines (<https://nursing.mcmaster.ca/current-students/non-academicrequirements>) and ensure you have met all requirements by the deadline. It is the student's professional responsibility to ensure this deadline is met.

Students must provide proof that ALL requirements have been met before practicing in a lab or professional practice setting. Students who fail to provide this proof will:

- Not be allowed to enter a lab or professional practice setting, or
- Be removed from a lab or professional practice setting until requirements are met.
- Be reviewed by the School of Nursing Professionalism Committee for failing to meet a requirement in a professional program

## Please note:

- An online CPR course will not be accepted
- CPR recertification is required annually
- CPR must be completed in Canada
- TB test is required annually
- CRC is required annually

## Immunization

The Ontario Public Hospitals Act requires all students working in a hospital setting to meet certain criteria related to surveillance for infectious diseases. Detailed medical information, including a record of completion of required immunizations, will be required upon acceptance and annually thereafter. Failure to produce this information will result in a student being precluded from commencing professional practice course(s) or a suspension from professional practice course(s) until such time that they are able to produce the information, which may result in the student having to take the course(s) in a different term. Information on specific medical information that is required will be sent to students prior to commencing their studies in the program and each year thereafter prior to the start of the academic year.

## Police Records Check

During the course of the B.Sc.N Program, all nursing students will work with vulnerable populations. As a result, in order to protect these vulnerable people from potential harm, the Council of Ontario University Programs in Nursing recommends and many professional practice agencies require that all nursing students provide confirmation of the absence of a criminal conviction or outstanding criminal charges. All students are required to have a satisfactory Police Record Check completed **annually**. The Police Record Check must include Vulnerable Sector Screening (VCC). Expenses for the Police Record Check are the responsibility of the student. Ensure you request two original copies from your Police Services. Students may be required to produce documentation of their Police Record Check at some professional practice

placements. Registered students who have been convicted of an offense under the Criminal Code (Canada) for which they have not been pardoned may be denied the opportunity to enter professional practice placement.

#### CPR Certification

Students are required to provide evidence of a valid certificate in cardiopulmonary resuscitation (CPR) at the Basic Cardiac Life Support for Health Care Provider level with training in AED. Please note that for health care providers, certification is valid for one year from the date of the course. As a result, annual recertification is mandatory. The cost of a course is the responsibility of the student. Courses are readily available in most communities. Certification obtained through an online provider will not be accepted. Certificate must be obtained in Canada.

#### **TRAVEL WITHIN THE PROGRAM**

Students are responsible for arranging their own travel to and from learning settings external to the University (regardless of site) and for covering any cost incurred. Students who enroll in the BScN Program are expected to travel to learning settings in the Hamilton and surrounding area, including but not limited to Halton, Peel, Brant, Haldimand-Norfolk, Niagara and Wellington Regions (McMaster and Mohawk sites); and Kitchener-Waterloo and surrounding area, including but not limited to Wellington, Brant and Halton regions (Conestoga site).

#### **ACCESS TO CLINICAL COURSES**

Students in any stream who register for a clinical NURSING course in Level III or above must also submit a placement preference form to the Placement Coordinator. Students who fail to meet the published deadline but who register for the course at least two months prior to the date is to commence will be assigned a placement setting without consideration of their preferences. Students who do not register two months in advance and who fail to meet the submission deadline will normally be required to defer their placement until the next term in which the course is offered.

The final assignment of learning settings for any course is constrained by the availability of the requested setting and faculty resources. Students may therefore be required to complete the practicum component of a course in a learning setting that is not of their choosing.

#### **GLOBAL HEALTH PROFESSIONAL PRACTICE**

Level IV students in Basic (A) Stream, Post Diploma R.P.N. (E) Stream and Accelerated (F) Stream have the option to complete global health professional practice placements in international or outpost settings for NURSING 4J07. Prerequisites include, but are not limited to, (1) attaining a GPA of 8.0 in all mandatory NURSING/HTHSCI courses Level II and Fall Term of Level III (Basic A Stream) or Winter Term of Level II and Fall Term of Level III (Post Diploma E Stream) or Fall and Winter term of Level III (Accelerated F Stream); (2) a pass in all professional practice NURSING courses; (3) a minimum grade of C- in NURSING 4H03.

#### **SPECIALIZED/ATYPICAL PROFESSIONAL PRACTICE PLACEMENTS**

Specialized/atypical placements in NURSING 4J07 and/or NURSING 4K10 are only available to students who have met the following criteria:

- a cumulative GPA of 8.0 in all mandatory NURSING/HTHSCI courses completed prior to entry to Level IV course work
- a pass in all professional practice courses on the first attempt.

Additional criteria (e.g. reference from a professional practice preceptor) may also be required and considered by the School of Nursing in allocating specialized/atypical placements. Achieving the above noted criteria is not a guarantee that a student will receive a specialized/atypical placement as placements are limited.

#### **DOCUMENTATION FOR LICENSURE OUTSIDE OF CANADA**

Documentation for Licensure for outside of Canada is done by the B.Sc.N. Program Office. A fee for each request, is charged for providing the documentation and sending, by courier, to the agency requesting such documentation. Please check the program website for details regarding fees. Forms requesting this documentation are available on the School of Nursing

website <http://nursing.mcmaster.ca/current/graduation-designations>.

## **Bachelor of Science in Nursing**

### **ACCELERATED (F) STREAM (B.SC.N)**

#### **McMaster Site**

The curriculum focuses on nursing context over five academic terms of full-time study. Students apply their previously acquired knowledge to develop their understanding of nursing practice. Students admitted to this stream will enter Level III of the B.Sc.N. Curriculum. Students are required to meet the residency requirement of the university as outlined in the General Academic Regulations section of this calendar.

#### **REQUIREMENTS (EFFECTIVE AS OF 2016-2017)**

##### **REQUIREMENTS**

*Advanced Credit: 54 units; Units Taken at McMaster: 72*

Level III: 45 Units

*(Units graded: 32; Units Pass/Fail: 13)*

**Fall Term: 14 units**

**6 units**

- HTHSCI 2H03 - Introductory Pharmacology
- HTHSCI 2RR3 - Introduction to the Social Determinants of Health

**8 units**

- NURSING 2I04 - Introduction to Professional Nursing and Health for Accelerated Stream
- NURSING 2U04 - Introduction to Nursing Practice I for Accelerated Stream

**1 course**

- WHMIS 1A00 - Introduction to Health and Safety

**Winter Term: 15 units**

**7 units**

- HTHSCI 2HH3 - Introductory Microbiology
- HTHSCI 3C04 - Research Appraisal and Utilization in Evidence Informed Decision Making

**8 units**

- NURSING 2J04 - Professional Nursing Practice II for Accelerated Stream
- NURSING 2V04 - Nursing Concepts in Health & Illness for Accelerated Stream

**Fall-Winter Terms: 3 units**

**3 units**

- HTHSCI 2PF3 A/B - Introduction to Integrated Pathophysiology for Accelerated Stream (or NURSING 2PF3 A/B)

**Spring/Summer Term: 13 units**

**13 units**

- HTHSCI 3PF1 - Integrated Pathophysiology for Accelerated Stream (or NURSING 3PF1)
- NURSING 3QQ3 - Professional Community Nursing Practice
- NURSING 3V03 - Nursing Concepts in Health & Illness for Accelerated Stream II
- NURSING 3ZA3 - Professional Nursing Practice III for Accelerated Stream
- NURSING 3ZB3 - Professional Nursing Practice IV for Accelerated Stream

Level IV: 27 Units

*(Units Graded: 10; Units Pass/Fail: 17)*

**Fall Term: 14 units**

**3 units**

- HTHSCI 4NR3 - Nursing Research

**11 units**

- NURSING 4J07 - Professional Nursing Practice VI
- NURSING 4P04 - Advanced Nursing Concepts I

Winter Term: 13 units

13 units

- NURSING 4K10 - Professional Practice and the New Graduate
- NURSING 4Q03 - Advanced Nursing Concepts II

Total Units: 126

Note:

Regardless of year of entrance, the following courses will no longer be offered: NURSING 2I06, 2V06, 3V04, 4K07, and 4Q04. Instead students will be required to take NURSING 2I04, 2V04 and 2PF3 A/B ; NURSING 3V03 and 3PF1 ; NURSING 4K10; and NURSING 4Q03, respectively.

## BASIC (A) STREAM (B.SC.N.)

McMaster Site

Conestoga Site

Mohawk Site

The Faculty has planned the curriculum so that the study of nursing, the physiological, psychological and social sciences, and the humanities are interrelated and span the entire program. In Level I, the amount of nursing experience is relatively small; the major proportion of study is in the behavioural and natural sciences. The nursing component increases progressively through Levels II, III, and IV, as the study of natural sciences is completed. Because of timetable constraints, courses must be taken in the level indicated in the curriculum.

### REQUIREMENTS (EFFECTIVE AS OF 2018-2019)

#### ELECTIVES

Eighteen units of electives are to be selected from disciplines of the student's choice, of which a minimum of six units are to be chosen from courses designated as Level II or above. A maximum of six units of electives may be selected from NURSING and/or HTHSCI elective courses (i.e. those courses that are not required for any of the program streams). For some courses, the amount of duplication of required content will preclude their being used for elective credit in the B.Sc.N. Program. Mandatory NURSING and/or HTHSCI courses from the Post Diploma R.P.N. (E) Stream or the Accelerated (F) Stream of the B.Sc.N. Program cannot be used toward elective requirements for the Basic (A) Stream.

#### NOTE

HTHSCI 4NR3 may be completed in either Level III or IV.

#### REQUIREMENTS

Level I: 30 Units

(Units graded: 28; Units Pass/Fail: 2)

9 units

- HTHSCI 1H06 A/B - Human Anatomy and Physiology I
- HTHSCI 1LL3 - Human Biochemistry I

12 units

- NURSING 1F03 - Introduction to Nursing and Health I for Basic Stream
- NURSING 1G03 - Introduction to Nursing and Health II for Basic Stream
- NURSING 1I02 - Introduction to Nursing Practice for Basic Stream
- NURSING 1J02 - Professional Nursing Practice I for Basic Stream
- NURSING 1K02 A/B - Community Engagement and Citizenship for Basic Stream

6 units

McMaster and Mohawk Site:

- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour

Conestoga Site:

- PSYCH 1N03 - Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1NN3 - Foundations of Psychology, Neuroscience & Behaviour

3 units

- Electives

1 course

- WHMIS 1A00 - Introduction to Health and Safety

Level II: 29 Units

(Units graded: 23; Units Pass/Fail: 6)

14 units

- HTHSCI 2H03 - Introductory Pharmacology
- HTHSCI 2HH3 - Introductory Microbiology
- HTHSCI 2LA2 A/B - Introduction to Integrated Pathophysiology for Nursing for Basic Stream
- HTHSCI 2RR3 - Introduction to the Social Determinants of Health
- HTHSCI 2S03 - Introduction to Statistics for Nursing

12 units

- NURSING 2L03 - Professional Nursing Practice II for Basic Stream
- NURSING 2MM3 - Nursing Concepts in Health and Illness I for Basic Stream
- NURSING 2NN3 - Nursing Concepts in Health and Illness II for Basic Stream
- NURSING 2P03 - Professional Nursing Practice III for Basic Stream

3 units

- Electives

Level III: 31 Units

(Units graded: 20; Units Pass/Fail: 11)

5 units

- HTHSCI 3BB3 - Human Biochemistry II: Nutrition and Metabolism
- HTHSCI 3PA2 A/B - Integrated Pathophysiology for Nursing

0-3 units

- HTHSCI 4NR3 - Nursing Research (See *Note* above.)

17 units

- NURSING 3Q03 - Professional Community Nursing Practice
- NURSING 3SS3 - Nursing Concepts in Health and Illness III for Basic Stream
- NURSING 3TT3 - Nursing Concepts in Health and Illness IV for Basic Stream
- NURSING 3X04 - Professional Nursing Practice IV
- NURSING 3Y04 - Professional Nursing Practice V

6-9 units

- Electives

Level IV: 30 Units

(Units graded: 13; Units Pass/Fail: 17)

0-3 units

- HTHSCI 4NR3 - Nursing Research (See *Note* above.)

24 units

- NURSING 4J07 - Professional Nursing Practice VI
- NURSING 4K10 - Professional Practice and the New Graduate
- NURSING 4P04 - Advanced Nursing Concepts I
- NURSING 4Q03 - Advanced Nursing Concepts II

3-6 units

- Electives

Total Units: 120

### REQUIREMENTS FOR STUDENTS WHO ENTERED FROM 2013 TO 2017

#### ELECTIVES

Eighteen units of electives are to be selected from disciplines of the student's choice, of which a minimum of six units are to be chosen from courses designated as Level II or above. A maximum of six units of electives may be selected from NURSING and/or HTHSCI elective courses (i.e. those courses that are not required for any of the program streams). For some courses, the amount of duplication of required content will preclude their being used for elective credit in the B.Sc.N. Program. Mandatory NURSING and/or HTHSCI courses from the Post Diploma R.P.N. (E) Stream or the Accelerated (F) Stream of the B.Sc.N. Program cannot be used toward elective requirements for the Basic (A) Stream.

**NOTE**

HTHSCI 4NR3 may be completed in either Level III or IV.

**REQUIREMENTS**Level I: 30 Units

(Units graded: 28; Units Pass/Fail: 2)

**9 units**

- HTHSCI 1LL3 - Human Biochemistry I
- HTHSCI 1H06 A/B - Human Anatomy and Physiology I

**12 units**

- NURSING 1F03 - Introduction to Nursing and Health I for Basic Stream
- NURSING 1G03 - Introduction to Nursing and Health II for Basic Stream
- NURSING 1I02 - Introduction to Nursing Practice for Basic Stream
- NURSING 1J02 - Professional Nursing Practice I for Basic Stream
- NURSING 1K02 A/B - Community Engagement and Citizenship for Basic Stream

**6 units****McMaster and Mohawk Site:**

- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour

**Conestoga Site:**

- PSYCH 1N03 - Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1NN3 - Foundations of Psychology, Neuroscience & Behaviour

**3 units**

- Electives

**1 course**

- WHMIS 1A00 - Introduction to Health and Safety

Level II: 31 Units

(Units graded: 23; Units Pass/Fail: 8)

**12 units**

- HTHSCI 2H03 - Introductory Pharmacology
- HTHSCI 2HH3 - Introductory Microbiology
- HTHSCI 2RR3 - Introduction to the Social Determinants of Health
- HTHSCI 2S03 - Introduction to Statistics for Nursing

**16 units**

- HTHSCI 2LA2 A/B - Introduction to Integrated Pathophysiology for Nursing for Basic Stream (or NURSING 2LA2 A/B)
- NURSING 2K02 A/B
- NURSING 2L03 - Professional Nursing Practice II for Basic Stream
- NURSING 2MM3 - Nursing Concepts in Health and Illness I for Basic Stream
- NURSING 2NN3 - Nursing Concepts in Health and Illness II for Basic Stream
- NURSING 2P03 - Professional Nursing Practice III for Basic Stream

**3 units**

- Electives

Level III: 31 Units

(Units graded: 20; Units Pass/Fail: 11)

**3 units**

- HTHSCI 3BB3 - Human Biochemistry II: Nutrition and Metabolism

**0-3 units**

- HTHSCI 4NR3 - Nursing Research

(See *Note* above.)

**19 units**

- HTHSCI 3PA2 A/B - Integrated Pathophysiology for Nursing (or NURSING 3PA2 A/B)
- NURSING 3QQ3 - Professional Community Nursing Practice
- NURSING 3SS3 - Nursing Concepts in Health and Illness III for Basic Stream
- NURSING 3TT3 - Nursing Concepts in Health and Illness IV for Basic Stream
- NURSING 3X04 - Professional Nursing Practice IV

- NURSING 3Y04 - Professional Nursing Practice V

**6-9 units**

- Electives

**5 units**Level IV: 30 Units

(Units graded: 13; Units Pass/Fail: 17)

**0-3 units**

- HTHSCI 4NR3 - Nursing Research

(See *Note* above.)

**24 units**

- NURSING 4J07 - Professional Nursing Practice VI
- NURSING 4K10 - Professional Practice and the New Graduate
- NURSING 4P04 - Advanced Nursing Concepts I
- NURSING 4Q03 - Advanced Nursing Concepts II

**3-6 units**

- Electives

Total Units: 122Note:

Regardless of year of entrance, the following courses will no longer be offered: NURSING 2M04, 2N04, 3SS4, 3TT4, 4K07, and 4Q04. Instead students will be required to take NURSING 2MM3, NURSING 2NN3 and NURSING 2LA2 A/B; NURSING 3SS3, NURSING 3TT3, and NURSING 3PA2 A/B; NURSING 4K10; and NURSING 4Q03, respectively.

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**POST DIPLOMA R.P.N. (E) STREAM (B.SC.N.)**

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**Conestoga Site****Mohawk Site**

*Please note that the last intake for this stream at McMaster was Fall 2010.*

*Any applicants interested in this stream should see information for Post Diploma R.P.N. (E) Stream (Mohawk and Conestoga) below.*

The program of study for the Post Diploma Registered Practical Nurses (E) Stream prepares students for practice as Registered Nurses. It builds on the knowledge and skills acquired in the diploma practical nurse program. (E) Stream students receive 30 units of advanced credit and enter at Level II. The two Level II nursing courses are designed to assist in the transition of students to baccalaureate studies. Students are integrated with both Basic and Post-Diploma students for most courses. The curriculum is planned for three academic years of full-time study.

**REQUIREMENTS****ELECTIVES**

Fifteen units of electives are to be selected from disciplines of the student's choice of which a minimum of six units are to be chosen from courses designated Level II or above. A maximum of six units of electives may be selected from NURSING and/or HTHSCI elective course (i.e. those course that are not required for any of the program streams). For some courses the amount of duplication of required content will preclude use for elective credit in the B.Sc.N. Program. Mandatory NURSING and/or HTHSCI courses from the Basic (A) Stream or the Accelerated (F) Stream of the B.Sc.N. Program cannot be used toward elective requirements for the Post Diploma R.P.N. (E) Stream.

**NOTE**

- NURSING 3A04 and NURSING 3RY4 cannot be taken concurrently; these courses must be completed in separate terms.
- HTHSCI 2S03 must be taken before HTHSCI 3C04.

**REQUIREMENTS**

*Advanced Credit: 30 units*

Level II: 32 Units

(Units graded: 29; Units Pass/Fail: 3)

**22 units**

- HTHSCI 1CC6 - Integrated Biological Bases of Nursing Practice I
- HTHSCI 2C06 - Integrated Biological Bases of Nursing Practice II



- HTHSCI 2RR3 - Introduction to the Social Determinants of Health
- HTHSCI 2S03 - Introduction to Statistics for Nursing
- HTHSCI 3C04 - Research Appraisal and Utilization in Evidence Informed Decision Making (See *Note 1* above.)

**10 units**

- NURSING 2A04 - Introduction to Professional RN Practice I for Post Diploma RPN Stream
- NURSING 2AA3 - Professional RN Practice II for Post Diploma RPN Stream
- NURSING 3QQ3 - Professional Community Nursing Practice (See *Note 1* above.)

**1 course**

- WHMIS 1A00 - Introduction to Health and Safety

Level III: 28 Units*(Units graded: 24; Units Pass/Fail: 4)***5 units**

- HTHSCI 3PA2 A/B - Integrated Pathophysiology for Nursing
- HTHSCI 4NR3 - Nursing Research

**14 units**

- NURSING 3A04 - Clinical Reasoning in RN Practice for Post Diploma RPN Stream (See *Note 1* above.)
- NURSING 3RS3 - Nursing Concepts in Health and Illness III for Post Diploma RPN Stream
- NURSING 3RT3 - Nursing Concepts in Health and Illness IV for Post Diploma RPN Stream
- NURSING 3RY4 - Professional Nursing Practice V for Post Diploma RPN Stream (See *Note 1* above.)

**9 units**

- Electives

Level IV: 30 Units*(Units graded: 13; Units Pass/Fail: 17)***24 units**

- NURSING 4J07 - Professional Nursing Practice VI
- NURSING 4K10 - Professional Practice and the New Graduate
- NURSING 4P04 - Advanced Nursing Concepts I
- NURSING 4Q03 - Advanced Nursing Concepts II

**6 units**

- Electives

Total Units: 120**REQUIREMENTS (EFFECTIVE 2018-2019)****ELECTIVES**

Fifteen units of electives are to be selected from disciplines of the student's choice of which a minimum of six units are to be chosen from courses designated Level II or above. A maximum of six units of electives may be selected from NURSING and/or HTHSCI elective course (i.e. those course that are not required for any of the program streams). For some courses the amount of duplication of required content will preclude use for elective credit in the B.Sc.N. Program. Mandatory NURSING and/or HTHSCI courses from the Basic (A) Stream or the Accelerated (F) Stream of the B.Sc.N. Program cannot be used toward elective requirements for the Post Diploma R.P.N. (E) Stream.

**NOTES**

- HTHSCI 2S03 and NURSING 3QQ3 cannot be taken concurrently; these courses must be completed in separate terms.
- NURSING 3A04 and NURSING 3Y04 cannot be taken concurrently; these courses must be completed in separate terms.
- NURSING 3SS3, NURSING 3TT3 and NURSING 3Y04 have had a code change only to NURSING 3RS3, NURSING 3RT3 and NURSING 3RY4 for the Post Diploma R.P.N. (E) Stream.

**REQUIREMENTS***Advanced Credit: 30 units*Level II: 32 Units*(Units graded: 29; Units Pass/Fail: 3)***22 units**

- HTHSCI 1CC6 - Integrated Biological Bases of Nursing Practice I
- HTHSCI 2C06 - Integrated Biological Bases of Nursing Practice II
- HTHSCI 2RR3 - Introduction to the Social Determinants of Health
- HTHSCI 2S03 - Introduction to Statistics for Nursing (See *Note 1* above.)
- HTHSCI 3C04 - Research Appraisal and Utilization in Evidence Informed Decision Making

**10 units**

- NURSING 2A04 - Introduction to Professional RN Practice I for Post Diploma RPN Stream
- NURSING 2AA3 - Professional RN Practice II for Post Diploma RPN Stream
- NURSING 3QQ3 - Professional Community Nursing Practice (See *Note 1* above.)

**1 course**

- WHMIS 1A00 - Introduction to Health and Safety

Level III: 28 Units*(Units graded: 24; Units Pass/Fail: 4)***5 units**

- HTHSCI 3PA2 A/B - Integrated Pathophysiology for Nursing
- HTHSCI 4NR3 - Nursing Research

**14 units**

- NURSING 3A04 - Clinical Reasoning in RN Practice for Post Diploma RPN Stream (See *Note 2* above.)
- NURSING 3RS3 - Nursing Concepts in Health and Illness III for Post Diploma RPN Stream (See *Note 3* above.)
- NURSING 3RT3 - Nursing Concepts in Health and Illness IV for Post Diploma RPN Stream (See *Note 3* above.)
- NURSING 3RY4 - Professional Nursing Practice V for Post Diploma RPN Stream (See *Note 3* above.)

**9 units**

- Electives

Level IV: 30 Units*(Units graded: 13; Units Pass/Fail: 17)***24 units**

- NURSING 4J07 - Professional Nursing Practice VI
- NURSING 4K10 - Professional Practice and the New Graduate
- NURSING 4P04 - Advanced Nursing Concepts I
- NURSING 4Q03 - Advanced Nursing Concepts II

**6 units**

- Electives

Total Units: 120**REQUIREMENTS (EFFECTIVE 2016-2017 OR 2017-2018)****ELECTIVES**

Twenty one units of electives are to be selected from disciplines of the student's choice of which a minimum of nine units are to be chosen from courses designated Level II or above. A maximum of nine units of electives may be selected from NURSING and/or HTHSCI elective course (i.e. those course that are not required for any of the Program streams). For some courses the amount of duplication of required content will preclude use for elective credit in the B.Sc.N. program. Mandatory NURSING and/or HTHSCI courses from the Basic (A) Stream or the Accelerated (F) Stream of the B.Sc.N. Program cannot be used toward elective requirements for the Post Diploma R.P.N. (E) Stream.

**NOTE**

NURSING 3Y04 and NURSING 3QQ3 cannot be taken concurrently and must be completed in separate terms.

**REQUIREMENTS***Advanced Credit: 30 units*Level II: 32 Units*(Units graded: 32)*

**18 units**

- HTHSCI 1CC6 - Integrated Biological Bases of Nursing Practice I
- HTHSCI 2C06 - Integrated Biological Bases of Nursing Practice II
- HTHSCI 2RR3 - Introduction to the Social Determinants of Health
- HTHSCI 2S03 - Introduction to Statistics for Nursing

**11 units**

- NURSING 2A04 - Introduction to Professional RN Practice I for Post Diploma RPN Stream
- NURSING 2AA3 - Professional RN Practice II for Post Diploma RPN Stream
- NURSING 2T04

**3 units**

- Electives

**1 course**

- WHMIS 1A00 - Introduction to Health and Safety

Level III: 30 Units

(Units graded: 23; Units Pass/Fail: 7)

**15 units**

- HTHSCI 3PA2 A/B - Integrated Pathophysiology for Nursing (or NURSING 3PA2 A/B)
- NURSING 3QQ3 - Professional Community Nursing Practice (See *Note* above.)
- NURSING 3SS3 - Nursing Concepts in Health and Illness III for Basic Stream
- NURSING 3TT3 - Nursing Concepts in Health and Illness IV for Basic Stream
- NURSING 3Y04 - Professional Nursing Practice V (See *Note* above.)

**15 units**

- Electives

Level IV: 30 Units

(Units graded: 13; Units Pass/Fail: 17)

**3 units**

- HTHSCI 4NR3 - Nursing Research

**24 units**

- NURSING 4J07 - Professional Nursing Practice VI
- NURSING 4K10 - Professional Practice and the New Graduate
- NURSING 4P04 - Advanced Nursing Concepts I
- NURSING 4Q03 - Advanced Nursing Concepts II

**3 units**

- Electives

Total Units: 122**NOTE:**

Regardless of year of entrance, the following courses will no longer be offered: NURSING 3SS4, and 3TT4. Instead students will be required to take NURSING 3SS3, NURSING 3TT3, and NURSING 3PA2 A/B .

**REQUIREMENTS (EFFECTIVE 2012 TO 2015)****ELECTIVES**

Twenty one units of electives are to be selected from disciplines of the student's choice of which a minimum of 9 units are to be chosen from courses designated Level II or above. For some courses the amount of duplication of required content will preclude use for elective credit in the B.Sc.N. program. Normally a maximum of nine units of Nursing and/or Health Sciences electives may be selected. Mohawk site students take 9 units of COLLAB electives and 12 units of McMaster electives.

**NOTE**

NURSING 3Y04 and NURSING 3QQ3 cannot be taken concurrently and must be completed in separate terms.

**REQUIREMENTS**

*Advanced Credit: 30 units*

Level II: 34 Units

(Units graded: 28; Units Pass/Fail: 6)

**15 units**

- HTHSCI 1CC6 - Integrated Biological Bases of Nursing Practice I
- HTHSCI 2C06 - Integrated Biological Bases of Nursing Practice II
- HTHSCI 2RR3 - Introduction to the Social Determinants of Health

**13 units**

- NURSING 2A04 - Introduction to Professional RN Practice I for Post Diploma RPN Stream
- NURSING 2AA3 - Professional RN Practice II for Post Diploma RPN Stream
- NURSING 2DP2 A/B
- NURSING 2T04

**3 units**

- Electives

**1 course**

- WHMIS 1A00 - Introduction to Health and Safety (or NURSING 1A00)

Spring/Summer Term:**3 units**

- HTHSCI 2S03 - Introduction to Statistics for Nursing

Level III: 30 Units

(Units graded: 23; Units Pass/Fail: 7)

**15 units**

- HTHSCI 3PA2 A/B - Integrated Pathophysiology for Nursing (or NURSING 3PA2 A/B)
- NURSING 3QQ3 - Professional Community Nursing Practice (See *Note* above.)
- NURSING 3SS3 - Nursing Concepts in Health and Illness III for Basic Stream
- NURSING 3TT3 - Nursing Concepts in Health and Illness IV for Basic Stream
- NURSING 3Y04 - Professional Nursing Practice V (See *Note* above.)

**15 units**

- Electives

Level IV: 30 Units

(Units graded: 13; Units Pass/Fail: 17)

**3 units**

- HTHSCI 4NR3 - Nursing Research

**24 units**

- NURSING 4J07 - Professional Nursing Practice VI
- NURSING 4K10 - Professional Practice and the New Graduate
- NURSING 4P04 - Advanced Nursing Concepts I
- NURSING 4Q03 - Advanced Nursing Concepts II

**3 units**

- Electives

Total Units: 124Note:

Regardless of year of entrance, the following courses will no longer be offered: NURSING 3SS4, and 3TT4. Instead students will be required to take NURSING 3SS3, NURSING 3TT3, and NURSING 3PA2 A/B .

**REQUIREMENTS (EFFECTIVE 2010-2011)****ELECTIVES**

Twenty one units of electives are to be selected from disciplines of the student's choice of which a minimum of 9 units are to be chosen from courses designated Level II or above. For some courses the amount of duplication of required content will preclude use for elective credit in the B.Sc.N. program. Normally a maximum of nine units of Nursing and/or Health Sciences electives may be selected. Mohawk site students take 9 units of COLLAB electives and 12 units of McMaster electives. Conestoga site students take 12 units of COLLAB electives and 9 units of McMaster electives.

**REQUIREMENTS**

*Advanced Credit: 30 units*

Level II: 32 Units

(Units graded: 24; Units Pass/Fail: 8)

**15 units**

- HTHSCI 1CC6 - Integrated Biological Bases of Nursing Practice I
- HTHSCI 2C06 - Integrated Biological Bases of Nursing Practice II
- HTHSCI 2RR3 - Introduction to the Social Determinants of Health

**11 units**

- NURSING 2A04 - Introduction to Professional RN Practice I for Post Diploma RPN Stream
- NURSING 2AA4
- NURSING 3LL3

**6 units**

- Electives

**1 course**

- WHMIS 1A00 - Introduction to Health and Safety (or NURSING 1A00)

Level III: 32 Units

(Units graded: 23; Units Pass/Fail: 9)

**3 units**

- HTHSCI 2S03 - Introduction to Statistics for Nursing (formerly NURSING 2R03)

**17 units**

- NURSING 1K02 A/B - Community Engagement and Citizenship for Basic Stream
- NURSING 3Q03 - Professional Community Nursing Practice
- NURSING 3SS4 (formerly NURSING 3S04)
- NURSING 3TT4 (formerly NURSING 3T04)
- NURSING 3X04 - Professional Nursing Practice IV

**12 units**

- Electives

Level IV: 30 Units

(Units graded: 13; Units Pass/Fail: 17)

**3 units**

- HTHSCI 4NR3 - Nursing Research

**24 units**

- NURSING 4J07 - Professional Nursing Practice VI
- NURSING 4K10 - Professional Practice and the New Graduate
- NURSING 4P04 - Advanced Nursing Concepts I
- NURSING 4Q03 - Advanced Nursing Concepts II

**3 units**

- Electives

Total Units: 124

**INDIGENOUS SECTION POST DIPLOMA R.P.N. (E) PROGRAM STREAM**

**Mohawk Site**

Twenty one units of electives are to be selected from disciplines of the student's choice of which a minimum of 9 units are to be chosen from courses designated Level II or above. Health Science (HTHSCI) and Nursing (NURSING) courses that are required courses in any of the B.Sc.N. Program streams may not be used by students to satisfy their elective requirements. A maximum of nine units of electives may be selected from NURSING and/or HTHSCI elective course (i.e. those course that are not required for any of the Program streams). For some courses the amount of duplication of required content will preclude use for elective credit in the B.Sc.N. program.

**REQUIREMENTS (EFFECTIVE 2018-2019)**

Electives

Fifteen units of electives are to be selected from disciplines of the student's choice of which a minimum of six units are to be chosen from courses designated Level II or above. Health Science (HTHSCI) and Nursing (NURSING) courses that are required courses in any of the B.Sc.N. Program streams may not be used by students to satisfy their elective requirements. A maximum of six units of electives may be selected from NURSING and/or HTHSCI elective course (i.e. those course that are not required for any of the program streams). For some courses the amount of duplication of required content will preclude

use for elective credit in the B.Sc.N. Program. Mandatory NURSING and/or HTHSCI courses from the Basic (A) Stream or the Accelerated (F) Stream of the B.Sc.N. Program cannot be used toward elective requirements for the Post Diploma R.P.N. (E) Stream.

Notes

- HTHSCI 2S03 and NURSING 3Q03 cannot be taken concurrently; these courses must be completed in separate terms.
- NURSING 3A04 and NURSING 3Y04 cannot be taken concurrently; these courses must be completed in separate terms.

Requirements

*Advanced Credit: 30 units*

**Level II: 32 Units**

(Units graded: 29; Units Pass/Fail: 3)

**22 units**

- HTHSCI 1CC6 - Integrated Biological Bases of Nursing Practice I
- HTHSCI 2C06 - Integrated Biological Bases of Nursing Practice II
- HTHSCI 2RR3 - Introduction to the Social Determinants of Health
- HTHSCI 2S03 - Introduction to Statistics for Nursing (See *Note 1* above.)
- HTHSCI 3C04 - Research Appraisal and Utilization in Evidence Informed Decision Making

**10 units**

- NURSING 2A04 - Introduction to Professional RN Practice I for Post Diploma RPN Stream
- NURSING 2AA3 - Professional RN Practice II for Post Diploma RPN Stream
- NURSING 3Q03 - Professional Community Nursing Practice (See *Note 1* above.)

**1 course**

- WHMIS 1A00 - Introduction to Health and Safety

**Level III: 28 Units**

(Units graded: 24; Units Pass/Fail: 4)

**5 units**

- HTHSCI 3PA2 A/B - Integrated Pathophysiology for Nursing
- HTHSCI 4NR3 - Nursing Research

**14 units**

- NURSING 3A04 - Clinical Reasoning in RN Practice for Post Diploma RPN Stream (See *Note 2* above.)
- NURSING 3SS3 - Nursing Concepts in Health and Illness III for Basic Stream
- NURSING 3TT3 - Nursing Concepts in Health and Illness IV for Basic Stream
- NURSING 3Y04 - Professional Nursing Practice V (See *Note 2* above.)

**9 units**

- Electives

**Level IV: 30 Units**

(Units graded: 13; Units Pass/Fail: 17)

**24 units**

- NURSING 4J07 - Professional Nursing Practice VI
- NURSING 4K10 - Professional Practice and the New Graduate
- NURSING 4P04 - Advanced Nursing Concepts I
- NURSING 4Q03 - Advanced Nursing Concepts II

**6 units**

- Electives

**Total Units: 120**

**Note:** Courses to be offered at Six Nations Polytechnic will be decided on a yearly basis.

## Midwifery Education Program

Health Sciences Centre (HSC), Room 4H24, ext. 26654  
<http://www.fhs.mcmaster.ca/midwifery/>

midwifery@mcmaster.ca

ASSISTANT DEAN

**Elizabeth Darling**

ASSOCIATE PROFESSORS

**Elizabeth Darling**/B.ArtsSc., B.H.Sc., M.Sc. (McMaster), Ph.D. (Ottawa), R.M.

**Derek Lobb**/B.Sc. (Western Ontario), M.Sc. (Guelph), Ph.D. (Toronto)

**Anne Malott**/B.Sc.N. (Windsor), M.S.N (Case Western Reserve), Ph.D. (Western), R.M.

**Helen McDonald**/M.H.Sc. (McMaster), R.M.

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**Bruce Wainman**/B.Sc. (Laurentian), M.H.Sc. (McMaster), Ph.D. (York)

ASSISTANT PROFESSORS

**Kate Demers**, MMID (Sheffield), R.M.

**Kathi Wilson**, M.Sc. (McMaster), R.M.

PROGRAM MANAGER

**Saadia Israr**

## Program Overview

Midwives are primary health care providers who provide care and advice to women during pregnancy, labour and the postpartum period; conduct deliveries and provide care for newborn babies. Midwives have well-developed interpersonal skills and are competent in areas of health education, counselling and interprofessional collaboration. Midwives' expertise in the care of normal pregnancy and childbirth arises from their understanding of childbearing as a social, cultural and biological process and from their ability to competently exercise clinical skills and decision-making. Midwifery is potentially one of the most important components of women's health care in Ontario. Midwifery education provides the base for sound professional practice. The educational program is an integral part of the evolution of the profession of midwifery in Ontario and is a leader in midwifery education in Canada. The program helps create future leaders and teachers. It assures practice and teaching as a continuum so that learning environments become available across Ontario. The Midwifery Education Program at McMaster University is a collaborative venture shared by McMaster, Ryerson and Laurentian Universities, and leads to a Bachelor of Health Sciences (B.H.Sc.) in Midwifery.

## Admission Procedures and Requirements

Enrolment in the Midwifery Education Program is limited. Admission into the Midwifery Education Program is by selection and reserved for candidates who meet all requirements and who satisfy the academic regulations of the university. Possession of the minimum requirements does not guarantee an offer of admission. It is recommended that applicants have completed at least one year of university prior to applying. All certified transcripts from secondary and post secondary education previously attended must be forwarded to the Office of the Registrar. The application deadline is February 1 each year for the following September intake. Applications received after February 1 will not be considered. Please note that all required courses must be completed, with final grades available on any and all official transcripts at the time of application (excluding current Secondary School students.) All official transcripts must be submitted by the February 1 deadline. *All documents submitted with the application become property of the university.*

**All applicants must have completed the following course requirements in order to be considered for admission:**

A full course credit in:

- Biology
- Chemistry
- English

A minimum grade of 75% in each course is required.

It is recognized that applicants apply to the program with varying educational backgrounds. Applicants can fulfill the courses required from the following educational backgrounds:

### Applicants Directly from Ontario Secondary Schools

The following are the minimum grade 12 U and M requirements under the Ontario Secondary School Curriculum for applicants directly from an Ontario Secondary School:

- English 12 U
- Biology 12 U
- Chemistry 12 U

Completion of additional 12 U or M courses to total six credits.

Students must obtain a minimum grade of 75% in each of the **three** (3) required courses listed in points 1, 2 and 3 above AND a minimum overall average of 75% on grade 12 U or M courses including the required courses. Current Ontario Secondary School Students may apply if one or more of the three (3) required courses are in progress at the time of application; however, the grade 11 prerequisite(s) must be completed at the time of application so that a preliminary assessment of the subject area(s) can be made. Admission is based on in progress secondary school grades for current secondary students **only** if the grade 11 prerequisite in that subject area is at least 75%.

### Applicants with Prior College Diploma Studies

No Admissions will be based on College standing. For applicants with prior college/diploma studies who completed their college education within the last two years of applying to Midwifery, admission will be based on secondary school eligibility. If college education was completed more than 2 years ago at the time of applying to Midwifery, please refer to the Mature Applicants section for eligibility and admission requirements.

### Applicants from Ontario Secondary Schools (within one year of obtaining OSSD)

The following are the minimum grade 12 U and M requirements under the Ontario Secondary School Curriculum for applicants from an Ontario Secondary School who have obtained their OSSD in the previous calendar year and have never attended University:

- English 12 U
- Biology 12 U
- Chemistry 12 U

Completion of additional grade 12 U or M courses to total six credits.

Applicants must have obtained a minimum grade of 75% in each of the **three** (3) required courses listed in points 1, 2 and 3 above AND a minimum overall average of 75% on grade 12 U or M courses including the required courses. All required courses must be completed at the time of application.

### Applicants with Qualifications Equivalent to Ontario Secondary School

Applicants from out-of-province, with qualifications equivalent to Ontario Secondary School (i.e Advanced Placement Students, American Style Curriculum Students, International Baccalaureate Students, General Certificate of Education Students, etc.) should refer to the Future McMaster website for general requirement and required course information.

### International Students

**Applicants must be Canadian Citizens or have Permanent Resident status prior to applying to the Midwifery program.**



## Mature Applicants

A mature student is someone who has been out of full time secondary school or college for the past two years, and who has never attended university (<http://future.mcmaster.ca/admission/admissionrequirements/mature-applicants/>.) Midwifery does not offer mature admission directly to the program. However, students interested in Midwifery may be admitted as mature students to another program in order to complete university pre-requisite courses for later consideration for admission to Midwifery. Enrolment in this program is limited. Possession of the minimum admission requirements does not guarantee admission.

In order to apply for admission to the Midwifery Education program, mature applicants must have successfully completed a minimum of 18 units of university level course work with a minimum cumulative average of 75% prior to acceptance.

Applicants must have grade 12 U courses from high school or full university courses in the three (3) required subject areas of Biology, Chemistry, and English with a minimum grade of 75% in each. A full university course is equivalent to 6 units or 1.0 credit, depending on the university.

## Prior Midwifery Education or Experience

For applicants with prior Midwifery Education or Experience, Ryerson University, through the division of Continuing Education, offers the International Midwifery Pre-Registration Program. The purpose of this program is to provide internationally educated midwives with assessment and education which will prepare them to register as midwives in Ontario. (Refer to the *Midwifery Education Program website* for more information.)

## Indigenous Applicants

In accordance with the Self-Identification policy of the Faculty of Health Sciences, Indigenous (First Nations, Inuit and Métis) applicants who wish to apply to a program that has a facilitated Indigenous admissions stream must complete the supplementary Self-identification Application. Information on the policy, application requirements and the online application can be found at: <https://ishs.mcmaster.ca/admissions/self-identification>.

One self-identification application is used for all Faculty of Health Sciences programs that have a facilitated Indigenous admissions stream, and should only be completed once even if an applicant applied to multiple programs. Applicants identify the program(s) they applied to on the Self-identification Application. The applicant is responsible for ensuring the Self-identification Application is submitted by the application deadline(s) for the program(s) they applied to in addition to completing any other application required for that program(s). If you applied to multiple Faculty of Health Sciences programs, the Self-identification Application must be completed by whatever the earliest deadline date is for the programs for which you have applied to. Indigenous applicants will also be required to apply to the Midwifery Program by February 1 of the year in which they are applying. All appropriate transcripts from secondary and post-secondary education must be submitted to the Office of the Registrar by February 1.

Applicants must meet the same minimum academic criteria for admission as set out for the general pool of candidates.

## Transfer Credit

Students with previous university education may be eligible for transfer credits for non-clinical courses in Levels I and II. Transfer credits will be determined on an individual basis, after the admitted students have accepted their Offer of Admission.

## Selection Procedure

The Midwifery Education Program has a limited number of placements and the admission process is very competitive. The admission requirements stated are minimum requirements. Preference will be given to applicants with the best qualifications. The actual standing required for admission in recent years has been an average in the mid to high 80s. The program has a two-step selection procedure:

- Assessment of academic eligibility. Applicants must be successful at step one to be considered for step two.
- Admission interview - selected applicants will be invited to Hamilton for an interview. The interview process will consist of ten, ten-minute interviews. The interviews typically take place on a Saturday at the end of April, but this is subject to change. Candidates must attend on the date and at the time specified.

Offers of admission will be made following the interview process.

Offers based on interim grades will be conditional upon maintaining satisfactory performance on final grades, and are based on the results from step 2.

## Application for Deferred Registration

Applications are not held over from one year to another; if an applicant is selected for admission, they cannot defer this to a future year and will be asked to reapply.

## Unsuccessful Applicants

If an unsuccessful applicant, or an applicant who refuses their offer of admission, wishes to reapply to the Midwifery Education Program, a new application, including transcripts and supplementary materials must be submitted.

## Application Deadline

Submission of completed application forms to the Ontario Universities' Application Centre must be received by the University no later than February 1 of the year in which registration is expected. All certified transcripts from secondary and post-secondary education previously attended must be forwarded to the Office of the Registrar and received by February 1. Applications received after February 1 will not be considered.

## Immunization

The *Ontario Public Hospitals Act* requires that all persons working in a hospital setting meet certain criteria regarding surveillance for infectious diseases. In order for the requirement of the legislation to be met, students are required to complete the immunization screening process by July 15th in the year of admission and each subsequent academic year. Failure to do so will result in suspension of clinical work. Information will be sent to successful applicants prior to registration.

## Police Records Check

An offer of admission is contingent upon provision of a Police Records Check, by July 31st of the year of admission. All registered students are required to have a satisfactory Police Records Check completed by July 31st annually. Expenses for the Police Records Check are the responsibility of the student. The Police Records Check includes a Vulnerable Sector Screening and check of the Royal Canadian Mounted Police (RCMP), National Canadian Police Information Centre (CPIC) database for the following:

- All records of Criminal Code (Canada) convictions
- All pardoned sexual offences
- All record of convictions under the Narcotic Control Act
- All records of convictions under the Food and Drug Act
- Any undertakings to enter into a Surety to Keep the Peace

- Any Restraining Orders issued under the Criminal Code (Canada) or the Family Act
- All outstanding warrants and charges

## Financial Information

In 2019-2020 the tuition fees for a student in Level I of the Midwifery Education Program were \$8,261.19 for an eight month academic term. Supplementary fees are estimated at \$500.00 per year.

Additional costs include books, supplies, and other learning resources estimated at \$1,200.00 - \$1,700.00.

Students must have access to a vehicle for all placement courses.

Students should expect to relocate for clinical placements.

Students should expect to cover their own travel and accommodation costs during the program. The program strongly suggests that students join both the College of Midwives Subscriber Status and the Association of Ontario Midwives as a student member.

## Academic Regulations

### Student Academic Responsibility

You are responsible for adhering to the statement on student academic responsibility found in the *General Academic Regulations* of this calendar.

### Access to Courses

All undergraduate courses at McMaster have an enrolment capacity. The University is committed to making every effort to accommodate students in required courses so that their program of study is not extended. Unless otherwise specified, registration is on a first-come basis and in some cases priority is given to students from particular programs or Faculties. All students are encouraged to register as soon as Mosaic is available to them.

### Student Communication Responsibility

It is the student's responsibility to:

- maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- use the university provided e-mail address or maintain a valid forwarding e-mail address.
- regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.
- accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.

*In addition to meeting the General Academic Regulations of the University, students enrolled in the Midwifery Education Program will be subject to the following program regulations.*

The Midwifery Education Program reserves the right, at any point during the term, to remove a student from a clinical placement or laboratory setting if the student exhibits unsafe clinical practice or behaviour that places clients or others at risk and/or violates the Midwifery Act of Ontario. Such removal will result in the student receiving a grade of F and may result in dismissal from the program.

## Continuation in the Program

All courses (clinical and non-clinical) with the subject abbreviation MIDWIF and HTHSCI (as outlined in the Curriculum Plan) are required for the degree. Students are reviewed at the end of each term. Students must achieve a Cumulative Grade Point Average (CGPA) of at least 6.0 in all graded courses and achieve a Pass/Satisfactory performance in all clinical courses at each review to continue in Good Standing in the program.

## Good Standing

A student is considered to be in Good Standing when all of the following criteria are met. The student must:

- achieve a Grade Point Average (GPA) of at least 6.0;
- achieve a minimum grade of C- in HTH SCI 1D06; and a minimum grade of B- in MIDWIF 1D03, 1G03, 2G06, 3F03 and 3J06;
- achieve a minimum grade of C- in each of HTH SCI 1C06, 1J03, 2M03 and MIDWIF 1F03 (or HTH SCI 3C04), 2F03, with the exception that a minimum grade of D is acceptable in one of those courses;
- achieve a Pass/Satisfactory performance in all clinical courses MIDWIF 2H15; 3I03; 3K06; 3L03; 3A09; 3H15; 4A15 and 4B15;
- receive a passing grade (minimum D-) in any required midwifery, health science, or indigenous studies graded courses other than those stated in **2.** and **3.** above.

## Probation

A student will be placed on probation if any of the following criteria is met. The student:

- obtains a GPA less than 6.0;
- obtains a grade of less than C- in HTHSCI 1D06 or a grade of less than B- in MIDWIF 1D03, 1G03, 2G06, 3F03 and 3J06;
- achieves a minimum grade of less than C- in HTH SCI 1C06, 1J03, 2M03 or MIDWIF 1F03 (or HTH SCI 3C04), 2F03, with the exception that a grade of D or D+ is acceptable in one of those courses;
- receives an F or a Fail/Unsatisfactory in any clinical course MIDWIF 2H15; 3I03; 3K06; 3L03; 3A09; 3H15; 4A15 and 4B15;
- fails any one required midwifery, health science or indigenous studies course.

If a student receives a CA of less than 6.0 (5.5 to 5.9), he/she may remain in the program, but will be placed on program probation for one reviewing period.

A student is permitted to be on program probation only once. A student on probation at the completion of Level II, Fall term, must undertake remedial course work and remove the probationary status before proceeding to MIDWIF 2H15. If a student receives a CA of 3.5 - 5.4, he/she may transfer to another program for which he/she qualifies.

A student must obtain a minimum pass grade (D-) except in courses with a higher minimum grade requirement (see items **2.** and **3.** under *Good Standing* above) when a course is repeated and receive an overall CGPA of 6.0 at the completion of a probation period. Planned course work for any student on probation must be approved by the Academic Review Committee.

## Graduation Requirements

Students who have successfully completed Level III of the program may request permission from the B.H.Sc. (Midwifery) Program Office to graduate with a three-level B.H.Sc. degree. Please refer to the *General Academic Regulations* section in this Calendar for additional information related to graduation.

## Required to Withdraw

A student will be required to **withdraw** from the program if any of the following criteria is met. The student:

- obtains a Grade Point Average (GPA) of less than 6.0 at the end of a probation period;
- fails two of the following courses MIDWIF 1D03; 1G03; 1F03; 2F03, 2G06; 3J06; 3F03; HTHSCI 1C06; 1D06; 1J03; 2M03; 2H15; 3I03; 3K06; 3L03; 3A09; 3H15; 4A15; 4B15;
- fails the second attempt at a course or receives a grade in the second attempt below C- for any of HTHSCI 1C06, 1D06, 1J03, 2M03, MIDWIF 1F03 (or HTHSCI 3C04), 2F03 or below B- in MIDWIF 1D03; 2G06; 3F03; 3J06;

- fails to complete program requirements for graduation within the maximum allowable time (five years)(not inclusive of approved leaves of absence);

## Deans' Honour List, Graduation with Distinction, Provost's Honour Roll

Students will be evaluated for standing on the Deans' Honour List, Graduation with Distinction and the Provost's Honour Roll only upon completion of the program. Students will be named to the Deans' Honour List and will Graduate with Distinction if they receive no failing, provisional or unsatisfactory grades in any courses throughout the program and achieve a GPA of 9.5, on graded courses taken throughout the program.

For the Provost's Honour Roll, students will be assessed if they have a GPA of 12.0 and have not received a failing, provisional or unsatisfactory grade in any course throughout the program.

## Graduation Requirements

A student is **eligible** for graduation when all of the following criteria are met. The student must:

- complete all required courses, including electives, with a GPA of at least 6.0 including a minimum grade of C- in HTHSCI 1D06 and a minimum grade of B- in MIDWIF 1D03, 2G06; 3F03; and 3J06;
- complete HTHSCI 1C06, 1J03, 2M03, MIDWIF 1F03 (or HTHSCI 3C04), 2F03 with a minimum grade of C- with the exception of a D in one of those courses;
- complete all clinical courses with a Pass/Satisfactory grade;
- complete all courses for the degree within five years (not inclusive of approved leaves of absence).

The practice of midwifery is regulated by the College of Midwives under the *Midwifery Act*, 1991 and the *Regulated Health Professions Act*, 1991.

The Midwifery Education Program monitors and documents students' clinical experience in order that students meet minimum practice requirements to be eligible for registration to practice. Graduation from the Midwifery Education Program does not guarantee registration with the College of Midwives of Ontario. All applicants to the College must meet additional registration requirements. New graduates are required to work in an established practice for their first year of registration.

Regulatory requirements are subject to change from time to time.

## Bachelor of Health Sciences

### MIDWIFERY PROGRAM (B.H.SC.)

The four year program which spans nine terms, includes courses from basic sciences, social sciences, health sciences, women's studies and electives, in addition to clinical courses. A variety of course formats include classroom, distance learning through web conferencing and print-based self-study courses. Teaching methods include lecture format, small group tutorials, self-directed activities and practical learning experiences in both laboratory and clinical practice settings.

#### INTENSIVES

An Intensives course is 5-7 days in duration and consists of workshop-style presentations focussing on clinical skills. Attendance (100%) is mandatory.

#### CLINICAL COURSES

Clinical courses consist of a practical and theoretical component and concurrent problem-based weekly tutorials. Students are assigned to a midwifery practice as well as to interprofessional placements including nursing, neonatal intensive care nursery, and obstetrical practices. Throughout the program, students will be placed in more than one midwifery practice within the McMaster Midwifery Program catchment area and will gain clinical

experience in a hospital setting and with an obstetrician. **Students should expect to relocate for clinical placements. Travel and living expenses are the responsibility of the student.**

The Midwifery Education Program reserves the right, at any point during the term, to remove a student from a clinical placement or laboratory setting if the student exhibits unsafe clinical practice or behaviour that places clients or others at risk and/or violates the Midwifery Act of Ontario. Such removal will result in the student receiving a grade of F and may result in dismissal from the program.

#### REQUIREMENTS

135 units total (Levels I to IV)

#### NOTE

An asterisk (\*) following a course code indicates that transfer credit may be available.

#### LEVEL I: 30 UNITS

6 units

- HTHSCI 1D06 A/B - Anatomy and Physiology \*

6 units

- HTHSCI 1C06 A/B - Working Across Difference in Midwifery

3 units

from

- INDIGST 3H03 - Indigenous Medicine I - Philosophy
- INDIGST 3HH3 - Indigenous Medicine II - Practical

3 units

from

- MIDWIF 1F03 - Introduction to Research Methods and Critical Appraisal \* (Term 2)

6 units

- MIDWIF 1D03 - Midwifery The Profession I (Term 1)
- MIDWIF 1G03 - Midwifery The Profession II (Term 2)

3 units

- HTHSCI 1J03 - Life Sciences for Clinical Practice \* (Term 1)

3 units

from

- One humanities or social science elective from the Faculties of Health Sciences, Humanities, or Social Sciences

#### LEVEL II: 30 UNITS

3 units

- HTHSCI 2M03 - Reproductive Physiology (Term 1)

15 units

- MIDWIF 2H15 - Normal Childbearing (Term 2)

3 units

- MIDWIF 2F03 - Pharmacotherapy (Term 1)

6 units

- MIDWIF 2G06 - Clinical Skills for Midwifery Practice (Term 1)

3 units

from

- One humanities or social science elective from the Faculties of Health Sciences, Humanities, or Social Sciences

#### LEVEL III: 45 UNITS

3 units

- MIDWIF 3I03 - Advanced Clinical Skills I (Term 1)

6 units

- MIDWIF 3J06 - Preparation for Primary Maternity Care (Term 1 or Term 2)

6 units

- MIDWIF 3K06 - Interprofessional Practice II (Term 1 or Term 2)

9 units

- MIDWIF 3A09 - Interprofessional Practice I (Term 1 or Term 2)

3 units

- MIDWIF 3F03 - Midwifery Issues (Term 1 or Term 2)

3 units

- MIDWIF 3L03 - Advanced Clinical Skills II (Term 2)

15 units

- MIDWIF 3H15 - Complications and Consultation (Spring/Summer) (Term 3)

**LEVEL IV: 30 UNITS**15 units

- MIDWIF 4A15 - Maternal and Newborn Pathology (Term 1)

15 units

- MIDWIF 4B15 - Midwifery Clerkship (Term 2)

## B.H.Sc. Physician Assistant Program

Health Sciences Centre (HSC), Room 4H31A  
paprogram@mcmaster.ca

### Bachelor of Health Sciences

#### PHYSICIAN ASSISTANT (B.H.SC.)

<http://www.fhs.mcmaster.ca/physicianassistant>

##### PROGRAM OVERVIEW

McMaster was among one of the first institutions in Canada to launch a Physician Assistant Education Program in 2008. The PA Education program will lead to the Bachelor of Health Sciences (Physician Assistant) degree. The program is taught using inquiry and problem-based learning, which enhance each student's ability to think critically, solve problems, demonstrate initiative and independence in practice, and promote lifelong learning.

##### MISSION STATEMENT

The mission of the McMaster University Physician Assistant Education Program is to educate energetic, innovative, committed and caring individuals to become role models in a new health care delivery model practicing medicine under the supervision of a physician to expand health care access for the people of Ontario.

##### CURRICULUM PLAN

The twenty-four month program begins in September. The first year focuses on the study of the clinical sciences underpinning health care delivery. In the second year, students enter into clinical placements.

##### YEAR I: CLINICAL SCIENCES

The clinical sciences curriculum is modeled on the McMaster Medical School COMPASS Curriculum and is designed to meet the competencies outlined in the Canadian Association of Physician Assistants Occupation Competency Profile and the Canadian Medical Association accreditation requirements. The curriculum is delivered in small group problem-based learning modules with a focus on the physician assistant's role in health care and the promotion of inter-professional education and training.

The clinical sciences curriculum consists of three Medical Foundations each composed of four components:

- Clinical Sciences
- Interviewing, Examination and Reasoning (IER)
- Professional Competencies
- Longitudinal Clinical Experience Program (LP)

##### Medical Foundation 1 (MF1)

- Clinical Science: Oxygen Transport: cardiovascular, respiratory and hematologic physiology and disease.
- IER: Basic communication skills, history taking and physical examination.
- ProComp: Professionalism, the role of the PA, principles and structure of the health care system, chronic disease, determinants of health
- LP

##### Medical Foundation 2 (MF2)

- Clinical Science: Homeostasis: energy balance, GI, endocrine, nutrition, fluid and electrolyte balance (including renal, acid base, BP) and reproduction, and pregnancy
- IER: Continued development of communication skills, history taking and physical examination with additional focus on GI, endocrine and obstetric and gynecologic systems.
- ProComp: Medical ethics and medical decision making.
- LP

##### Medical Foundation 3 (MF3)

- Clinical Science: Infection, neoplasia, neurologic, psychiatric and musculoskeletal physiology and disease
- IER: Continued development of communication skills (negotiation and conflict resolution), history taking and physical examination with additional focus on the neurologic, psychiatric and musculoskeletal systems.
- ProComp: Standards of care, laws and codes relevant to medical practice, institutional policies, mental health and society, breaking bad news, end of life decision-making, resource allocation
- LP

##### YEAR II: CLERKSHIP

In the second year of the program students will undertake 48 weeks of supervised clinical placements. Core experiences will take place in family medicine, medicine, surgery, emergency medicine, pediatrics, geriatrics, and psychiatry. Placements will take place in Hamilton, in the distributed MacCARE campuses, and in the broader Ontario community. Elective placements will round out the balance of the clinical year and will allow students to pursue additional career interests.

##### CERTIFICATION

Graduates will qualify to take the Physician Assistant Certification Council of Canada National examination.

##### ADMISSION REQUIREMENTS

Applicants must achieve a minimum GPA average of 3.0 by February, and complete a minimum of 2 years undergraduate coursework by June - this criteria must be met to start the program in September of the same year. To satisfy the minimum requirements, academic credentials obtained from a Canadian University must be from an institution that is a full member of the Association of Universities and Colleges of Canada (AUCC) or the Council of Ontario Universities (COU). A minimum of 10 full-courses or 20 half courses (two years) is required. Courses that employ small group, self-directed or inquiry learning are excellent preparation for the PA Education program. There is no requirement for applicants to have carried a full course load. Applicants are expected to have achieved an overall simple average of at least 3.0 on the OMSAS 4.0 scale for consideration, but higher grades may be required to be competitive with other applicants.

Upon acceptance, successful applicants will be required to provide detailed medical information, including a record of completion of required immunizations, evidence of Basic Cardiac Life Support certification (Adult and Child CPR) and a satisfactory Police Records Check (at the applicant's expense) upon entering the program and annually thereafter.

##### ADMISSION PROCEDURES

Application (including the appropriate fee) is to be made through the:

##### **Ontario Universities' Application Centre (OUAC)**

170 Research Lane

Guelph, ON, N1G 5E2

<http://www.ouac.on.ca>

This form is required by **February 1st** for admission into the September class of the same year. Access to the supplementary application will be sent by email in mid-February. Please refer to the program's web site for full application details and information regarding the supplementary application form. Upon receipt of the application, supplementary application and certified



transcripts, selected applicants will be invited to an interview.

**THE ADMISSIONS COMMITTEE WILL CONSIDER:**

- University transcripts and GPA
- Supplementary application
- Interview

**APPLICATION FOR DEFERRED REGISTRATION**

Deferred registrations will not normally be granted in the PA Education Program. Deferred registration may be granted only under exceptional circumstances. Request for deferral must be submitted within two weeks of the offer of admission.

**ADVANCED STANDING/TRANSFER**

The structure of the PA Education program requires that all students complete the entire program starting with Medical Foundation 1. There is no provision for advanced standing or transfer into the program.

**FULL-TIME STATUS**

The structure of the program requires that all students be registered in the program on a full-time basis and attendance in all components of the program is mandatory.

**FINANCIAL INFORMATION**

In 2020-21 the tuition fee for a student in Year I of the PA Education Program is expected to be approximately \$12,500 for a 12 month academic term, plus supplementary fees estimated at \$1,300.00 per year. Additional costs include books, diagnostic equipment and other learning resources estimated at \$2,500.00. Students are also responsible for their transportation costs related to clinical study.

There is a bursary program which has been developed by the University. Bursaries may be awarded to students who are Canadian citizens based on demonstrated financial need. Bursaries are intended to offset provincial financial assistance and cannot supplement the full cost of education. For further information, please contact the Education program web site or the Student Financial Aid and Scholarships Office at McMaster University.

## Faculty of Humanities

Chester New Hall, Room 112

<http://www.humanities.mcmaster.ca/>

[humanities@mcmaster.ca](mailto:humanities@mcmaster.ca)

DEAN OF HUMANITIES

**P. Swett**/A.B., M.A., Ph.D.

ASSOCIATE DEAN OF HUMANITIES

**S. Corner**/B.A., M.A. (*Oxford*), Ph.D. (*Princeton*)

**HUMANITIES ACADEMIC ADVISING OFFICE**

Chester New Hall, Room 107, ext. 27532

ASSISTANT DEAN (STUDIES)

**J. Osterman**/B.A., B.Admin., M.Ed.

ACADEMIC ADVISORS

**C. Chauvin**/B.A., B.Ed.

**J. Gloazzo**/ B.A., M.A.

**J. Richardson**/B.A.

**E. Williams**/B.A., B.Ed., M.Ed.

**AT MCMASTER, HUMANITIES MEANS LEADERSHIP.**

Look at any list of the attributes of effective leadership, and what do you find?

- Strong personal and ethical values;
- The ability to influence others by making reasoned, well thought out arguments;
- Emotional intelligence, achieved both by knowing oneself, and by being able to see the world from the perspective of others;
- Social intelligence, the ability to collaborate, to engage others in conversation, to be sensitive to social situations and to work with those culturally different from ourselves;
- Communication, the ability to effectively convey complex ideas in clear and inspiring ways;
- Creativity, an openness to new ideas and a willingness to question everything, not for the sake of asking questions, but to make this a better world.

These are the skills that build leaders in our communities, in our neighbourhoods, in our classrooms, in our social agencies, in our arts organizations, and in businesses, from corporations to start-ups. Employers in all sectors are finding that these soft skills are hard.

That's where Humanities comes in. In our disciplines, we focus on values, on developing persuasive and rational arguments, on communicating complex and challenging ideas, on collaboration, on creativity, and on critical and constructive thinking. Our students go on to successful leadership roles as lawyers, doctors, teachers, professors, policy analysts, journalists, museum curators, artists, musicians, translators, speech language pathologists, and business executives, to name just a few.

How you get there is up to you. We offer a broad range of programs, many of which can be taken in combination. They include: Studio Art, Music, Theatre and Film, Art History, Classics, History, Communication Studies, Multimedia, English and Cultural Studies, French, Cognitive Science of Language, Linguistics, Peace Studies, Philosophy, and Justice, Political Philosophy and Law. You can combine most programs with those in Social Sciences, Mathematics with English, French, History or Philosophy, or Biology and Philosophy. We offer courses in a variety of languages and in women's studies, many of which can lead to a Minor. Students may also take a Specialized Minor in Commerce, an Interdisciplinary Minor in African and African Diaspora Studies, Archaeology, Community Engagement, Social Justice and Inclusive Communities, or Sustainability.

We look forward to having you in our classrooms, our workshops, our performance spaces and our laboratories. We will work with you and help you work with others to build the skills you need to be the agents of change that our world so desperately needs.

## Types of Degree Programs

Upon successful completion of Humanities I, a student may be admitted to a program of study leading toward a Bachelor of Arts degree. Completion of Music I may lead to a Bachelor of Music (Honours) or Bachelor of Arts degree. Completion of Studio Art I leads to a Bachelor of Fine Arts (Honours) degree. Three types of programs lead toward a Bachelor's degree in the Faculty of Humanities.

### Single Honours Program

Honours Bachelor of Arts programs consist of a total of 120 units of work typically completed over four years of full-time study. Honours programs provide a concentration in the work of a single discipline (e.g. History). The Honours Bachelor of Music (B. Mus. Honours) consists of 123 units total, with three years of full-time Music study beyond Music 1. The Honours Bachelor of Fine Arts (B.F.A. Honours) is completed in 120 total units, or three years of full-time Art study beyond Studio Art I.

### Combined Honours Program

Subject to possible timetable restrictions, and provided that the student meets the requirements for entry into each of the relevant Honours programs, a student may combine work in any two disciplines within the Humanities for completion of a Combined Honours Bachelor of Arts degree (e.g. English and Peace Studies). These combinations are available within the Faculty, in combination with programs in the Faculty of Social Sciences (e.g. History and Political Science), and with select offerings in the Arts and Science Program, or select combinations with Math or Biology. Students will complete 120 units, including approximately 36 units of work beyond Level I in each component of the program (normally 12 units per level in each subject). The Honours B.A. in Justice, Political Philosophy and Law is not available in combination with another subject.

### B.A. Program

Bachelor of Arts programs consist of a total of 90 units, typically completed over three years of full-time study, and concentrated in the work of a single discipline.

The content and the requirements of Single Honours, Combined Honours and other B.A. programs are found after the Academic Regulations below. There are a number of Humanities courses without prerequisites which may be taken as electives. Individual course descriptions are listed by department in the Course Listings section of this Calendar.

Not only are students from other Faculties able to take individual courses which have no prerequisites, but they are also able to transfer into any of the degree programs offered by the Faculty of Humanities. For the majority of programs in the Faculty, admission may be gained after the successful completion of any Level I program at the university, providing this includes the necessary program requisites as outlined in the admission statement for each Humanities program as described under Programs for the B.A., B.A. (Honours) and B.Mus. (Honours) Degrees.

## Specialized Minor in Commerce for Students Completing a Single Honours B.A. in Humanities

The Specialized Minor in Commerce for Humanities students is administered by the DeGroot School of Business. A maximum of 30 students will be admitted each year to this Specialized Minor.

## Notes

- For admission, Humanities students (Level 1) must complete an application for admission to the Minor by using the Service Request function in the Student Centre in Mosaic during the Program/Plan Selection process in April.
- Students must also be admitted to a Single Honours B.A. in one of the following programs: Art History, Classics, Cognitive Science of Language, Communication Studies, English and Cultural Studies, French, History, Justice, Political Philosophy and Law, Linguistics, Multimedia, Philosophy, or Theatre & Film Studies.
- Students seeking the Specialized Minor in Commerce for Humanities must have completed ECON 1B03, and one of MATH 1M03 or ECON 1BB3.
- Students must have a Grade Point Average of at least 6.0 to be considered for entry into the Minor.
- Students planning to apply to the accelerated MBA program at McMaster are strongly encouraged to consult with MBA Admissions at the Ron Joyce Centre regarding admission requirements. In addition to meeting all other admission criteria students must complete, with a minimum grade of B-, the following courses:
  - all three of ECON 1B03, 1BB3, and MATH 1M03;
  - all level 1 and 2 Commerce courses listed below, with the exception of COMMERCE 2DA3;
  - COMMERCE 3MC3

## Requirements

*33 units total*

### 6 UNITS

- COMMERCE 1AA3 - Introductory Financial Accounting
- COMMERCE 1BA3 - Organizational Behaviour
- COMMERCE 1DA3 - Business Data Analytics
- COMMERCE 1MA3 - Introduction to Marketing

### 18 UNITS

from

- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- COMMERCE 2DA3 - Decision Making with Analytics
- COMMERCE 2FA3 - Introduction to Finance
- COMMERCE 2FB3 - Managerial Finance
- COMMERCE 2KA3 - Information Systems in Business
- COMMERCE 2MA3
- COMMERCE 2QA3
- COMMERCE 2OC3 - Operations Management
- COMMERCE 3MC3 - Applied Marketing Management
- COMMERCE 3S03 - Management Skills Development

### 3 UNITS

from

- HUMAN 3LM3 - Foundations of Leadership  
or
- HUMAN 3CM3 - Leadership: Cross-Cultural Mentoring Lab

### 6 UNITS

- Level III or IV Commerce courses

## Minor

A Minor is an option available to a student enrolled in a four-level honours program. Normally, you must complete a minimum of 24 units in the Minor subject. No more than six of these units can be at Level I, unless otherwise stated in the specific requirements of the minor. At least 18 units must be completed at McMaster. Students are responsible for ensuring that they take

courses that meet these requirements (**using elective units only**.) When enrolling in cross-listed courses to be applied towards a Minor, students must ensure that they enrol in the appropriate subject for the Minor designation. Those who have the necessary requirements may apply for recognition of a Minor when they graduate. If recognition for a Minor is granted, it will be recorded on the student's transcript. Minors cannot be revoked once approved. **Students may return for a second degree in the subject in which they have obtained a Minor**, but only at the Honours level. For further information please refer to Minors in the General Academic Regulations section in this Calendar.

## Concurrent Certificates

Concurrent certificates are an option available to any student in an undergraduate degree program, and may be completed as part of a student's elective credit. Some concurrent certificates will require a student be admitted to this option, while others may involve completion of course credit and declaring certificate completion at the time of graduation. Students should consult the relevant certificate's guidelines for admission and completion, and/or the department offering the concurrent certificate for additional information. Concurrent certificate programs offered by the Faculty of Humanities include:

- **Concurrent Certificate in Essential French** (*offered by the Department of French*)
- **Concurrent Certificate in Professional French** (*offered by the Department of French*)
- **Concurrent Certificate in International Engagement** (*offered by the Faculty of Humanities*)
- **Concurrent Certificate in Leadership & Cross-Cultural Literacy** (*offered by the Faculty of Humanities*)
- **Concurrent Certificate in the Language of Medicine and Health** (*offered by the Department of Classics*)
- **Concurrent Certificate for Applied Ethics and Policy (CAEP)** (*offered by the Department of Philosophy*)

## Second Language Proficiency

Students embarking on Humanities programs should be aware that most graduate schools require, for admission, proficiency in at least one, and frequently two, languages other than English. In this Faculty, proficiency in at least one language other than English is regarded as an essential tool for students interested in Linguistics. Generally, proficiency in more than one language is a hallmark of most highly-qualified Humanities' graduates seeking the widest range of post-graduation academic and employment opportunities.

## Part-Time Study

Students wishing to enter any program offered by the Faculty of Humanities and pursue a program on a part-time basis should consult the appropriate Departmental Counsellor(s) before making their plans.

## Academic Regulations

### STUDENT ACADEMIC RESPONSIBILITY

You are responsible for adhering to the statement on student academic responsibility found in the General Academic Regulations of this calendar.

### ACCESS TO COURSES

All undergraduate courses at McMaster have an enrolment capacity. Unless otherwise specified, registration is on a first-come basis and in some cases priority is given to students from particular programs or Faculties. Students will be informed of their enrolment periods and are encouraged to enroll as soon as online enrolment is available to them in the Student Centre in Mosaic.

### STUDENT COMMUNICATION RESPONSIBILITY

It is the student's responsibility to:

- maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- use the university provided e-mail address or maintain a valid forwarding e-mail address.
- regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.
- accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.

*Students enrolled in Humanities programs, in addition to meeting the General Academic Regulations of the University, shall be subject to the following Faculty Regulations and Policies.*

## Application for Level II Programs/Plans

For students applying for Honours Justice, Political Philosophy, and Law, the mandatory supplementary application is due prior to the end of Program/Plan Selection in April: <http://philos.humanities.mcmaster.ca/jppl-program>.

### STEP 1: ATTEND THE HUMANITIES MAJORS FAIR (IN EARLY MARCH)

The Faculty hosts a Majors Fair for Level I students to provide information regarding program and plan options for Level II, the range and nature of subjects studied in particular discipline areas, as well as possible career and postgraduate options.

### STEP 2: SELECTING A LEVEL II PROGRAM (PRIOR TO THE END OF PROGRAM/PLAN SELECTION IN APRIL)

Student seeking admission to a Level II program/plan for the following Fall and Winter terms must complete an application by using their MacID to log-on to Mosaic.

- Click the "Student Center" tab.
- Click the "My Academics" link.
- Click "Program/Plan Application" link.

### Please note the following *IMPORTANT* information:

- Students must rank order their program choices **carefully**, especially if they want to be considered for admission to a limited enrolment program such as Multimedia or Justice, Political Philosophy & Law.
- Students who are admitted to their FIRST choice program, will NOT be evaluated for any other program selections.
- Students who are NOT admitted to their first choice, will be evaluated for their second choice, third choice, and so on.
- Students may apply to a maximum of **four programs**.
- For students applying for Honours Justice, Political Philosophy, and Law, the mandatory supplementary application is due prior to the end of Program/Plan Selection in April: <http://philos.humanities.mcmaster.ca/jppl-program>

**STEP 3: VIEW YOUR PROGRAM (LATE MAY)**

In late May, students must check the Student Centre in Mosaic to see their program for the Fall and Winter terms.

**Minimum Requirements for Entering and Continuing in a Program Beyond Level I****HONOURS B.A. PROGRAMS, BFA (HONOURS) PROGRAM, AND B.MUS. (HONOURS) PROGRAM:**

You must have a Grade Point Average (GPA) of at least 5.0 to continue in an Honours program. If your GPA is 4.5 to 4.9, you may remain in the Honours program, but will be placed on program probation for one reviewing period. You may be on program probation only once. If your GPA is 3.0 to 4.4, you must transfer to another program for which you qualify. If your GPA is less than 3.0, you may not continue at the University.

**B.A. PROGRAMS**

You must have a Grade Point Average (GPA) of at least 3.5 to continue in, or graduate from, a three-level B.A. program. If your GPA is 3.0 to 3.4, you may remain in the program, but will be placed on academic probation. You may be on academic probation only once. If your GPA is less than 3.0, you may not continue at the University.

**Deferred Examinations and Deferred Term Work**

Students who have been granted more than one deferred examination or term-work privilege may be required by their Faculty/Program office to **reduce their course load** during the term in which the deferred examinations are being written. The decision on a reduced load will be made and communicated with the decision on the application for deferred examinations.

**Transfer to the Faculty of Humanities**

Students from other Faculties are able to transfer to degree programs offered by the Faculty of Humanities provided that they have obtained a Grade Point Average of at least 3.5 and have completed the necessary requirements for admission to a program.

**Reinstatement to the Faculty of Humanities**

A student who may not continue at the University may apply for reinstatement; however, **reinstatement is not automatic or guaranteed**. Application for reinstatement must be made to the Office of the Registrar using the *Reinstatement Request Form* by the deadline for the session. See the Sessional Dates section of this Calendar.

The form should explain the reasons for the student's inadequate performance, and should include relevant documentary evidence, for example a letter from a physician outlining any medical condition that might have affected the student's academic performance or final grades. Reinstatement cases will be carefully screened and the evidence considered will include the student's academic performance before and after admission to McMaster, as well as the nature of the reasons cited in the application letter and the accompanying documentation.

If students are reinstated at the University, their Grade Point Average will be re-set to 0.0 on zero units, although students may (at Faculty discretion) retain credit for prior work. Following reinstatement, students will be on academic probation and must complete a minimum of 60 units of work after reinstatement to be eligible for Graduation with Distinction or other recognition based on the Grade Point Average.

**If, at any review after reinstatement, the student's Grade Point Average falls below 3.5, the student will be required to withdraw from the University for a period of at least 12 months.**

**Course Selection and Course Changes**

Students are responsible for ensuring that their course selection meets the requirements of the degree program in which they are enrolled, that prerequisites have been met, and that, where necessary, permission to take courses has been obtained. They should review their personal advisement report each time they cancel or add courses, and contact an Academic Advisor if they have questions, **particularly if the advisement report shows unused courses**. Students should also be aware that changes to their course load may affect their fees and their eligibility for scholarships and financial aid such as OSAP.

**Overload**

**Fall/Winter Session:** Normally students may not enrol in more than 30 units during the Fall/Winter Session (33 units for students in Music I.) **A student with outstanding deferred examinations or incomplete term-work will not be permitted to overload in the following term.** Students may take an overload up to six units under the following circumstances:

- if a student has a Sessional Average of at least 7.0 in the immediately preceding review period; or
- if the student is enrolled in the final Level of his/her program.

**Spring/Summer Session:** Students wishing to enrol in more than 12 units during the Spring/Summer Session or more than six units in either term of that Session, may do so only with the permission of the Assistant Dean of Humanities.

**Letter of Permission**

Students in good academic standing, who wish to attend another university to take courses for credit toward a McMaster degree, must first request a Letter of Permission in the Student Centre in Mosaic. A Letter of Permission is automatically cancelled if a student is placed on academic probation, program probation, or required to withdraw from the University. Students should take note of any conditions on the Letter of Permission that might apply, including the requirement of a grade of at least C- for transfer credit. Courses taken at another university cannot be used to satisfy the University's minimum residence requirement, will not be included in the calculation of the averages at McMaster, and therefore cannot be used to raise standing. The transcript designation will read T, indicating transfer credit has been granted, when a C- or better is attained. It is the student's responsibility to ensure that an official transcript from the host university is sent to the Academic Advising Office to receive credit for work taken.

**Summer Immersion Programs in French**

- Students must obtain approval from the Academic Advising Office prior to participating in any language immersion program. Failure to obtain prior approval may result in transfer credit not being accepted.
- The government-sponsored Explore summer language program offers university students the opportunity to take French courses at a large number of accredited institutions. Students wishing to attend another university in order to participate in a language immersion program must: (a) petition the Academic Advising Office, (b) submit detailed course descriptions for assessment, and (c) obtain a Letter of Permission.
- Students enrolled in a program in French may take a maximum of six units of credit in this manner as elective work only. Students not enrolled in a program in French may take up to 12 units of credit.



## Humanities Study Abroad

### HUMANITIES STUDY ABROAD DURING LEVEL III OF HONOURS PROGRAMS

There are two ways to undertake international studies during Level III of an Honours program: (i) a Formal Exchange Program or (ii) Independent Study Abroad through a Letter of Permission.

#### (I) FORMAL EXCHANGE PROGRAM DURING LEVEL III OF HONOURS PROGRAMS

Formal Exchange Programs are those where McMaster University has an agreement with another institution involving a temporary exchange of students. Exchange students pay tuition fees and supplementary fees to McMaster. No tuition is paid to the other institution. See the General Academic Regulations section of this Calendar and the sections on Eligibility and Application below.

#### ELIGIBILITY FOR THE MCMASTER EXCHANGE PROGRAM

- Students enrolled in any Honours or Combined Honours program in the Faculty of Humanities may apply to replace all or part of the work of their third year with an acceptable program of study taken at a university approved by the Faculty of Humanities.
- To be eligible to take part in this program, students must have completed at least 60 units of work with a Grade Point Average of at least 7.0. Individual programs may have additional requirements. All requirements must be satisfied by the end of the Fall/Winter session (September-April) preceding the commencement of study elsewhere. Students taking part in this program do not have the option of graduating with a three-year B.A. degree on the basis of work completed in this program, but must return to McMaster University to complete their final 30 units of work.
- Students may receive up to 30 units of credit for a full year of study at another institution. The awarding of transfer credit for work completed elsewhere may be confirmed only after the Academic Advising Office has received transcripts and reviewed students' academic achievements following their return and after they have officially enrolled for Level IV.

#### APPLICATION FOR THE MCMASTER EXCHANGE PROGRAM

- Students interested in applying for this program should consult the Academic Advising Office approximately one year before they anticipate studying abroad (i.e. during the Fall term of the year in which they enter Level II.) Applications are submitted through International Student Services and are normally due in January of Level II.

#### (II) INDEPENDENT STUDY ABROAD

Qualified students may undertake studies at a university abroad through a Letter of Permission. Students enrol at and pay tuition fees to the other institution. See the *General Academic Regulations* section of this Calendar and the sections on Eligibility and Application below.

#### ELIGIBILITY FOR STUDY ABROAD THROUGH LETTER OF PERMISSION

- Students in good standing in the Faculty of Humanities may apply for a Letter of Permission to take coursework abroad towards their degree. The coursework must be approved in advance by the faculty office. Students must apply directly to, and be accepted by, the other school.
- The awarding of transfer credit for work completed elsewhere may be confirmed only after the Academic Advising Office has received transcripts and reviewed students' academic achievements following their return.

#### APPLICATION FOR STUDY ABROAD THROUGH A LETTER OF PERMISSION

- Students should consult with an academic advisor on the coursework to be taken abroad prior to applying. A Letter of Permission must be given by McMaster to be permitted to take coursework elsewhere for transfer credit. Students apply directly to the other school to be accepted, and must be aware of the other school's dates and deadlines.

## Level I Programs

### HUMANITIES ACADEMIC ADVISING OFFICE

Chester New Hall, Room 107

[ASSISTANT DEAN \(STUDIES\)](#)

**J. Osterman**/B.A., B.Admin., M.Ed.

[ACADEMIC ADVISORS](#)

**C. Chauvin** /B.A., B.Ed.

**J. Gloazzo**/B.A., M.A.

**J. Richardson**/B.A.

**E. Williams**/B.A., B.Ed., M.Ed.

## Bachelor of Arts (Honours)

### HUMANITIES 1

#### HUMANITIES 1

Students admitted to Humanities 1 must complete 30 units as follows:

#### PROGRAM NOTES

- A full-course load for Humanities 1 is 30 units. (The final digit in course numbers indicates the unit weight of a course. A six-unit A/B course is taught from September to April and a three-unit course is normally a half-year course which may be taught either from September to December or January to April).
- Admission to a Level II program normally requires completion of three to six units of the relevant subject in Level I. In order to be considered for admission to a Level II program, students should consult the admission statements for Level II programs when selecting their Level I courses.
- Humanities 1 students are permitted to take up to 12 units of work in any single subject.
- Students with a Grade 12 U course in Greek or Latin will register for six units of Level II Greek or Latin in lieu of the corresponding 1Z03 and 1ZZ3 courses.
- Humanities 1 students may take no more than 12 units of introductory language courses.
- Students uncertain as to whether language course prerequisites best reflect their linguistic ability are encouraged to consult the appropriate department for placement tests.
- Students wishing to take Music courses other than MUSIC 1A03, 1AA3 or 1CR3 must make arrangements with the School of the Arts for qualifying tests.

#### COURSE LIST 1

- ARTHIST 1A03 - World Art and Cultural Heritage I
- ARTHIST 1AA3 - World Art and Cultural Heritage II
- CLASSICS 1A03 - Introduction to Classical Archaeology
- CLASSICS 1B03 - An Introduction to Ancient Myth and Literature
- CLASSICS 1M03 - History of Greece and Rome
- CMST 1A03 - Introduction to Communication
- ENGLISH 1CS3 - Studying Culture: A Critical Introduction
- ENGLISH 1F03 - The Written World
- ENGLISH 1G03 - Making and Unmaking Literary Traditions
- ENGLISH 1H03 - Words in Place
- FRENCH 1A06 A/B - Introduction to French Studies: Advanced Level
- GREEK 1Z03 - Beginner's Intensive Ancient Greek I
- GREEK 1ZZ3 - Beginner's Intensive Ancient Greek II
- HISTORY 1CC3 - The Rise of Empires, 500-1950
- HISTORY 1DD3 - The Making of the Modern World, 1750-1945
- HISTORY 1EE3 - The Historical Roots of Contemporary Issues
- HISTORY 1FF3 - Exploring History in a Small Group Setting
- HISTORY 1M03 - History of Greece and Rome
- HISTORY 1P03 - A History of Magic

- LATIN 1Z03 - Beginner's Intensive Latin I
- LATIN 1ZZ3 - Beginner's Intensive Latin II
- LINGUIST 1A03 - Introduction to Linguistics: Sounds, Speech and Hearing
- LINGUIST 1AA3 - Introduction to Linguistics: Words, Sentences and Meaning
- MMEDIA 1A03 - Multimedia and Digital Society
- MUSIC 1A03 - Introduction to the History of Music I
- MUSIC 1AA3 - Introduction to the History of Music II
- PEACEST 1A03 - Introduction to Peace Studies
- PHILOS 1A03 - Philosophical Texts
- PHILOS 1B03 - Philosophy, Law and Society
- PHILOS 1E03 - Philosophical Questions
- PHILOS 1F03 - Meaning in Life
- THTRFLM 1T03 - Introduction to Theatre, Cinema and Society

#### COURSE LIST 2

**(Humanities courses available to Level I students. These courses do not provide entry into a Level II program)**

- ART 1T13 - Making Art and Understanding Technology & Images
- ART 1U13 - Making Art and Understanding Images
- ARTHIST 1PA3 - Arts in Society: Social Constructions of Race and Gender
- CHINESE 1Z06 A/B - Mandarin Chinese for Beginners
- FRENCH 1Z06 A/B - Beginner's Intensive French I
- GERMAN 1B03 - Intermediate German I
- GERMAN 1BB3 - Intermediate German II
- GERMAN 1Z06 A/B S - Beginner's Intensive German
- HUMAN 1QU3 - Insight and Inquiry: Questions to Change the World
- ITALIAN 1A03 - Intermediate Italian I
- ITALIAN 1AA3 - Intermediate Italian II
- ITALIAN 1Z06 A/B S - Beginner's Intensive Italian
- JAPANESE 1Z06 A/B S - Beginner's Intensive Japanese
- LINGUIST 1Z03 - Structure of Modern English I
- LINGUIST 1ZZ3 - Structure of Modern English II
- MUSIC 1CR3 - Rudiments of Music
- MUSIC 1EE6 A/B - Solo Performance \*
- MUSIC 1GB3 A/B - Ensemble Performance: McMaster Concert Band \*
- MUSIC 1GC3 A/B - Ensemble Performance: McMaster University Choir \*
- MUSIC 1GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble \*
- MUSIC 1GJ3 A/B - Ensemble Performance: McMaster Jazz Band \*
- MUSIC 1GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble \*
- MUSIC 1GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra \*
- MUSIC 1GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble \*
- POLISH 1Z03 - Beginner's Polish I
- POLISH 1ZZ3 - Beginner's Polish II
- RUSSIAN 1Z03 - Intensive Beginner's Russian I
- RUSSIAN 1ZZ3 - Intensive Beginner's Russian II
- SPANISH 1A03 - Intermediate Spanish I
- SPANISH 1AA3 - Intermediate Spanish II
- SPANISH 1Z06 A/B - Beginner's Intensive Spanish
- THTRFLM 1H03 - Acting Skills for Life and Work
- WOMENST 1A03 - Women, Culture, Power
- WOMENST 1AA3 - Women Transforming the World

\* See Program Note 7 above regarding Level I MUSIC courses.

#### REQUIREMENTS

12 units

from

- Course List 1 (When selecting courses, please consult the

admission statements for Level II programs.)

3 units

- HUMAN 1VV3 - Voice and Vision: Words to Change the World

15 units

- Electives, which may include courses from *Course Lists 1* and *2*

## Bachelor of Fine Arts (Honours)

### STUDIO ART 1

#### PROGRAM NOTE

The Honours Studio Art program is a limited enrolment program for which entrance requires the permission of the School of the Arts and a successful portfolio interview. The portfolio should contain a variety of works in different media that represent the applicant's creative abilities and interests. Aptitude in art, academic ability and demonstrated commitment to the discipline are considered in the selection process. In exceptional circumstances, where distance does not allow for an interview, portfolios may be submitted in the form of electronic digital images or photographs. Portfolio interviews occur between January and April each year for entrance in September of the same calendar year. Only those students who call the Office of the School of the Arts (905-525-9140, ext. 27671) before March 1st to book appointments for portfolio interviews will be guaranteed consideration for entrance into the Level I Art program. (Late applicants will only be interviewed if space availability permits).

#### REQUIREMENTS

Students admitted to Studio Art 1 must complete 30 units as follows:

#### 12 UNITS

- ART 1DM3 - Dimensional Material Investigations and Concepts
- ART 1MI3 - Material Investigations and Concepts
- ART 1OS3 - Observational Studies
- ART 1SI3 - Studio Investigations

#### 1 COURSE

- WHMIS 1A00 - Introduction to Health and Safety

#### 6 UNITS

- ARTHIST 1A03 - World Art and Cultural Heritage I
- ARTHIST 1AA3 - World Art and Cultural Heritage II

#### 12 UNITS

- Electives

## Bachelor of Music (Honours)

### MUSIC 1

#### NOTES

Completion of a Music degree requires considerable daytime attendance.

#### PROGRAM NOTES

- Students interested in entering Honours Music (Music Cognition) must have completed Grade 12 Biology, or enroll in BIOLOGY 1P03 concurrently with PSYCH 1X03 or PSYCH 1XX3.
- Applicants to Music 1 must book an audition with the School of the Arts to take place usually in February and March.
- During the music audition students will complete a theory test. Those with a sufficient background will be notified that the requirement for Music 1CR3 may be waived.

#### COURSE LIST 1

- MUSIC 1GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 1GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 1GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 1GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 1GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble

- MUSIC 1GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 1GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 2GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 2GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 2GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 2GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 2GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 2GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 2GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble

### REQUIREMENTS

Students admitted to Music 1 must complete 33 units of work as follows:

#### 0-3 UNITS

- MUSIC 1CR3 - Rudiments of Music

(see Program Note 3 above)

#### 18 UNITS

- MUSIC 1CB3 - Theory and Analysis I
- MUSIC 1DA3 - Practical Musicianship I
- MUSIC 1DB3 - Practical Musicianship II
- MUSIC 1E06 A/B - Solo Performance
- MUSIC 1MH3 - Music History I: Music and Culture

#### 3 UNITS

- MUSIC 1GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 1GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 1GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 1GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 1GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 1GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 1GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble

#### 9-12 UNITS

Electives, excluding *Course List 1 (Students intending to enter the Honours Music (Music Cognition) program must take PSYCH 1X03 and PSYCH 1XX3.)*

## School of the Arts

<http://sota.humanities.mcmaster.ca/>

Faculty as of January 15, 2020

#### DIRECTOR

**Claude Eilers** (Acting)

#### PROFESSORS

**Judy N. Major-Girardin**/(Studio Art) B.F.A. (Windsor), M.F.A. (Alabama)

#### ASSOCIATE PROFESSORS

**Peter Cockett**/(Theatre & Film Studies) B.A. (London), M.A., Ph.D. (Toronto)

**John Ford**/(Studio Art) B.Sc. (Southeast Missouri State), M.F.A. (Southern Illinois)

**Catherine Graham**/(Theatre & Film Studies) B.A., M.A., Ph.D. (McGill)

**Briana Palmer**/(Studio Art) B.F.A. (Alberta College), M.F.A. (Alberta)

**Michael Schutz**/(Music) B.Mus., B.Sc. (Pennsylvania), M.Mus. (Northwestern), Ph.D. (Virginia)

**Joseph Sokalski**/(Theatre & Film Studies) B.E. (Alberta), M.A., Ph.D. (Toronto)

**Angela Sheng**/(Art History) B.A., M.A. (Toronto), Licence (Paris), Ph.D. (Pennsylvania)

**Matthew Woolhouse**/(Music) GGSM (London, UK), M.Phil., Ph.D. (Cantab)

#### ASSISTANT PROFESSORS

**Carmela Alfaro-Laganse**/(Studio Art) B.F.A. (Manitoba), M.F.A. (Ohio)

**Andrew Mitchell**/(Music) B.Mus. (Saskatchewan), M.A., Ph.D. (Western)

**Joseph Resendes**/(Music) B.F.A., M.A. (Toronto)

**Tracy Wong**/(Music) B.Mus. (Australia), M.A., Ph.D. (Toronto)

#### ADJUNCT ASSISTANT PROFESSORS

**Tobi Bruce**/(Art Gallery of Hamilton) B.A. (Kingston), M.A. (Ottawa)

**Melissa Bennett**/(Art Gallery of Hamilton) B.F.A. (Nova Scotia), M.A. (Toronto)

#### ASSOCIATE MEMBERS

**Alison McQueen**/(History) B.A. (McGill), M.A., Ph.D. (Pittsburgh)

**David Ogborn**/(Communication Studies and Multimedia) B.A., B.Sc. (Mary), B.Mus. (Manitoba), M.Mus. (Toronto), Mus.Doc. (Toronto)

The School of the Arts offers programs in:

- Studio Art
- Art History
- Music
- Theatre & Film Studies

In addition, Minors are available in: Art History, Music and Theatre & Film Studies.

### ARTS & SCIENCE COMBINATIONS WITH SCHOOL OF THE ARTS

#### PROGRAMS:

- Honours Arts & Science and Art History (B.Arts.Sc.; See *Arts & Science Program*)
- Honours Arts & Science and Music (B.Arts.Sc.; See *Arts & Science Program*)
- Honours Arts & Science and Theatre & Film Studies (B.Arts.Sc.; See *Arts & Science Program*)

## Bachelor of Arts (Honours)

### COMBINED HONOURS IN ART HISTORY AND ANOTHER SUBJECT (B.A.)

#### ADMISSION

Completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in one of ARTHIST 1A03 or ARTHIST 1AA3. Students must complete both ARTHIST 1A03 and 1AA3 by the end of Level II.

#### NOTES

- Before choosing Level II and III courses, students should become familiar with the prerequisites for Level III and IV courses.
- Students intending to pursue graduate work in Art History should note that most universities offering such programs require undergraduate work in at least one foreign language for admission. Students are encouraged to include the study of foreign languages as early as possible in their program.
- Students interested in enrolling in 3AB3 Applied Art History: Experiential Learning with Placement as an Intern must finalize planning of their internship with the program Counsellor no later than January 30 in order to begin the course in May, by April 30 in order to begin in September, or September 30 in order to begin in January of the same year.

#### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- the Level I program completed prior to admission into the program

#### 15 UNITS

- Level II Art History

#### 0-3 UNITS

If not completed in Level I

- ARTHIST 1A03 - World Art and Cultural Heritage I or
- ARTHIST 1AA3 - World Art and Cultural Heritage II

**15 UNITS**

- Level III Art History

**3 UNITS**

- Level IV Art History

**36 UNITS**

- Courses specified for the other subject. (Combinations with Social Sciences may require more than 36 units.)

**18-21 UNITS**

- Electives to total 120 units

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**COMBINED HONOURS IN MUSIC AND ANOTHER SUBJECT (B.A.)**


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**NOTES**

Completion of a Music degree requires considerable daytime attendance.

**ADMISSION**

Completion of Music I and a Grade Point Average of at least 5.0.

**PROGRAM NOTE**

Students in the Combined Honours B.A. in Music and Another Subject program can only use a total of 12 units from Course List 3 as credit toward their degrees.

**COURSE LIST 1**

**All Level III and IV Music courses**, including

HEALTHSCI 3MU3 - Music, Health, & the Community

The following exceptions may not be used toward this course list:

- MUSIC 3GA3 A/B - Ensemble Performance: Accompanying
- MUSIC 3GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 3GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 3GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 3GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 3GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 3GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 3GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 3Z03
- MUSIC 4GA3 A/B - Ensemble Performance: Accompanying
- MUSIC 4GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 4GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 4GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 4GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 4GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 4GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 4GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble

**COURSE LIST 2**

- MUSIC 2A03 - Music of the World's Cultures
- MUSIC 2F03 - Music for Film and Television
- MUSIC 2II3 - Popular Music in North America and the United Kingdom: Post-World War II
- MUSIC 2MT3 - Introduction to the Practice of Music Therapy
- MUSIC 2MU3 - Introduction to Music Therapy Research
- MUSIC 2T03
- MUSIC 2TT3 - Broadway and the Popular Song
- MUSIC 2U03 - Jazz
- MUSIC 2Z03
- MUSIC 3Z03
- MMEDIA 2G03 - Introduction to Digital Audio

- MMEDIA 3C03 - Interactive and Spatial Audio

**COURSE LIST 3**

- MUSIC 1G03
- MUSIC 1GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 1GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 1GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 1GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 1GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 1GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 1GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 2G03
- MUSIC 2GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 2GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 2GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 2GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 2GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 2GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 2GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 3G03
- MUSIC 3GA3 A/B - Ensemble Performance: Accompanying
- MUSIC 3GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 3GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 3GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 3GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 3GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 3GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 3GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 4G03
- MUSIC 4GA3 A/B - Ensemble Performance: Accompanying
- MUSIC 4GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 4GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 4GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 4GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 4GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 4GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 4GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO 2018-2019**

*120 units total (Levels I to IV), of which 51 units may be Level I*

**33 UNITS**

- Music 1 program

**21 UNITS**

from

- MUSIC 2B03 - Music History: Music in Western Culture from c. 1750 to the Present
- MUSIC 2BB3
- MUSIC 2CC3 A/B
- MUSIC 2D03 A/B
- MUSIC 2E06 A/B - Solo Performance
- MUSIC 2H03



**6 UNITS**

- MUSIC 3E06 A/B - Solo Performance

**9 UNITS**

- from *Course List 1*

**3 UNITS**

from

- *Course List 1*
- *Course List 2*

**36 UNITS**

- Courses specified for the other subject. (Combinations with Social Sciences may require more than 36 units.)

**12 UNITS**

- Electives, including no more than 6 units from *Course List 3*, to total 120 units

**REQUIREMENTS FOR STUDENTS WHO ENTERED 2018-2019 OR LATER**

*120 units total (Levels I to IV), of which 51 units may be Level 1*

**33 UNITS**

- Music 1 program

**21 UNITS**

from

- MUSIC 2B03 - Music History: Music in Western Culture from c. 1750 to the Present
- MUSIC 2CA3 - Theory and Analysis II
- MUSIC 2CB3 - Theory and Analysis III
- MUSIC 2DA3 - Practical Musicianship III
- MUSIC 2E06 A/B - Solo Performance
- MUSIC 2MH3 - Music History: Music in Western Culture from Antiquity to c. 1750

**6 UNITS**

- MUSIC 3E06 A/B - Solo Performance

**6 UNITS**

- from *Course List 1*

**3 UNITS**

from

- *Course List 1*
- *Course List 2*

**36 UNITS**

- Courses specified for the other subject. (Combinations with Social Sciences may require more than 36 units.)

**15 UNITS**

- Electives, including no more than 6 units from *Course List 3*, to total 120 units

## COMBINED HONOURS IN THEATRE & FILM STUDIES AND ANOTHER SUBJECT (B.A.)

### PROGRAMS IN THEATRE & FILM STUDIES

Theatre & Film Studies is a liberal arts program that integrates critical analysis with experiential learning. We study performance in a range of media, cultures, and historical periods. Students learn to critically engage with the processes of conception, design, production, and reception of theatre, film, performance art, video art, and with the performativity of our everyday lives. Our experiential learning courses use current devised theatre practices to engage students with performance through studio work and public productions. All our courses encourage students to adopt inventive and critical perspectives on creative processes and foster collaborative understandings of artistic creation.

**NOTE**

Students registered in Honours Theatre & Film Studies are encouraged to complete elective courses in related art forms.

**ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in THTRFLM 1T03.

**COURSE LIST 1**

- THTRFLM 3AA3 - Modernist Drama and Theatre in Europe
- THTRFLM 3DD3 - Contemporary Canadian Drama and Theatre
- THTRFLM 3FF3 - Early Cinema History
- THTRFLM 3L03 - Cinema History from WWII
- THTRFLM 3M03
- THTRFLM 3P03 - Women and Visual Culture
- THTRFLM 3U03 - Pleasure and Critique in Dramatic Performance

**COURSE LIST 2**

- THTRFLM 3N03 - Artists' Alternative Film and Video
- THTRFLM 3OP6 A/B - Organizing the Performance Space
- THTRFLM 3PC3 - Performance and Community Engagement
- THTRFLM 3PR3 - Text-based Devising: Research and Development
- THTRFLM 3PS3 - Devising New Plays: Research and Development
- THTRFLM 3S03
- THTRFLM 3S06 - Major Production Workshop
- THTRFLM 3SD3 - Scripting the Devised Performance
- THTRFLM 3VS3 - Visual Storytelling
- THTRFLM 3WW3 - Acting and the Voice: Devising from Classical Texts
- THTRFLM 3XX3 - Acting and the Body: Devising Physical Theatre

**COURSE LIST 3**

- ARTHIST 2A03 - Visual Literacy
- ARTHIST 2R03 - The History of Fashion and Identity
- ARTHIST 2T03 - Art, Theatre and Music in the Enlightenment
- ARTHIST 3Q03 - Colours of the World
- CLASSICS 2E03 - The Ancient World in Film
- CLASSICS 2YY3 - Greek Tragedy
- CMST 2G03 - Performance and Performativity
- ENGLISH 2CR3 - Shakespeare: Comedies, Problem Plays, and Romances
- ENGLISH 2HT3 - Shakespeare: Histories and Tragedies
- ENGLISH 3CC3 - Reading Film
- GERMAN 2N03 - The Holocaust in Film and Fiction (Taught in English)
- GERMAN 2P03 - Modern Germany Through Film: Symphonies of Magic & Horror (Taught in English)
- GERMAN 2S03
- INDIGST 3EE3 - Indigenous Representations in Film
- INDIGST 3G03 - Indigenous Creative Arts and Drama: Selected Topics
- ITALIAN 3X03 - Italy Today Through Film (Taught in English)
- MMEDIA 2G03 - Introduction to Digital Audio
- MMEDIA 3C03 - Interactive and Spatial Audio
- MUSIC 2F03 - Music for Film and Television
- MUSIC 2TT3 - Broadway and the Popular Song
- RUSSIAN 2G03 - Masterpieces of Russian Literature in Film and TV Series (Taught in English)
- RUSSIAN 2H03 - Soviet Propaganda in Films and Other Mass Media (Taught in English)
- THTRFLM 2Z03

**REQUIREMENTS (EFFECTIVE 2018-2019)**

*120 units total (Levels I to IV), of which 48 units may be Level I*

**30 UNITS**

from

- Level I program completed prior to admission into the program

**6 UNITS**

- THTRFLM 2CP3 - Culture and Performance
- THTRFLM 2FA3 - Film Analysis

**6 UNITS**

from

- THTRFLM 2AA3 - Acting as Devising

- THTRFLM 2BB3 - Designing as Devising
- THTRFLM 2DP3 - Devising Processes

**18 UNITS**

- Level III or IV Theatre & Film courses, including nine units from *Course List 1*; nine units from *Course List 2*

**6 UNITS**

Level IV Theatre & Film courses, including at least three units from

- THTRFLM 4C03 - Performance and Society
- THTRFLM 4D03 - Theatre, Society and Early Cinema
- THTRFLM 4E03 - Cinema and Society

**36 UNITS**

- courses specified for the other subject. (Combinations with Social Sciences may require more than 36 units.)

**18 UNITS**

- electives to total 120 units

**REQUIREMENTS (PRIOR TO 2018-2019)**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

from

- Level I program completed prior to admission into the program

**6 UNITS**

- THTRFLM 2CP3 - Culture and Performance
- THTRFLM 2FA3 - Film Analysis

**3 UNITS**

from

- THTRFLM 2AA3 - Acting as Devising
- THTRFLM 2BB3 - Designing as Devising
- THTRFLM 2DP3 - Devising Processes

**3 UNITS**

from

- Level II Theatre & Film courses or from *Course List 3*

**18 UNITS**

from

- Level III or IV Theatre & Film courses, including six units from *Course List 1*; nine units from *Course List 2*, and can also include three units from *Course List 3*

**6 UNITS**

- Level IV Theatre & Film courses, including at least three units from
- THTRFLM 4C03 - Performance and Society
- THTRFLM 4D03 - Theatre, Society and Early Cinema
- THTRFLM 4E03 - Cinema and Society

**36 UNITS**

- courses specified for the other subject  
(Combinations with Social Sciences may require more than 36 units.)

**18 UNITS**

- electives to total 120 units

**HONOURS ART HISTORY (B.A.)****ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in one of ARTHIST 1A03 or ARTHIST 1AA3. Students must complete both ARTHIST 1A03 or ARTHIST 1AA3 by the end of Level II.

**NOTES**

- Before choosing Level II and III courses, students should become familiar with the prerequisites for Level III and IV courses.
- Students intending to pursue graduate work in Art History should note that most universities offering such programs require undergraduate work in at least one foreign language for admission. Students are encouraged to include the study of foreign languages as early as

possible in their program.

- Students interested in enrolling in 3AB3 Applied Art History: Experiential Learning with Placement as an Intern must finalize planning of their internship with the program Counsellor no later than January 30 in order to begin the course in May, by April 30 in order to begin in September, or September 30 in order to begin in January of the same year.

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

from

- the Level I program completed prior to admission into the program

**18 UNITS**

- Level II Art History

**0-3 UNITS**

If not completed in Level I

- ARTHIST 1A03 - World Art and Cultural Heritage I or
- ARTHIST 1AA3 - World Art and Cultural Heritage II

**21 UNITS**

- Level III Art History

**6 UNITS**

- Level IV Art History

**42-45 UNITS**

- Electives

**HONOURS ART HISTORY WITH A SPECIALIZED MINOR IN COMMERCE (B.A.)**

For details on this Specialized Minor, please see *Specialized Minor in Commerce for Students Completing a Single Honours B.A. in Humanities*, offered by the DeGroote School of Business.

**HONOURS THEATRE & FILM STUDIES (B.A.)****PROGRAMS IN THEATRE & FILM STUDIES**

Theatre & Film Studies is a liberal arts program that integrates critical analysis with experiential learning. We study performance in a range of media, cultures, and historical periods. Students learn to critically engage with the processes of conception, design, production, and reception of theatre, film, performance art, video art, and with the performativity of our everyday lives. Our experiential learning courses use current devised theatre practices to engage students with performance through studio work and public productions. All our courses encourage students to adopt inventive and critical perspectives on creative processes and foster collaborative understandings of artistic creation.

**NOTE**

Students registered in Honours Theatre & Film Studies are encouraged to complete elective courses in related art forms.

**ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in THTRFLM 1T03.

**COURSE LIST 1**

- THTRFLM 3AA3 - Modernist Drama and Theatre in Europe
- THTRFLM 3DD3 - Contemporary Canadian Drama and Theatre
- THTRFLM 3FF3 - Early Cinema History
- THTRFLM 3L03 - Cinema History from WWII
- THTRFLM 3M03
- THTRFLM 3P03 - Women and Visual Culture
- THTRFLM 3U03 - Pleasure and Critique in Dramatic Performance

**COURSE LIST 2**

- THTRFLM 3N03 - Artists' Alternative Film and Video
- THTRFLM 3OP6 A/B - Organizing the Performance Space
- THTRFLM 3PC3 - Performance and Community Engagement
- THTRFLM 3PR3 - Text-based Devising: Research and Development

- THTRFLM 3PS3 - Devising New Plays: Research and Development
- THTRFLM 3S03
- THTRFLM 3S06 - Major Production Workshop
- THTRFLM 3SD3 - Scripting the Devised Performance
- THTRFLM 3VS3 - Visual Storytelling
- THTRFLM 3WW3 - Acting and the Voice: Devising from Classical Texts
- THTRFLM 3XX3 - Acting and the Body: Devising Physical Theatre

**COURSE LIST 3**

- ARTHIST 2A03 - Visual Literacy
- ARTHIST 2R03 - The History of Fashion and Identity
- ARTHIST 2T03 - Art, Theatre and Music in the Enlightenment
- ARTHIST 3Q03 - Colours of the World
- CLASSICS 2E03 - The Ancient World in Film
- CLASSICS 2YY3 - Greek Tragedy
- CMST 2G03 - Performance and Performativity
- ENGLISH 2CR3 - Shakespeare: Comedies, Problem Plays, and Romances
- ENGLISH 2HT3 - Shakespeare: Histories and Tragedies
- ENGLISH 3CC3 - Reading Film
- GERMAN 2N03 - The Holocaust in Film and Fiction (Taught in English)
- GERMAN 2P03 - Modern Germany Through Film: Symphonies of Magic & Horror (Taught in English)
- GERMAN 2S03
- INDIGST 3EE3 - Indigenous Representations in Film
- INDIGST 3G03 - Indigenous Creative Arts and Drama: Selected Topics
- ITALIAN 3X03 - Italy Today Through Film (Taught in English)
- MMEDIA 2G03 - Introduction to Digital Audio
- MMEDIA 3C03 - Interactive and Spatial Audio
- MUSIC 2F03 - Music for Film and Television
- MUSIC 2TT3 - Broadway and the Popular Song
- RUSSIAN 2G03 - Masterpieces of Russian Literature in Film and TV Series (Taught in English)
- RUSSIAN 2H03 - Soviet Propaganda in Films and Other Mass Media (Taught in English)
- THTRFLM 2Z03

**REQUIREMENTS (EFFECTIVE 2018-2019)**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

- from the Level I program completed prior to admission into the program

**6 UNITS**

- THTRFLM 2CP3 - Culture and Performance
- THTRFLM 2FA3 - Film Analysis

**6 UNITS**

from

- THTRFLM 2AA3 - Acting as Devising
- THTRFLM 2BB3 - Designing as Devising
- THTRFLM 2DP3 - Devising Processes

**3 UNITS**

from

- Level II Theatre & Film courses or from *Course List 3*

**27 UNITS**

- Level III or IV Theatre & Film, including twelve units from *Course List 1*; twelve units from *Course List 2*, and can also include three units from *Course List 3*

**6 UNITS**

Level IV Theatre & Film courses, including at least three units from

- THTRFLM 4C03 - Performance and Society
- THTRFLM 4D03 - Theatre, Society and Early Cinema
- THTRFLM 4E03 - Cinema and Society

**42 UNITS**

- Electives

**REQUIREMENTS (PRIOR TO 2018-2019)**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

- from the Level I program completed prior to admission into the program

**6 UNITS**

- THTRFLM 2CP3 - Culture and Performance
- THTRFLM 2FA3 - Film Analysis

**3 UNITS**

from

- THTRFLM 2AA3 - Acting as Devising
- THTRFLM 2BB3 - Designing as Devising
- THTRFLM 2DP3 - Devising Processes

**3 UNITS**

from

- Level II Theatre & Film courses or from *Course List 3*

**27 UNITS**

- Level III or IV Theatre & Film, including nine units from *Course List 1*; twelve units from *Course List 2*, and can also include six units from *Course List 3*

**6 UNITS**

Level IV Theatre & Film courses, including at least three units from

- THTRFLM 4C03 - Performance and Society
- THTRFLM 4D03 - Theatre, Society and Early Cinema
- THTRFLM 4E03 - Cinema and Society

**45 UNITS**

- Electives

**HONOURS THEATRE & FILM STUDIES WITH A SPECIALIZED MINOR IN COMMERCE (B.A.)**

For details on this Specialized Minor, please see *Specialized Minor in Commerce for Students Completing a Single Honours B.A. in Humanities*, offered by the DeGroote School of Business.

**Bachelor of Arts****ART HISTORY (B.A.)****ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 3.5 including a grade of at least C- in one of ARTHIST 1A03 or ARTHIST 1AA3. Students must complete both ARTHIST 1A03 and 1AA3 by the end of Level II.

**NOTES**

Before choosing Level II courses, students should become familiar with the prerequisites for Level III courses.

**REQUIREMENTS**

90 units total (Levels I to III), of which 42 units may be Level I

**30 UNITS**

- from the Level I program completed prior to admission into the program

**15 UNITS**

- Level II Art History

**0-3 UNITS**

if not completed in Level I

- ARTHIST 1A03 - World Art and Cultural Heritage I or
- ARTHIST 1AA3 - World Art and Cultural Heritage II

**15 UNITS**

- Level III Art History

**27-30 UNITS**

- Electives

## MUSIC (B.A.)

### NOTES

Completion of a Music degree requires considerable daytime attendance.

### ADMISSION

Completion of Music 1 and a Grade Point Average of at least 3.5.

### PROGRAM NOTES

- Students from another Level I program may be admitted with a Grade Point Average of at least 3.5, a weighted average of 4.0 in MUSIC 1A03 and 1AA3, and a successful audition.
- Students in the B.A. in Music program can only use a total of 12 units from *Course List 2* as credit toward their degrees.

### COURSE LIST 1

**All Level III and IV Music courses**, including

HEALTHSCI 3MU3 - Music, Health, & the Community

The following exceptions may not be used toward this course list:

- MUSIC 2GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 2GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 2GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 2GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 2GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 2GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 2GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 3GA3 A/B - Ensemble Performance: Accompanying
- MUSIC 3GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 3GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 3GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 3GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 3GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 3GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 3GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 4GA3 A/B - Ensemble Performance: Accompanying
- MUSIC 4GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 4GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 4GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 4GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 4GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 4GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 4GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble

### COURSE LIST 2

- MUSIC 1GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 1GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 1GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 1GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 1GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 1GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 1GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 2GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 2GC3 A/B - Ensemble Performance: McMaster University Choir

- MUSIC 2GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 2GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 2GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 2GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 2GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 3GA3 A/B - Ensemble Performance: Accompanying
- MUSIC 3GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 3GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 3GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 3GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 3GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 3GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 3GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 4GA3 A/B - Ensemble Performance: Accompanying
- MUSIC 4GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 4GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 4GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 4GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 4GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 4GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 4GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble

### REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO 2018-2019

90 units total (Levels I to III), of which 45 units may be Level I

#### 33 UNITS

- Music 1 program

#### 21 UNITS

from

- MUSIC 2B03 - Music History: Music in Western Culture from c. 1750 to the Present
- MUSIC 2BB3
- MUSIC 2CC3 A/B
- MUSIC 2D03 A/B
- MUSIC 2E06 A/B - Solo Performance
- MUSIC 2H03

#### 9 UNITS

- from *Course List 1*

#### 27 UNITS

- Electives, including no more than 6 units from *Course List 2*

### REQUIREMENTS FOR STUDENTS WHO ENTERED 2018-2019 OR LATER

90 units total (Levels I to III), of which 45 units may be Level I

#### 33 UNITS

- Music 1 program

#### 21 UNITS

from

- MUSIC 2B03 - Music History: Music in Western Culture from c. 1750 to the Present
- MUSIC 2CA3 - Theory and Analysis II
- MUSIC 2CB3 - Theory and Analysis III
- MUSIC 2DA3 - Practical Musicianship III
- MUSIC 2E06 A/B - Solo Performance
- MUSIC 2MH3 - Music History: Music in Western Culture from Antiquity to c. 1750



**6 UNITS**

- from *Course List 1*

**30 UNITS**

- Electives, including no more than 6 units from *Course List 2*

**THEATRE & FILM STUDIES (B.A.)****PROGRAMS IN THEATRE & FILM STUDIES**

Theatre & Film Studies is a liberal arts program that integrates critical analysis with experiential learning. We study performance in a range of media, cultures, and historical periods. Students learn to critically engage with the processes of conception, design, production, and reception of theatre, film, performance art, video art, and with the performativity of our everyday lives. Our experiential learning courses use current devised theatre practices to engage students with performance through studio work and public productions. All our courses encourage students to adopt inventive and critical perspectives on creative processes and foster collaborative understandings of artistic creation.

**ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 3.5 including a grade of at least C- in THTRFLM 1T03.

**COURSE LIST 1**

- THTRFLM 3AA3 - Modernist Drama and Theatre in Europe
- THTRFLM 3DD3 - Contemporary Canadian Drama and Theatre
- THTRFLM 3FF3 - Early Cinema History
- THTRFLM 3L03 - Cinema History from WWII
- THTRFLM 3M03
- THTRFLM 3P03 - Women and Visual Culture
- THTRFLM 3U03 - Pleasure and Critique in Dramatic Performance

**COURSE LIST 2**

- THTRFLM 3N03 - Artists' Alternative Film and Video
- THTRFLM 3OP6 A/B - Organizing the Performance Space
- THTRFLM 3PC3 - Performance and Community Engagement
- THTRFLM 3PR3 - Text-based Devising: Research and Development
- THTRFLM 3PS3 - Devising New Plays: Research and Development
- THTRFLM 3S03
- THTRFLM 3S06 - Major Production Workshop
- THTRFLM 3SD3 - Scripting the Devised Performance
- THTRFLM 3VS3 - Visual Storytelling
- THTRFLM 3WW3 - Acting and the Voice: Devising from Classical Texts
- THTRFLM 3XX3 - Acting and the Body: Devising Physical Theatre

**COURSE LIST 3**

- ARTHIST 2A03 - Visual Literacy
- ARTHIST 2R03 - The History of Fashion and Identity
- ARTHIST 2T03 - Art, Theatre and Music in the Enlightenment
- ARTHIST 3Q03 - Colours of the World
- CLASSICS 2E03 - The Ancient World in Film
- CLASSICS 2YY3 - Greek Tragedy
- CMST 2G03 - Performance and Performativity
- ENGLISH 2CR3 - Shakespeare: Comedies, Problem Plays, and Romances
- ENGLISH 2HT3 - Shakespeare: Histories and Tragedies
- ENGLISH 3CC3 - Reading Film
- GERMAN 2N03 - The Holocaust in Film and Fiction (Taught in English)
- GERMAN 2P03 - Modern Germany Through Film: Symphonies of Magic & Horror (Taught in English)
- GERMAN 2S03
- INDIGST 3EE3 - Indigenous Representations in Film
- INDIGST 3G03 - Indigenous Creative Arts and Drama: Selected Topics
- ITALIAN 3X03 - Italy Today Through Film (Taught in English)
- MMEDIA 2G03 - Introduction to Digital Audio
- MMEDIA 3C03 - Interactive and Spatial Audio
- MUSIC 2F03 - Music for Film and Television

- MUSIC 2TT3 - Broadway and the Popular Song
- RUSSIAN 2G03 - Masterpieces of Russian Literature in Film and TV Series (Taught in English)
- RUSSIAN 2H03 - Soviet Propaganda in Films and Other Mass Media (Taught in English)
- THTRFLM 2Z03

**REQUIREMENTS (EFFECTIVE 2018-2019)**

90 units total (Levels I to III), of which 42 units may be Level I

**30 UNITS**

- from the Level I program completed prior to admission into the program

**6 UNITS**

- THTRFLM 2CP3 - Culture and Performance
- THTRFLM 2FA3 - Film Analysis

**6 UNITS**

from

- THTRFLM 2AA3 - Acting as Devising
- THTRFLM 2BB3 - Designing as Devising
- THTRFLM 2DP3 - Devising Processes

**3 UNITS**

from

- Level II Theatre & Film courses or from *Course List 3*

**12 UNITS**

- Level III or IV Theatre & Film courses, including three units from *Course List 1*; three units from *Course List 2*

**33 UNITS**

- Electives

**REQUIREMENTS (PRIOR TO 2018-2019)**

90 units total (Levels I to III), of which 42 units may be Level I

- THTRFLM 2CP3 - Culture and Performance
- THTRFLM 2FA3 - Film Analysis

**30 UNITS**

- from the Level I program completed prior to admission into the program

**6 UNITS****3 UNITS**

from

- THTRFLM 2AA3 - Acting as Devising
- THTRFLM 2BB3 - Designing as Devising
- THTRFLM 2DP3 - Devising Processes

**3 UNITS**

from

- Level II Theatre & Film courses or from *Course List 3*

**12 UNITS**

Level III or IV Theatre & Film courses, including three units from *Course List 1*; three units from *Course List 2*, and can also include three units from *Course List 3*

**36 UNITS**

- Electives

**Bachelor of Fine Arts (Honours)****HONOURS STUDIO ART (B.F.A.)****ADMISSION**

Completion of Studio Art 1 and a Grade Point Average of at least 5.0, with an average of at least 5.0 in ART 1DM3, 1MI3, 1OS3, 1SI3, and the successful completion of ARTHIST 1A03 and 1AA3.

**NOTES**

- Students enrolled in the Studio Art program must be committed to full-time study for the duration of the first two years of their degree. This program does not allow part-time enrolment.
- Field trips may be taken in all levels of the program to natural and urban

areas on campus and in Hamilton and surrounding areas.

- Students in Honours Studio Art must complete ART 2DG3, 2IS3, 2PG3, 2PM3, 2SC3 before registering in Level III or IV Art courses.
- Students wishing to obtain a Minor in Art History should note that six, and only six of Art History units required in the Honours Studio Art program may be counted toward the Minor of 24 units.

#### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

- Studio Art 1

#### 15 UNITS

- ART 2DG3 - Contemporary Approaches to Drawing
- ART 2IS3 - Independent Studio Methods
- ART 2PG3 - Contemporary Approaches to Painting
- ART 2PM3 - Contemporary Approaches to Print Media
- ART 2SC3 - Contemporary Approaches to Sculpture

#### 3 UNITS

from

- ART 2DP3 - Digital Practices
- ART 2ER3 - Environmentally Responsible Art
- ART 2Z03
- HTHSCI 3EE3 - Biomedical Graphics
- MMEDIA 2G03 - Introduction to Digital Audio
- MMEDIA 3C03 - Interactive and Spatial Audio

#### 6 UNITS

from

- ART 2AT3 - Art Today
- Level II, III or IV Art History

#### 9 UNITS

- ART 3D03 - Practical Issues
- ART 3GS3
- ART 3TS3
- ART 3GS6 A/B - Guided Studio Practice

#### 9 UNITS

from

- ART 3BA3 - Concentrated Study - Book Arts
- ART 3CC3 - Concentrated Study - Ceramics
- ART 3CE3 - Community Exhibitions
- ART 3CF3 - Concentrated Study - Foundry
- ART 3CI3 - Concentrated Study - Intaglio
- ART 3CL3 - Concentrated Study - Lithography
- ART 3FW3 - Field Work: On-Site Explorations
- ART 3ID3 - Integrated Dimensional Media Concentration
- ART 3IM3 - Integrated Media Concentration
- ART 3IP3 - Media Installation and Performance
- ART 3J03 - Concentrated Study - Collaborative Community Projects
- ART 3PB3 - Photography Beyond the Frame
- ART 3PD3 - New Directions in Painting/drawing
- ART 3VA3 - Video Art and Digital Cinema
- ART 4CC3 - Concentrated Study - Ceramics
- ART 4CI3 - Concentrated Study - Intaglio
- ART 4CL3 - Concentrated Study - Lithography
- ART 4PR3 - Professional Residency
- MMEDIA 3PC3 - Photographic Collage and Composite Images

#### 3 UNITS

from

- ART 4CA3 - 20th Century and Contemporary Art Practices: How Artists Think, Act and Engage
- ARTHIST 3BB3 - Indigenous Art and Visual Culture in Canada, 1960 to the Present
- ARTHIST 3JA3 - The History of Art 1970 to the Present

#### 12 UNITS

- ART 4AS6 A/B - Advanced Studio Production and Critical Discourse
- ART 4AR3 - Advanced Research and Presentation Strategies
- ART 4EP3 - Exhibition Preparation and Documentation

#### 3 UNITS

- Levels III or IV Art History

#### 30 UNITS

- Electives

## Bachelor of Music (Honours)

### HONOURS MUSIC (B.MUS.)

123 units total (Levels I to IV), of which 51 units may be Level I

#### NOTES

Completion of a Music degree requires considerable daytime attendance.

#### ADMISSION

Completion of Music I and a Grade Point Average of at least 5.0.

#### PROGRAM NOTES

- The courses appearing in *Course List 1* are specifically intended to prepare students to attend a Faculty of Education for a career in school music teaching. Students interested in Music Education are advised to consult the Music Counsellor during their first year for advice on fulfilling the entrance requirements of Faculties of Education.
- Students who intend to pursue graduate studies in music history or theory should select a significant number of the courses in Course List 2.
- Students in the Honours B.Mus. program can only use a total of 12 units from *Course List 5* as credit toward their degrees.

#### COURSE LIST 1

- HTHSCI 3MU3 - Music, Health, & the Community
- MUSIC 2MC3 - Psychology of Music
- MUSIC 3AA3 - Elementary Music Education
- MUSIC 3CG3
- MUSIC 3J03 - Orchestration and Arranging
- MUSIC 3K03 - Brass Methods
- MUSIC 3L03 - Woodwind Methods
- MUSIC 3M03 A/B - String Methods
- MUSIC 3N03 - Vocal Methods
- MUSIC 3O03 - Conducting
- MUSIC 3P03 - Percussion Methods
- MUSIC 3V03 - Foundations of Music Education
- MUSIC 4K03 - Brass Methods
- MUSIC 4L03 - Woodwind Methods
- MUSIC 4M03 A/B - String Methods
- MUSIC 4N03 - Choral Methods
- MUSIC 4OC3 - Advanced Conducting: Choral
- MUSIC 4OI3 - Advanced Conducting: Instrumental
- MUSIC 4Q03
- MUSIC 4V03 - Current Issues in Music Education

#### COURSE LIST 2

- MUSIC 3CM3 - Modal Counterpoint
- MUSIC 3CT3 - Tonal Counterpoint
- MUSIC 3H03 - Analysis
- MUSIC 3JJ3 - Topics in Music History: Music Before c. 1750
- MUSIC 3KK3 - Topics in Music History: Music from c. 1750-c. 1900
- MUSIC 3Y03
- MUSIC 3YY3
- MUSIC 4C03 - Advanced Studies in Harmony and Counterpoint
- MUSIC 4H03 - Advanced Studies in Analysis

#### MUSIC 4R03

- MUSIC 4Y03 - Topics in Music History: Advanced Musicology Seminar

- MUSIC 4Z03 - Composition
- MUSIC 4ZZ3 - Advanced Composition

**COURSE LIST 3**

- MUSIC 2A03 - Music of the World's Cultures
- MUSIC 2F03 - Music for Film and Television
- MUSIC 2I03 - Popular Music in North America and the United Kingdom: Post-World War II
- MUSIC 2MT3 - Introduction to the Practice of Music Therapy
- MUSIC 2MU3 - Introduction to Music Therapy Research
- MUSIC 2T03
- MUSIC 2TT3 - Broadway and the Popular Song
- MUSIC 2U03 - Jazz
- MUSIC 2Z03
- MUSIC 3MT3
- MUSIC 3Z03
- MUSIC 4S03
- MUSIC 4U03
- MMEDIA 2G03 - Introduction to Digital Audio
- MMEDIA 3C03 - Interactive and Spatial Audio

**COURSE LIST 4**

- MUSIC 3SS3 - Special Studies in Chamber Music or Accompanying I
- MUSIC 4E03 - Solo Performance
- MUSIC 4E06 A/B - Solo Performance
- MUSIC 4SS3 - Special Studies in Chamber Music or Accompanying II

**COURSE LIST 5**

- MUSIC 1GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 1GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 1GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 1GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 1GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 1GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 1GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 2GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 2GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 2GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 2GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 2GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 2GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 2GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 3GA3 A/B - Ensemble Performance: Accompanying
- MUSIC 3GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 3GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 3GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 3GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 3GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 3GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 3GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 4GA3 A/B - Ensemble Performance: Accompanying
- MUSIC 4GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 4GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 4GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 4GJ3 A/B - Ensemble Performance: McMaster Jazz Band

- MUSIC 4GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 4GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 4GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO 2018-2019**

*123 units total (Levels I to IV), of which 51 units may be Level I*

**33 UNITS**

- Music I

**21 UNITS**

from

- MUSIC 2B03 - Music History: Music in Western Culture from c. 1750 to the Present
- MUSIC 2BB3
- MUSIC 2CC3 A/B
- MUSIC 2D03 A/B
- MUSIC 2E06 A/B - Solo Performance
- MUSIC 2H03

**6 UNITS**

- MUSIC 3E06 A/B - Solo Performance

**21 UNITS**

from

- *Course List 1*
- *Course List 2*

**6 UNITS**

from

- *Course List 3*
- *Course List 4*
- *Course List 5*

**6 UNITS**

from

- *Course List 3*
- *Course List 4*

**3 UNITS**

from

- *Course List 5*

**27 UNITS**

- Electives, excluding *Course List 5*

**REQUIREMENTS FOR STUDENTS WHO ENTERED 2018-2019 OR LATER**

*123 units total (Levels I to IV), of which 51 units may be Level I*

**33 UNITS**

- Music 1

**21 UNITS**

from

- MUSIC 2B03 - Music History: Music in Western Culture from c. 1750 to the Present
- MUSIC 2CA3 - Theory and Analysis II
- MUSIC 2CB3 - Theory and Analysis III
- MUSIC 2DA3 - Practical Musicianship III
- MUSIC 2E06 A/B - Solo Performance
- MUSIC 2MH3 - Music History: Music in Western Culture from Antiquity to c. 1750 (not offered until 18/19)

**3 UNITS**

- MUSIC 3JJ3 - Topics in Music History: Music Before c. 1750
- MUSIC 3KK3 - Topics in Music History: Music from c. 1750-c. 1900
- MUSIC 4Y03 - Topics in Music History: Advanced Musicology Seminar

**6 UNITS**

- MUSIC 3E06 A/B - Solo Performance

**21 UNITS**

from

- *Course List 1*
- *Course List 2*
- *Course List 3*
- *Course List 4*

**6 UNITS**

from

- *Course List 1*
- *Course List 2*
- *Course List 3*
- *Course List 4*
- *Course List 5*

**3 UNITS**

from

- *Course List 5*

**30 UNITS**

- Electives, excluding *Course List 5*

**HONOURS MUSIC (B.MUS.) (MUSIC COGNITION)****NOTES**

Completion of a Music degree requires considerable daytime attendance.

**ADMISSION**

**Enrolment in this program is limited.** Admission requires, as a minimum, completion of Music I, a Grade Point Average of at least 5.0, and an average of at least 5.0 in PSYCH 1X03 (or 1F03) and PSYCH 1XX3 (or 1FF3).

**PROGRAM NOTES**

- Students interested in this program must have completed Grade 12 Biology U, or enroll in BIOLOGY 1P03 in the first term of Level I, concurrently with PSYCH 1X03.
- More advanced training in statistics is recommended for students in this program (especially if students plan to conduct independent research in the future), but is not required. Students wanting more advanced statistics training should take PNB 2XE3 and PNB 3XE3. For permission to take these courses, please see the Academic Advisor in the Department of Psychology, Neuroscience & Behaviour.
- The courses appearing in Course List 1 are specifically intended to prepare students to attend a Faculty of Education and for a career in school and music teaching. Students interested in Music Education are advised to consult the Music Counsellor during Level I for advice on fulfilling the entrance requirements of Faculties of Education.
- Students who intend to pursue graduate studies in music history or theory or who wish to use the music degree as preparation for post-graduate studies in other professions should select a significant number of the courses in Course List 2.
- Students in the Honours B.Mus. (Music Cognition) program can only use a total of 12 units from *Course List 5* as credit toward their degrees.
- Although it is listed as an option, students are encouraged to complete MUSICCOG 4D06 A/B - Thesis in Music Cognition.
- PSYCH 2E03 is recommended as preparation for MUSICCOG 4MP3.

**COURSE LIST 1**

- HTHSCI 3MU3 - Music, Health, & the Community
- MUSIC 3AA3 - Elementary Music Education
- MUSIC 3CG3
- MUSIC 3J03 - Orchestration and Arranging
- MUSIC 3K03 - Brass Methods
- MUSIC 3L03 - Woodwind Methods
- MUSIC 3M03 A/B - String Methods
- MUSIC 3N03 - Vocal Methods
- MUSIC 3O03 - Conducting
- MUSIC 3P03 - Percussion Methods
- MUSIC 3V03 - Foundations of Music Education

- MUSIC 4K03 - Brass Methods
- MUSIC 4L03 - Woodwind Methods
- MUSIC 4M03 A/B - String Methods
- MUSIC 4N03 - Choral Methods
- MUSIC 4OC3 - Advanced Conducting: Choral
- MUSIC 4OI3 - Advanced Conducting: Instrumental
- MUSIC 4P03
- MUSIC 4Q03
- MUSIC 4V03 - Current Issues in Music Education

**COURSE LIST 2**

- MUSIC 3CM3 - Modal Counterpoint
- MUSIC 3CT3 - Tonal Counterpoint
- MUSIC 3H03 - Analysis
- MUSIC 3JJ3 - Topics in Music History: Music Before c. 1750
- MUSIC 3KK3 - Topics in Music History: Music from c. 1750-c. 1900
- MUSIC 3Y03
- MUSIC 3YY3
- MUSIC 4C03 - Advanced Studies in Harmony and Counterpoint
- MUSIC 4H03 - Advanced Studies in Analysis
- MUSIC 4R03
- MUSIC 4Y03 - Topics in Music History: Advanced Musicology Seminar

**COURSE LIST 3**

- MUSIC 2A03 - Music of the World's Cultures
- MUSIC 2D03 A/B
- MUSIC 2F03 - Music for Film and Television
- MUSIC 2II3 - Popular Music in North America and the United Kingdom: Post-World War II
- MUSIC 2MT3 - Introduction to the Practice of Music Therapy
- MUSIC 2MU3 - Introduction to Music Therapy Research
- MUSIC 2T03
- MUSIC 2TT3 - Broadway and the Popular Song
- MUSIC 2U03 - Jazz
- MUSIC 2Z03
- MUSIC 3MT3
- MUSIC 3Z03
- MUSIC 4S03
- MUSIC 4U03
- MUSIC 4Z03 - Composition
- MUSIC 4ZZ3 - Advanced Composition
- MMEDIA 2G03 - Introduction to Digital Audio
- MMEDIA 3C03 - Interactive and Spatial Audio

**COURSE LIST 4**

- MUSIC 3SS3 - Special Studies in Chamber Music or Accompanying I
- MUSIC 4E03 - Solo Performance
- MUSIC 4E06 A/B - Solo Performance
- MUSIC 4SS3 - Special Studies in Chamber Music or Accompanying II

**COURSE LIST 5**

- MUSIC 1GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 1GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 1GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 1GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 1GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 1GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 1GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 2GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 2GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 2GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 2GJ3 A/B - Ensemble Performance: McMaster Jazz Band



- MUSIC 2GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 2GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 2GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 3GA3 A/B - Ensemble Performance: Accompanying
- MUSIC 3GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 3GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 3GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 3GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 3GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 3GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 3GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 4GA3 A/B - Ensemble Performance: Accompanying
- MUSIC 4GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 4GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 4GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 4GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 4GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 4GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 4GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble

#### COURSE LIST 6

- PSYCH 2AA3 - Child Development
- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 2C03 - Social Psychology
- PSYCH 2H03 - Human Learning and Cognition
- PSYCH 2N03
- PSYCH 2NF3 - Clinical Neuropsychology
- PSYCH 3A03 - Audition
- PSYCH 3BB3
- PSYCH 3BN3 - Cognitive Neuroscience I
- PSYCH 3C03 - Child Language Acquisition
- PSYCH 3F03 - Evolution and Human Behaviour
- PSYCH 3FA3 - The Neurobiology of Learning and Memory
- PSYCH 3GG3 - Essentials of Developmental Psychology
- PSYCH 3H03 - The Arts and The Brain
- PSYCH 3II3
- PSYCH 3NL3 - Cognitive Neuroscience of Language
- MUSIC 2MT3 - Introduction to the Practice of Music Therapy
- MUSICCOG 3Q03 A/B S - Experimental Laboratory in Music Cognition I
- MUSICCOG 4Q03 A/B S - Experimental Laboratory in Music Cognition II

#### REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO 2018-2019

123 units total (Levels I to IV), of which 51 units may be Level I

#### 33 UNITS

- Music I

#### 18 UNITS

- MUSIC 2B03 - Music History: Music in Western Culture from c. 1750 to the Present
- MUSIC 2BB3
- MUSIC 2CC3 A/B
- MUSIC 2E06 A/B - Solo Performance
- MUSIC 2H03

#### 9 UNITS

from

- MUSICCOG 2MP3 - Introduction to Music Cognition (or MUSICCOG 2A03 or 2MA3)
- MUSICCOG 3MP3
- MUSICCOG 3SP3 - The Science of Performance
- MUSICCOG 4MP3 - Neuroscience of Music (or one of MUSICCOG 3A03, 3MA3, or 4LA3)

#### 3 UNITS

- SOCSCI 2J03 - Introduction to Statistics

#### 3 UNITS

- PSYCH 2E03 - Sensory Processes

#### 6 UNITS

- MUSIC 3E06 A/B - Solo Performance

#### 24 UNITS

from

- *Course List 1*
- *Course List 2*
- *Course List 3*
- *Course List 4*

#### 3 UNITS

from

- *Course List 5*

#### 3 UNITS

from

- PSYCH 2AA3 - Child Development
- PSYCH 2D03
- PSYCH 2F03
- PSYCH 2H03 - Human Learning and Cognition
- PSYCH 2N03
- PSYCH 2NF3 - Clinical Neuropsychology
- PSYCH 2TT3

#### 6 UNITS

- MUSICCOG 4D06 A/B - Thesis in Music Cognition or
- 6 units from *Course List 6*

#### 15 UNITS

- Electives, including no more than 6 units from *Course List 5*

#### REQUIREMENTS FOR STUDENTS WHO ENTERED 2018-2019 OR LATER

123 units total (Levels I to IV), of which 51 units may be Level I

#### 33 UNITS

- Music 1

#### 21 UNITS

- MUSIC 2B03 - Music History: Music in Western Culture from c. 1750 to the Present
- MUSIC 2CA3 - Theory and Analysis II
- MUSIC 2CB3 - Theory and Analysis III
- MUSIC 2DA3 - Practical Musicianship III
- MUSIC 2E06 A/B - Solo Performance
- MUSIC 2MH3 - Music History: Music in Western Culture from Antiquity to c. 1750

#### 9 UNITS

from

- MUSICCOG 2MP3 - Introduction to Music Cognition (or MUSICCOG 2A03 or 2MA3)
- MUSICCOG 3MP3
- MUSICCOG 3SP3 - The Science of Performance
- MUSICCOG 4MP3 - Neuroscience of Music (or one of MUSICCOG 3A03, 3MA3, or 4LA3)

#### 3 UNITS

- SOCSCI 2J03 - Introduction to Statistics

#### 3 UNITS

- PNB 2XA3 - Human Perception & Cognition

**6 UNITS**

- MUSIC 3E06 A/B - Solo Performance

**18 UNITS**

from

- *Course List 1*
- *Course List 2*
- *Course List 3*
- *Course List 4*

**3 UNITS**

from

- *Course List 5*

**3 UNITS**

from

- PSYCH 2AA3 - Child Development
- PSYCH 2E03 - Sensory Processes
- PSYCH 2H03 - Human Learning and Cognition
- PSYCH 2NF3 - Clinical Neuropsychology

**6 UNITS**

- MUSICCOG 4D06 A/B - Thesis in Music Cognition or
- 6 units from *Course List 6*

**18 UNITS**

- Electives, including no more than 6 units from *Course List 5*

**Minor(s):****MINOR IN ART HISTORY****REQUIREMENTS**

- 24 units of Art History

**MINOR IN MUSIC****REQUIREMENTS**

24 units of Music or Music Cognition subject to the prerequisites and qualifying tests specified in this Calendar. No more than nine units of the minor may be from Level I and no more than twelve units of the minor may be from

- MUSIC 1GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 1GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 1GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 1GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 1GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 1GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 1GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 2GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 2GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 2GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 2GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 2GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 2GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 2GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 3GA3 A/B - Ensemble Performance: Accompanying
- MUSIC 3GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 3GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 3GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 3GJ3 A/B - Ensemble Performance: McMaster Jazz Band

- MUSIC 3GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 3GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 3GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 4GA3 A/B - Ensemble Performance: Accompanying
- MUSIC 4GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 4GC3 A/B - Ensemble Performance: McMaster University Choir
- MUSIC 4GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 4GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 4GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 4GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 4GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble

**MINOR IN THEATRE & FILM STUDIES****REQUIREMENTS**

- 24 units in Theatre & Film, including up to 9 units from *Course List 3*

**Diploma(s)****DIPLOMA IN MUSIC PERFORMANCE**

The Diploma is intended to recognize a concentration and achievement in the area of music performance. **Students should contact the Academic Counsellor for Music in the School of the Arts for direction on completing the requirements.**

**NOTES**

- Lesson fees: Lesson fees are charged over and above tuition for MUSIC 2EE6 A/B, MUSIC 3EE6 A/B, MUSIC 3SS3, MUSIC 4EE9 A/B, and MUSIC 4SS3.
- MUSIC 4E09 A/B and MUSIC 4EE9 A/B must be taken over and above the total number of units required for a McMaster degree. Because these courses may not be used for credit towards any McMaster degree, students pursuing the Diploma must plan their work to accommodate nine extra units.
- Registration in MUSIC 4E09 A/B and MUSIC 4EE9 A/B requires permission of the School of the Arts. An overall Grade Point Average of at least 8.0 will be required for admission to these courses.

**ADMISSION**

Students should meet with the Academic Counsellor for Music in the School of the Arts as early as possible in their degree program, but no later than the April before MUSIC 4E09 A/B or MUSIC 4EE9 A/B has begun. However, the application for MUSIC 4E09 A/B or MUSIC 4EE9 A/B will be considered the formal application to be admitted to the diploma program, even though some of the requirements will have been completed in earlier years.

**REQUIREMENTS**

The Diploma will require completion of **24 units** as follows:

**12 UNITS**

- MUSIC 2E06 A/B - Solo Performance or
- MUSIC 2EE6 A/B - Solo Performance
- MUSIC 3E06 A/B - Solo Performance or
- MUSIC 3EE6 A/B - Solo Performance

**3 UNITS**

from

- MUSIC 1GB3 A/B - Ensemble Performance: McMaster Concert Band
- MUSIC 1GC3 A/B - Ensemble Performance: McMaster University Choir

- MUSIC 1GF3 A/B - Ensemble Performance: David Gerry Flute Ensemble
- MUSIC 1GJ3 A/B - Ensemble Performance: McMaster Jazz Band
- MUSIC 1GP3 A/B - Ensemble Performance: McMaster Percussion Ensemble
- MUSIC 1GR3 A/B - Ensemble Performance: McMaster Chamber Orchestra
- MUSIC 1GW3 A/B - Ensemble Performance: McMaster Cantemus Vocal Ensemble
- MUSIC 3SS3 - Special Studies in Chamber Music or Accompanying I
- MUSIC 4SS3 - Special Studies in Chamber Music or Accompanying II

**9 UNITS**

- MUSIC 4E09 A/B - Solo Performance, Diploma or
- MUSIC 4EE9 A/B - Solo Performance, Diploma

**NOTE**

The Diploma will be awarded at the fall convocation of the Centre for Continuing Education following the completion of all requirements.

## Department of Classics

<http://classics.humanities.mcmaster.ca/>

**Faculty as of January 15, 2020**

**CHAIR**

**Michele G. George** (Acting)

**PROFESSORS**

**Michele G. George**/B.A. (Toronto), M.A., Ph.D. (McMaster)

**ASSOCIATE PROFESSORS**

**Martin Beckmann**/B.A. (Wilfrid Laurier), M.A. Ph.D. (McMaster)

**Sean Corner**/B.A., M.A. (Oxford), Ph.D. (Princeton)

**Claude Eilers**/B.A. (Saskatchewan), M.A. (McMaster), D.Phil. (Oxford)

**Kathryn Mattison**/B.A., Ph.D. (Toronto)

**Spencer Pope**/B.A. (Middlebury College), Ph.D. (Brown)

**ASSISTANT PROFESSOR**

**Mariapia Pietropaolo**/B.A., M.A., Ph.D. (Toronto)

**NOTES**

- Students in a Classics program may choose courses from the following subfields: Ancient History and Society, Ancient Philosophy, Classical Archaeology and Art History, Classical Literature in Translation, Greek Language and Literature, Latin Language and Literature.
- With the approval of the Department of Classics and the Office of the Dean of the Faculty of Humanities, students who have completed 60 units of work of any Honours program in Classics may replace all or part of their Level III work by courses of study at a university or equivalent institution abroad. Consult the Department for further details.
- Students may receive up to six units of credit for archaeological field work at an approved Classical site. Consult the Department for further details.
- Students are encouraged to include at least six units of Greek or Latin in their program. GREEK 1Z03, 1ZZ3 and LATIN 1Z03, 1ZZ3, if not completed in the Level I program, may be taken to fulfill the degree requirements. Students intending to do graduate work in the field of Classics should note that most universities offering such programs require several years of undergraduate work in both Greek and Latin for admission. These students are strongly encouraged to include Greek and Latin courses as early as possible in their program.
- Students intending to do graduate work in the field of Classics may wish to include an independent study course (CLASSICS 4T03 A/B S) in the final level of their program.

For the Honours Arts & Science and Classics program (B.Arts.Sc.), see *Arts & Science Program*.

**INTERDISCIPLINARY MINOR IN ARCHAEOLOGY**

See the *Interdisciplinary Minors and Thematic Areas* section of this Calendar.

## Bachelor of Arts (Honours)

### COMBINED HONOURS IN CLASSICS AND ANOTHER SUBJECT (B.A.)

**ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 5.0 and a grade of at least C in three units of Level I Classics, Greek or Latin courses. (Students with Grade 12 Greek U may substitute three units of Level II Greek; students with Grade 12 Latin U may substitute three units of Level II Latin.)

**REQUIREMENTS**

*120 units total (Levels I to IV), of which 48 units may be Level I*

**30 UNITS**

from

- the Level I program completed prior to admission into the program

**12 UNITS**

- Level II Classics, Greek, Latin (may include Level I Greek or Latin)
- PHILOS 2P03 - Ancient Greek Philosophy

**9 UNITS**

- Level III Classics, Greek, Latin (may include Level II Greek or Latin)
- PHILOS 3XX3 - Plato
- PHILOS 3ZZ3 - Aristotle

**6 UNITS**

- Level IV Classics, Level III or IV Greek, Level III or IV Latin
- PHILOS 4K03 - Seminar in Ancient Philosophy

**9 UNITS**

- Levels II, III, IV Classics, Greek or Latin
- PHILOS 2P03 - Ancient Greek Philosophy
- PHILOS 3XX3 - Plato
- PHILOS 3ZZ3 - Aristotle
- PHILOS 4K03 - Seminar in Ancient Philosophy

**36 UNITS**

- Courses specified for the other subject (Combinations with Social Sciences may require more than 36 units.)

**18 UNITS**

- Electives to total 120 units

### HONOURS CLASSICS (B.A.)

**ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 5.0 and a grade of at least C in three units of Level I Classics, Greek or Latin. (Students with Grade 12 Greek U may substitute three units of Level II Greek; students with Grade 12 Latin U may substitute three units of Level II Latin.)

**REQUIREMENTS**

*120 units total (Levels I to IV), of which 48 units may be Level I*

**30 UNITS**

- from the Level I program completed prior to admission into the program

**15 UNITS**

- Level II Classics, Greek, Latin (may include Level I Greek or Latin)
- PHILOS 2P03 - Ancient Greek Philosophy

**12 UNITS**

- Level III Classics, Greek, Latin (may include Level II Greek or Latin)
- PHILOS 3XX3 - Plato
- PHILOS 3ZZ3 - Aristotle

**6 UNITS**

- Level IV Classics, Level III or IV Greek, Level III or Level IV Latin
- PHILOS 4K03 - Seminar in Ancient Philosophy

**15 UNITS**

- Levels II, III, IV Classics, Greek or Latin

- PHILOS 2P03 - Ancient Greek Philosophy
- PHILOS 3XX3 - Plato
- PHILOS 3ZZ3 - Aristotle
- PHILOS 4K03 - Seminar in Ancient Philosophy

**42 UNITS**

- Electives

## HONOURS CLASSICS WITH A SPECIALIZED MINOR IN COMMERCE (B.A.)

For details on this Specialized Minor, please see *Specialized Minor in Commerce for Students Completing a Single Honours B.A. in Humanities*, offered by the DeGroot School of Business.

## Bachelor of Arts

### CLASSICS (B.A.)

#### ADMISSION

Completion of any Level I program and a Grade Point Average (GPA) of at least 3.5 and a grade of at least C- in three units of Level I Classics, Greek or Latin courses. (Students with Grade 12 Greek U may substitute three units of Level II Greek; students with Grade 12 Latin U may substitute three units of Level II Latin.)

#### REQUIREMENTS

90 units total (Levels I to III), of which 42 units may be Level I

#### 30 UNITS

from

- the Level I program completed prior to admission into the program

#### 9 UNITS

- Level II Classics, Greek, Latin (may include Level I Greek or Latin)
- PHILOS 2P03 - Ancient Greek Philosophy

#### 9 UNITS

- Level III Classics, Greek, Latin (may include Level II Greek or Latin)
- PHILOS 3XX3 - Plato
- PHILOS 3ZZ3 - Aristotle

#### 6 UNITS

- Levels II and III Classics, Greek or Latin (may include Level I Greek or Latin)
- PHILOS 2P03 - Ancient Greek Philosophy
- PHILOS 3XX3 - Plato
- PHILOS 3ZZ3 - Aristotle

#### 36 UNITS

- Electives

## Minor(s):

### MINOR IN CLASSICS

#### REQUIREMENTS

- 24 units of Classics, Greek or Latin, of which no more than six units may be from Level I.

### MINOR IN GREEK

#### REQUIREMENTS

- 24 units of Greek, of which no more than six units may be from Level I.

### MINOR IN LATIN

#### REQUIREMENTS

- 24 units of Latin, of which no more than six units may be from Level I.

## Department of Communication Studies and Multimedia

<https://csmm.humanities.mcmaster.ca/>

**Faculty as of January 15, 2020**

#### CHAIR

**Christina Baade**

#### PROFESSOR

**Christina Baade**/ B.Mus. (*Northwestern*), M.Mus., Ph.D. (*Wisconsin-Madison*)

**Robert S. Hamilton**/M.F.A. (*S.A.I.C.*), M.F.A. (*Jan van Eyck Academie*)

**Liss Platt**/B.F.A. (*Connecticut*), M.F.A. (*California-San Diego*)

#### ASSOCIATE PROFESSORS

**Sara Bannerman**/B.Mus. (*Queen's*), M.A., Ph.D. (*Carleton*)/Canada Research Chair in Communication Policy and Governance

**Terence Flynn**/B.A. (*Carleton*), M.Sc., Ph.D. (*Syracuse*)

**Paula Gardner**/B.A. (*SUNY*), M.A. (*NSSR*), Ph.D. (*UMass*)/Asper Chair in Communications

**Faiza Hirji**/B.A. (*Simon Fraser*), M.A., Ph.D. (*Carleton*)

**Andrew Mactavish**/B.A. (*Mount Saint Vincent*), M.A. (*Dalhousie*), Ph.D. (*Alberta*)

**David Ogborn**/B.A., B.Sc. (*Mary*), B.Mus. (*Manitoba*), M.Mus. (*Toronto*), Mus. Doc. (*Toronto*)

**Christine Quail**/B.A., M.A. (*Pennsylvania*), Ph.D. (*Oregon*)

**Philip Savage**/B.A. (*Carleton*), M.A. (*Simon Fraser*), Ph.D. (*York*)

**Alexandre Sévigny**/B.A. (*York*), M.A., Ph.D. (*Toronto*)

**David Harris Smith**/M.F.A (*York*), Ph.D. (*York*)

#### ASSISTANT PROFESSORS

**Lyndsey Beutin**/B.A. (*Duke*), M.A., Ph.D. (*Pennsylvania*)

**Dilyana Mincheva**/B.A., M.A. (*Sofia-Bulgaria*), Ph.D. (*Trent*)

**Selina Mudavanhu**/B.A., M.A. (*Zimbabwe*), Ph.D. (*Cape Town*)

**Chris Myhr**/B.A (*Simon Fraser*), B.F.A. (*Lethbridge*), M.F.A. (*NSCAD*)

**Andrea Zeffiro**/B.A., M.A. (*Western*), Ph.D. (*Concordia*)

#### ASSOCIATE MEMBER

**James Gillett** (*Health, Aging and Society; Sociology*), B.A. (*Calgary*), M.A., Ph.D. (*McMaster*)

For the Honours Arts & Science and Communication Studies program (B.Arts.Sc.), see Arts & Science Program.

For the Honours Arts & Science and Multimedia program (B.Arts.Sc.), see *Arts & Science Program*.

## Bachelor of Arts (Honours)

### COMBINED HONOURS IN COMMUNICATION STUDIES AND ANOTHER SUBJECT (B.A.)

Communication Studies is an academic discipline that encompasses many fields of inquiry. Graduates of this program will have an advanced knowledge of the nature, function and evolution of communication and will develop both practical and theoretical skills necessary to pursue careers in the field of communications.

#### ADMISSION

Completion of any Level I program and a Grade Point Average of at least 5.0 and a grade of at least C in CMST 1A03.

#### NOTES

- Because MMEDIA 1A03 is required for admission into the Honours Multimedia program, students registered in the Combined Honours Communication Studies and Multimedia program will substitute three units elective for MMEDIA 1A03.



- Students are required to take CMST 2RA3, 2TM6 and MMEDIA 1A03 by the end of Level II.
- Students are required to take CMST 3HC3 (or CMST 2CC3) by the end of Level III.
- Students wishing to take more than the required three units of Level IV Communication Studies courses must first obtain permission from the undergraduate advisor for the Communication Studies program.
- Students transferring into the program at Level IV should not expect to complete all of the degree requirements in one year.

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

from

- Level I program completed prior to admission into the program

**12 UNITS**

(must be completed by the end of Level II) (See *Note 2* above)

- CMST 2RA3 - Application in Communication Theory and Methods
- CMST 2TM6 - Foundations in Communication Theory and Methods
- MMEDIA 1A03 - Multimedia and Digital Society

**3 UNITS**

(must be completed by the end of Level III) (See *Note 3* above)

- CMST 3HC3 - History of Communication

**15 UNITS**

from the following courses (of which 9 units must be from Level III):

- **Level II and III Communication Studies or any of the following:**
- ARTHIST 2A03 - Visual Literacy
- LINGUIST 2E03 - The Nature of Texts: From Slang to Formal Discourse
- LINGUIST 3P03 - Pragmatics
- MMEDIA 2G03 - Introduction to Digital Audio
- MMEDIA 3BB3 - New Media Art Practices
- MMEDIA 3MU3 - Musics, Technologies and Audio Cultures
- MUSIC 2A03 - Music of the World's Cultures
- MUSIC 2F03 - Music for Film and Television
- MUSIC 2I13 - Popular Music in North America and the United Kingdom: Post-World War II
- PHILOS 2TT3 - Ethical Issues in Communication
- PHILOS 3E03 - Philosophy of Language
- PHILOS 3M03
- RUSSIAN 2H03 - Soviet Propaganda in Films and Other Mass Media (Taught in English)
- THTRFLM 3M03
- THTRFLM 3N03 - Artists' Alternative Film and Video
- WOMENST 3BB3 - Women and Visual Culture

**3 UNITS**

from

- Levels II or III Communication Studies
- MMEDIA 2G03 - Introduction to Digital Audio
- MMEDIA 3A03
- MMEDIA 3B03 - Digital Cultures
- MMEDIA 3BB3 - New Media Art Practices
- MMEDIA 3K03 - Game Studies
- MMEDIA 3MU3 - Musics, Technologies and Audio Cultures

**3 UNITS**

- Level IV Communication Studies

**36 UNITS**

- Courses specified for the other subject. (Combinations with Social Sciences may require more than 36 units.)

**18 UNITS**

- electives to total 120 units

**COMBINED HONOURS IN MULTIMEDIA AND ANOTHER SUBJECT (B.A.)****MULTIMEDIA**

<http://csmm.humanities.mcmaster.ca/>

Offered as a Single or Combined Honours program, Multimedia unites new media with traditional arts and humanities subjects. Through experiential learning, students in this program will engage with the creative, theoretical and critical aspects of digital media and develop both the practical and theoretical skills necessary to pursue careers in Multimedia.

**ADMISSION**

**Enrolment in this program is limited and possession of the published minimum requirements does not guarantee admission.** Selection is based on academic achievement in MMEDIA 1A03 but requires, as a minimum, completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in MMEDIA 1A03. (See Notes below)

**NOTES**

- **Applicants must have completed any Level I program including the course MMEDIA 1A03** by April of the year in which application is made. Decisions regarding admission into the Multimedia program are made in May when final grades for the previous Fall and Winter terms are known.
- **Application for this program must be made during the program/plan selection process at the end of the Winter term.** Please see Application to Level II Programs under Academic Regulations in this section of the Calendar for information with regard to the application procedure. Serious applicants are advised to rank the Multimedia program as their first program of choice for Level II.
- Students entering Multimedia should be aware that, due to course sequencing and prerequisites, it takes a minimum of **THREE** years beyond Level I to complete program requirements.

Students must register for the following required Multimedia courses in the following sequence:

**LEVEL II:**

The following courses must be completed in the same academic year:

- MMEDIA 2A06 - Design & Code
- MMEDIA 2B06 - Time-Based Media I
- MMEDIA 2G03 - Introduction to Digital Audio

**LEVEL III:**

- MMEDIA 3X03 A/B - Presentation and Critique
- 9 additional units of Level III Multimedia

**LEVEL IV:**

- MMEDIA 4ST6 A/B - Senior Thesis Research and Production

**COURSE LIST 1**

- ART 3IP3 - Media Installation and Performance
- ART 3PB3 - Photography Beyond the Frame
- MMEDIA 3AN3 - Animation
- MMEDIA 3C03 - Interactive and Spatial Audio
- MMEDIA 3EE3 - Graphic Design
- MMEDIA 3H03 - Time-Based Media II
- MMEDIA 3I03 - Narrative Strategies
- MMEDIA 3L03 - Game Design
- MMEDIA 3P03
- MMEDIA 3PC3 - Photographic Collage and Composite Images
- MMEDIA 3Q03 - Emerging Media
- MMEDIA 3S03 - Sound and Image
- MMEDIA 3VA3 - Video Art and Digital Cinema
- MMEDIA 4F03 - Topics in Multimedia Production

**COURSE LIST 2**

- CMST 3B03 A/B S - Practical Aspects of Media Production
- CMST 3Z03 - Mobile Practices, Technologies and Art

- MMEDIA 3A03
- MMEDIA 3B03 - Digital Cultures
- MMEDIA 3BB3 - New Media Art Practices
- MMEDIA 3K03 - Game Studies
- MMEDIA 3MU3 - Musics, Technologies and Audio Cultures
- THTRFLM 2BB3 - Designing as Devising
- THTRFLM 3OP6 A/B - Organizing the Performance Space
- THTRFLM 3PR3 - Text-based Devising: Research and Development
- THTRFLM 3PS3 - Devising New Plays: Research and Development
- THTRFLM 3S06 - Major Production Workshop

### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- Level I program completed prior to admission into the program

#### 24 UNITS

- MMEDIA 2A06 - Design & Code
- MMEDIA 2B06 - Time-Based Media I
- MMEDIA 2G03 - Introduction to Digital Audio
- MMEDIA 3X03 A/B - Presentation and Critique
- MMEDIA 4ST6 A/B - Senior Thesis Research and Production

#### 3 UNITS

from

- MMEDIA 3B03 - Digital Cultures
- MMEDIA 3BB3 - New Media Art Practices

#### 12 UNITS

from

- *Course Lists 1 and 2*

#### 36 UNITS

- Courses specified for the other subject. (Combinations with Social Sciences may require more than 36 units.)

#### 15 UNITS

- electives, excluding Multimedia *Course List 1*, to total 120 units

## HONOURS COMMUNICATION STUDIES (B.A.)

Communication Studies is an academic discipline that encompasses many fields of inquiry. Graduates of this program will have an advanced knowledge of the nature, function and evolution of communication, and will develop both practical and theoretical skills necessary to pursue careers in the field of communications.

### ADMISSION

Completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in CMST 1A03.

### NOTES

- Students are required to take CMST 2RA3, 2TM6 and MMEDIA 1A03 by the end of Level II.
- Students are required to take CMST 3HC3 (or CMST 2CC3) by the end of Level III.
- Students wishing to take more than the required six units of Level IV Communication Studies courses must first obtain permission from the undergraduate advisor for the Communication Studies program.
- Students transferring into the program at Level IV should not expect to complete all of the degree requirements in one year.

### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- Level I program completed prior to admission into the program

#### 12 UNITS

(must be completed by the end of Level II) (*See Note 1 above*)

- CMST 2RA3 - Application in Communication Theory and Methods
- CMST 2TM6 - Foundations in Communication Theory and Methods
- MMEDIA 1A03 - Multimedia and Digital Society

#### 3 UNITS

(must be completed by the end of Level III) (*See Note 2 above*)

- CMST 3HC3 - History of Communication

#### 30 UNITS

from the following courses, of which 12 units must be Level III

##### • **Level II and III Communication Studies**

##### or any of the following:

- ARTHIST 2A03 - Visual Literacy
- LINGUIST 2E03 - The Nature of Texts: From Slang to Formal Discourse
- LINGUIST 3P03 - Pragmatics
- MMEDIA 2G03 - Introduction to Digital Audio
- MMEDIA 3BB3 - New Media Art Practices
- MMEDIA 3MU3 - Musics, Technologies and Audio Cultures
- MUSIC 2A03 - Music of the World's Cultures
- MUSIC 2F03 - Music for Film and Television
- MUSIC 2I13 - Popular Music in North America and the United Kingdom: Post-World War II
- PHILOS 2TT3 - Ethical Issues in Communication
- PHILOS 3E03 - Philosophy of Language
- PHILOS 3M03
- RUSSIAN 2H03 - Soviet Propaganda in Films and Other Mass Media (Taught in English)
- THTRFLM 3M03
- THTRFLM 3N03 - Artists' Alternative Film and Video
- WOMENST 3BB3 - Women and Visual Culture

#### 3 UNITS

from

- CMST 3Z03 - Mobile Practices, Technologies and Art
- MMEDIA 2G03 - Introduction to Digital Audio
- MMEDIA 3A03
- MMEDIA 3B03 - Digital Cultures
- MMEDIA 3BB3 - New Media Art Practices
- MMEDIA 3K03 - Game Studies
- MMEDIA 3MU3 - Musics, Technologies and Audio Cultures

#### 6 UNITS

- Level IV Communication Studies

#### 36 UNITS

- electives

## HONOURS COMMUNICATION STUDIES WITH A SPECIALIZED MINOR IN COMMERCE (B.A.)

For details on this Specialized Minor, please see *Specialized Minor in Commerce for Students Completing a Single Honours B.A. in Humanities*, offered by the DeGroote School of Business.

## HONOURS MULTIMEDIA (B.A.)

### MULTIMEDIA

<http://csmm.humanities.mcmaster.ca/>

Offered as a Single or Combined Honours program, Multimedia unites new media with traditional arts and humanities subjects. Through experiential learning, students in this program will engage with the creative, theoretical and critical aspects of digital media and develop both the practical and theoretical skills necessary to pursue careers in Multimedia.

### ADMISSION

**Enrolment in this program is limited and possession of the published minimum requirements does not guarantee admission.** Selection is based on academic achievement in MMEDIA 1A03 but requires, as a minimum,

completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in MMEDIA 1A03. (See *Notes* below.)

#### NOTES

- **Applicants must have completed any Level I program including the course MMEDIA 1A03 by April of the year in which application is made.** Decisions regarding admission into the Multimedia program are made in May when final grades for the previous Fall and Winter terms are known.
- **Application for this program must be made during the program/plan selection process at the end of the Winter term.** Please see Application to Level II Programs under Academic Regulations in this section of the Calendar for information with regard to the application procedure. Serious applicants are advised to rank the Multimedia program as their first program of choice for Level II.
- Students entering Multimedia should be aware that, due to course sequencing and prerequisites, it takes a minimum of **THREE** years beyond Level I to complete program requirements. Students must register for the following required Multimedia courses in the following sequence:

#### LEVEL II:

The following courses must be completed in the same academic year:

- MMEDIA 2A06 - Design & Code
- MMEDIA 2B06 - Time-Based Media I
- MMEDIA 2G03 - Introduction to Digital Audio

#### LEVEL III:

- MMEDIA 3X03 A/B - Presentation and Critique
- 12 additional units of Level III Multimedia

#### LEVEL IV:

- MMEDIA 4ST6 A/B - Senior Thesis Research and Production

#### COURSE LIST 1

- ART 3IP3 - Media Installation and Performance
- ART 3PB3 - Photography Beyond the Frame
- MMEDIA 3AN3 - Animation
- MMEDIA 3C03 - Interactive and Spatial Audio
- MMEDIA 3EE3 - Graphic Design
- MMEDIA 3H03 - Time-Based Media II
- MMEDIA 3I03 - Narrative Strategies
- MMEDIA 3L03 - Game Design
- MMEDIA 3P03
- MMEDIA 3PC3 - Photographic Collage and Composite Images
- MMEDIA 3Q03 - Emerging Media
- MMEDIA 3S03 - Sound and Image
- MMEDIA 3VA3 - Video Art and Digital Cinema
- MMEDIA 4F03 - Topics in Multimedia Production

#### COURSE LIST 2

- CMST 3B03 A/B S - Practical Aspects of Media Production
- CMST 3Z03 - Mobile Practices, Technologies and Art
- MMEDIA 3A03
- MMEDIA 3K03 - Game Studies
- MMEDIA 3MU3 - Musics, Technologies and Audio Cultures
- THTRFLM 2BB3 - Designing as Devising
- THTRFLM 3OP6 A/B - Organizing the Performance Space
- THTRFLM 3PR3 - Text-based Devising: Research and Development
- THTRFLM 3PS3 - Devising New Plays: Research and Development
- THTRFLM 3S06 - Major Production Workshop

#### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- Level I program completed prior to admission into the program

#### 30 UNITS

- MMEDIA 2A06 - Design & Code
- MMEDIA 2B06 - Time-Based Media I
- MMEDIA 2G03 - Introduction to Digital Audio
- MMEDIA 3B03 - Digital Cultures
- MMEDIA 3BB3 - New Media Art Practices
- MMEDIA 3X03 A/B - Presentation and Critique
- MMEDIA 4ST6 A/B - Senior Thesis Research and Production

#### 9 UNITS

- CMST 1A03 - Introduction to Communication
- CMST 2BB3 - Culture and Communication
- CMST 3I13 - Intellectual Property

#### 18 UNITS

from

- *Course Lists 1 & 2*

#### 33 UNITS

- electives, excluding Multimedia *Course List 1*

### HONOURS MULTIMEDIA WITH A SPECIALIZED MINOR IN COMMERCE (B.A.)

For details on this Specialized Minor, please see *Specialized Minor in Commerce for Students Completing a Single Honours B.A. in Humanities*, offered by the DeGroote School of Business.

## Department of English and Cultural Studies

<http://english.humanities.mcmaster.ca/>

#### Faculty as of January 15, 2020

##### CHAIR

##### Susie O'Brien

##### DISTINGUISHED UNIVERSITY PROFESSOR

**Lorraine M. York**/B.A., M.A., Ph.D. (*McMaster*), Senator William McMaster Chair in Canadian Literature and Culture

##### PROFESSORS

**Sarah Brophy**/B.A. (*Wilfrid Laurier*), M.A., Ph.D. (*McMaster*)

**Chandrima Chakraborty**/B.A. (*Calcutta*), M.A., M.Phil. (*Jawaharlal Nehru*), Ph.D. (*York*)

**David L. Clark**/B.A., M.A., Ph.D. (*Western Ontario*)

**Daniel Coleman**/B.Ed., M.A. (*Regina*), Ph.D. (*Alberta*)

**Jeffery Donaldson**/B.A., M.A., Ph.D. (*Toronto*)

**Henry Giroux**/B.S. (*Maine*), M.A. (*Appalachian State*), D. Arts (*Carnegie-Mellon*), Chair for Scholarship in the Public Interest

**Susan Searls Giroux**/B.A., M.A.T. (*Miami University-Oxford, Ohio*), Ph.D. (*Pennsylvania State*)

**James King**/B.A. (*Toronto*), M.A., Ph.D. (*Princeton*), F.R.S.C.

**Susie O'Brien**/B.A. (*Queen's*), M.A. (*Queensland*), Ph.D. (*Queen's*)

**Mary Silcox**/B.A. (*Western Ontario*), M.A., Ph.D. (*Queen's*)

**Peter Walmsley**/B.A., M.A. (*Toronto*), Ph.D. (*Cambridge*)

##### ASSOCIATE PROFESSORS

**Nadine Attewell**/B.A. (*Toronto*), M.A., Ph.D. (*Cornell*)

**Amber Dean**/B.A. (*Alberta*), M.A. (*Simon Fraser*), Ph.D. (*Alberta*)

**Melinda Gough**/B.A. (*McGill*), M.A., Ph.D. (*Yale*)

**Catherine Grisé**/B.A. (*Trent*), M.A., Ph.D. (*Western Ontario*)

**Roger L. Hyman**/B.A. (*York*), M.A., Ph.D. (*Toronto*)

**Grace Kehler**/B.A. (*Regina*), M.A., Ph.D. (*Western Ontario*)

**Rick Monture**/B.A., M.A., Ph.D. (*McMaster*)

**Anne Savage**/B.A. (*Calgary*), Ph.D. (*London*)

**Eugenia Zuroski**/B.A. (*Columbia*), M.A., Ph.D. (*Brown*)

For the Honours Arts & Science and English and Cultural Studies program (B.Arts.Sc.; See *Arts & Science Program*)

## Bachelor of Arts (Honours)

### COMBINED HONOURS IN ENGLISH AND CULTURAL STUDIES AND ANOTHER SUBJECT (B.A.)

#### ADMISSION

Completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in three units of Level I English.

#### NOTES

- When registering, students should distribute their required English courses (See Requirements below) as follows:
- Level II: 12 units of Level II English
- Level III: 12 units of Levels II and/or III English
- Level IV: 6 units of Levels II and/or III English; 6 units of Level IV English seminars (No student may take more than six units of Level IV seminars.)
- Students who are interested in taking ENGLISH 4X03 should contact the faculty member chairing the ENGLISH 4X03 committee early in the first term of Level IV.
- With permission of the Department, students may enrol in ENGLISH 4Y06 A/B, 4Y03 and/or 4YY3 in Level IV. Invitations to apply for ENGLISH 4Y06 A/B, 4Y03 and 4YY3 will be circulated to students in the second term of Level III. Students may complete a maximum of 6 units of practicum coursework toward their degree requirements.
- Most graduate programs in English require proficiency in a second language. Students who plan to pursue graduate studies in English are strongly encouraged to include in their program a second language beyond the introductory level.

#### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- Level I program completed prior to admission into the program

#### 6 UNITS

- ENGLISH 2RW6 A/B - Reading and Writing Criticism

#### 6 UNITS

from

- ENGLISH 2M03 - Concepts of Culture
- ENGLISH 2M06 A/B
- ENGLISH 2P03 - Modernity, Postmodernity, Visuality
- ENGLISH 3A03 - Critical Race Studies
- ENGLISH 3AA3 - Theories of Gender and Sexuality
- ENGLISH 3GG3 - Theories of Decolonization and Resistance
- ENGLISH 3QQ3 - Contemporary Critical Theory
- ENGLISH 3R06 A/B
- ENGLISH 3V03 - Global Anglophone Literature and Film
- WOMENST 2AA3 - Introduction to Feminist Thought

#### 9 UNITS

from

- ENGLISH 2CR3 - Shakespeare: Comedies, Problem Plays, and Romances
- ENGLISH 2HT3 - Shakespeare: Histories and Tragedies
- ENGLISH 3C06 A/B
- ENGLISH 3EC3 - Eighteenth-Century Literature and Culture: Enlightenment and its Shadows
- ENGLISH 3G06 A/B
- ENGLISH 3L03 - Old English Literature in Translation
- ENGLISH 3M06 A/B
- ENGLISH 3NN3 - Medieval Literature and Culture: An Overview

- ENGLISH 3Q03 - The History of Critical Theory
- ENGLISH 3RL6 A/B
- ENGLISH 3SS3 - Topics in Medieval Literature and Culture
- ENGLISH 3TT3 - The Age of Elizabeth I
- ENGLISH 3UU3 - Renaissance and Revolution: Studies in 17th-Century Literature
- ENGLISH 3VC3 - 'We Other Victorians': Victorian Literature and Culture and Its Afterlives
- ENGLISH 3WE3 - British Romantic Literature and Culture: Revolution, War, Empire

#### 9 UNITS

from

- courses listed above and
- ENGLISH 2AA3 - American Literature Before 1900
- ENGLISH 2BB3 - Topics in 20th and 21st-century American Literature and Culture
- ENGLISH 2BL3 - Twentieth- and Twenty-First Century British Literature and Film
- ENGLISH 2C03 - Contemporary Canadian Fiction
- ENGLISH 2CC3 - Settler Colonialism and Writing in Canada
- ENGLISH 2CL3 - Canadian Literature of Dissent and Social Justice
- ENGLISH 2D03 - Creative Writing Inquiry
- ENGLISH 2G06 A/B
- ENGLISH 2H06 A/B
- ENGLISH 2I06 A/B
- ENGLISH 2KA3 - Indigenous Futurisms and Wonderworks
- ENGLISH 2KK3 - Studies in Women Writers
- ENGLISH 2NH3 - Narratives of Health
- ENGLISH 2PC3 - Popular Culture
- ENGLISH 2S03 - Spectacular Bodies
- ENGLISH 2Z03 - Nature, Literature, Culture: Introduction to the Environmental Humanities
- ENGLISH 3CC3 - Reading Film
- ENGLISH 3CL3 - Topics in Twentieth- and Twenty-First-Century British Literature and Cultural Studies
- ENGLISH 3CW3 - Creating Writing in/for/with Communities
- ENGLISH 3D03 - Science Fiction
- ENGLISH 3EE3 - African American Literature
- ENGLISH 3F03 - The Fairy Tale
- ENGLISH 3GF3 - Studies in Popular Genres
- ENGLISH 3H03 - Jane Austen
- ENGLISH 3PT3 - Perspective and Time in Fiction
- ENGLISH 3RR3
- ENGLISH 3RW3 - Experiential Practicum: Reading and Writing in the Community
- ENGLISH 3S03
- ENGLISH 3W03 - Contemporary Native Literature in Canada
- ENGLISH 3WP3 - The Writer's Process: Short Stories from Beginning to End
- ENGLISH 3X03 - Contemporary Native Literature in the United States
- ENGLISH 3Y03 - Children's Literature
- ENGLISH 4X03 - Honours Essay
- ENGLISH 4Y06 A/B S - Research Practicum
- ENGLISH 4Y03 - Experiential Practicum I
- ENGLISH 4YY3 - Experiential Practicum II
- THTRFLM 3DD3 - Contemporary Canadian Drama and Theatre

#### 6 UNITS

- Level IV English seminars (*excluding ENGLISH 4Y03, 4YY3, 4Y06 A/B*)

#### 36 UNITS

- Courses specified for the other subject. (Combinations with Social Sciences may require more than 36 units.)



**18 UNITS**

- electives to total 120 units

**HONOURS ENGLISH AND CULTURAL STUDIES (B.A.)****ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in three units of Level I English.

**NOTES**

- When registering, students should distribute their required English courses (See Requirements below) as follows:
- Level II: ENGLISH 2RW6 A/B; 12 units of Level II English
- Level III: 18 units of Levels II and/or III English
- Level IV: 9 units of Levels II and/or III English; 9 units of Level IV English seminars.  
(No student may take more than nine units of Level IV seminars.)
- Students who are interested in taking ENGLISH 4X03 should contact the faculty member chairing the ENGLISH 4X03 committee early in the **first** term of Level IV.
- With permission of the Department, students may enrol in ENGLISH 4Y06 A/B, 4Y03 and/or 4YY3 in Level IV. Invitations to apply for ENGLISH 4Y06 A/B, 4Y03 and 4YY3 will be circulated to students in the second term of Level III. Students may complete a maximum of 6 units of practicum coursework toward their degree requirements.
- Most graduate programs in English require proficiency in a second language. Students who plan to pursue graduate studies in English are strongly encouraged to include in their program a second language beyond the introductory level.

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

from

- Level I program completed prior to admission into the program

**6 UNITS**

- ENGLISH 2RW6 A/B - Reading and Writing Criticism

**9 UNITS**

from

- ENGLISH 2M03 - Concepts of Culture
- ENGLISH 2M06 A/B
- ENGLISH 2P03 - Modernity, Postmodernity, Visuality
- ENGLISH 3A03 - Critical Race Studies
- ENGLISH 3AA3 - Theories of Gender and Sexuality
- ENGLISH 3GG3 - Theories of Decolonization and Resistance
- ENGLISH 3QQ3 - Contemporary Critical Theory
- ENGLISH 3R06 A/B
- ENGLISH 3V03 - Global Anglophone Literature and Film
- WOMENST 2AA3 - Introduction to Feminist Thought

**15 UNITS**

from

- ENGLISH 2CR3 - Shakespeare: Comedies, Problem Plays, and Romances
- ENGLISH 2HT3 - Shakespeare: Histories and Tragedies
- ENGLISH 3C06 A/B
- ENGLISH 3EC3 - Eighteenth-Century Literature and Culture: Enlightenment and its Shadows
- ENGLISH 3G06 A/B
- ENGLISH 3L03 - Old English Literature in Translation
- ENGLISH 3M06 A/B
- ENGLISH 3NN3 - Medieval Literature and Culture: An Overview
- ENGLISH 3Q03 - The History of Critical Theory
- ENGLISH 3RL6 A/B
- ENGLISH 3SS3 - Topics in Medieval Literature and Culture

- ENGLISH 3TT3 - The Age of Elizabeth I
- ENGLISH 3UU3 - Renaissance and Revolution: Studies in 17th-Century Literature
- ENGLISH 3VC3 - 'We Other Victorians': Victorian Literature and Culture and Its Afterlives
- ENGLISH 3WE3 - British Romantic Literature and Culture: Revolution, War, Empire

**15 UNITS**

from

- courses listed above and
- ENGLISH 2AA3 - American Literature Before 1900
- ENGLISH 2BB3 - Topics in 20th and 21st-century American Literature and Culture
- ENGLISH 2BL3 - Twentieth- and Twenty-First Century British Literature and Film
- ENGLISH 2C03 - Contemporary Canadian Fiction
- ENGLISH 2CC3 - Settler Colonialism and Writing in Canada
- ENGLISH 2CL3 - Canadian Literature of Dissent and Social Justice
- ENGLISH 2D03 - Creative Writing Inquiry
- ENGLISH 2G06 A/B
- ENGLISH 2H06 A/B
- ENGLISH 2I06 A/B
- ENGLISH 2KA3 - Indigenous Futurisms and Wonderworks
- ENGLISH 2KK3 - Studies in Women Writers
- ENGLISH 2NH3 - Narratives of Health
- ENGLISH 2PC3 - Popular Culture
- ENGLISH 2S03 - Spectacular Bodies
- ENGLISH 2Z03 - Nature, Literature, Culture: Introduction to the Environmental Humanities
- ENGLISH 3CC3 - Reading Film
- ENGLISH 3CL3 - Topics in Twentieth- and Twenty-First-Century British Literature and Cultural Studies
- ENGLISH 3CW3 - Creating Writing in/for/with Communities
- ENGLISH 3D03 - Science Fiction
- ENGLISH 3EE3 - African American Literature
- ENGLISH 3F03 - The Fairy Tale
- ENGLISH 3GF3 - Studies in Popular Genres
- ENGLISH 3H03 - Jane Austen
- ENGLISH 3PT3 - Perspective and Time in Fiction
- ENGLISH 3RR3
- ENGLISH 3RW3 - Experiential Practicum: Reading and Writing in the Community
- ENGLISH 3S03
- ENGLISH 3W03 - Contemporary Native Literature in Canada
- ENGLISH 3WP3 - The Writer's Process: Short Stories from Beginning to End
- ENGLISH 3X03 - Contemporary Native Literature in the United States
- ENGLISH 3Y03 - Children's Literature
- ENGLISH 4X03 - Honours Essay
- ENGLISH 4Y06 A/B S - Research Practicum
- ENGLISH 4Y03 - Experiential Practicum I
- ENGLISH 4YY3 - Experiential Practicum II
- THTRFLM 3DD3 - Contemporary Canadian Drama and Theatre

**9 UNITS**

- Level IV English seminars (*excluding ENGLISH 4Y03, 4YY3, 4Y06 A/B*)

**36 UNITS**

- electives

## HONOURS ENGLISH AND CULTURAL STUDIES AND MATHEMATICS (B.A.)

### ADMISSION

Completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in three units of Level I English; and successful completion of one of MATH 1A03, 1LS3 or 1X03 and one of MATH 1AA3, 1LT3, or 1XX3 with a grade of at least C+ (*see Note 6 below*).

### NOTES

- When registering, students should distribute their required English courses (See *Requirements* below) as follows:
- Level II: 12 units of Level II English
- Level III: 12 units of Levels II and/or III English
- Level IV: 6 units of Levels II and/or III English; 6 units of Level IV English seminars  
(No student may take more than six units of Level IV seminars.)
- MATH 1B03 must be completed by the end of Level II. Completion in Level I is strongly recommended. It is also recommended that students consider completing MATH 1C03 prior the end of Level II.
- Students who are interested in taking ENGLISH 4X03 should contact the faculty member chairing the ENGLISH 4X03 committee early in the first term of Level IV.
- With permission of the Department, students may enrol in ENGLISH 4Y06 A/B, 4Y03 and/or 4YY3 in Level IV. Invitations to apply for ENGLISH 4Y06 A/B, 4Y03 and 4YY3 will be circulated to students in the second term of Level III. Students may complete a maximum of 6 units of practicum coursework toward their degree requirements.
- Most graduate programs in English require proficiency in a second language. Students who plan to pursue graduate studies in English are strongly encouraged to include in their program a second language beyond the introductory level.
- While MATH 1LS3 and 1LT3 may be used for consideration to Level II Mathematics and Statistics programs, students are strongly encouraged to take either MATH 1A03 and 1AA3, or MATH 1X03 and 1XX3, to ensure a sufficient background in content required for MATH 2X03.

### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- Level I program completed prior to admission into the program

#### 6 UNITS

- ENGLISH 2RW6 A/B - Reading and Writing Criticism

#### 6 UNITS

from

- ENGLISH 2M03 - Concepts of Culture
- ENGLISH 2M06 A/B
- ENGLISH 2P03 - Modernity, Postmodernity, Visuality
- ENGLISH 3A03 - Critical Race Studies
- ENGLISH 3AA3 - Theories of Gender and Sexuality
- ENGLISH 3GG3 - Theories of Decolonization and Resistance
- ENGLISH 3QQ3 - Contemporary Critical Theory
- ENGLISH 3R06 A/B
- ENGLISH 3V03 - Global Anglophone Literature and Film
- WOMENST 2AA3 - Introduction to Feminist Thought

#### 9 UNITS

from

- ENGLISH 2CR3 - Shakespeare: Comedies, Problem Plays, and Romances
- ENGLISH 2HT3 - Shakespeare: Histories and Tragedies
- ENGLISH 3C06 A/B
- ENGLISH 3EC3 - Eighteenth-Century Literature and Culture: Enlightenment and its Shadows

- ENGLISH 3G06 A/B
- ENGLISH 3L03 - Old English Literature in Translation
- ENGLISH 3M06 A/B
- ENGLISH 3NN3 - Medieval Literature and Culture: An Overview
- ENGLISH 3Q03 - The History of Critical Theory
- ENGLISH 3RL6 A/B
- ENGLISH 3SS3 - Topics in Medieval Literature and Culture
- ENGLISH 3TT3 - The Age of Elizabeth I
- ENGLISH 3UU3 - Renaissance and Revolution: Studies in 17th-Century Literature
- ENGLISH 3VC3 - 'We Other Victorians': Victorian Literature and Culture and Its Afterlives
- ENGLISH 3WE3 - British Romantic Literature and Culture: Revolution, War, Empire

#### 9 UNITS

from

- courses listed above and
- ENGLISH 2AA3 - American Literature Before 1900
- ENGLISH 2BB3 - Topics in 20th and 21st-century American Literature and Culture
- ENGLISH 2BL3 - Twentieth- and Twenty-First Century British Literature and Film
- ENGLISH 2C03 - Contemporary Canadian Fiction
- ENGLISH 2CC3 - Settler Colonialism and Writing in Canada
- ENGLISH 2CL3 - Canadian Literature of Dissent and Social Justice
- ENGLISH 2D03 - Creative Writing Inquiry
- ENGLISH 2G06 A/B
- ENGLISH 2H06 A/B
- ENGLISH 2I06 A/B
- ENGLISH 2KA3 - Indigenous Futurisms and Wonderworks
- ENGLISH 2KK3 - Studies in Women Writers
- ENGLISH 2NH3 - Narratives of Health
- ENGLISH 2PC3 - Popular Culture
- ENGLISH 2S03 - Spectacular Bodies
- ENGLISH 2Z03 - Nature, Literature, Culture: Introduction to the Environmental Humanities
- ENGLISH 3CC3 - Reading Film
- ENGLISH 3CL3 - Topics in Twentieth- and Twenty-First-Century British Literature and Cultural Studies
- ENGLISH 3CW3 - Creating Writing in/for/with Communities
- ENGLISH 3D03 - Science Fiction
- ENGLISH 3EE3 - African American Literature
- ENGLISH 3F03 - The Fairy Tale
- ENGLISH 3GF3 - Studies in Popular Genres
- ENGLISH 3H03 - Jane Austen
- ENGLISH 3PT3 - Perspective and Time in Fiction
- ENGLISH 3RR3
- ENGLISH 3RW3 - Experiential Practicum: Reading and Writing in the Community
- ENGLISH 3S03
- ENGLISH 3W03 - Contemporary Native Literature in Canada
- ENGLISH 3WP3 - The Writer's Process: Short Stories from Beginning to End
- ENGLISH 3X03 - Contemporary Native Literature in the United States
- ENGLISH 3Y03 - Children's Literature
- ENGLISH 4X03 - Honours Essay
- ENGLISH 4Y06 A/B S - Research Practicum
- ENGLISH 4Y03 - Experiential Practicum I
- ENGLISH 4YY3 - Experiential Practicum II
- THTRFLM 3DD3 - Contemporary Canadian Drama and Theatre

**6 UNITS**

- Level IV English seminars (*excluding ENGLISH 4Y03, 4YY3, 4Y06 A/B*)

**3 UNITS**

- MATH 1B03 - Linear Algebra I (if not completed in Level I)

**3 UNITS**

from

- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II

**6 UNITS**

- MATH 2X03 - Advanced Calculus I
- MATH 2XX3 - Advanced Calculus II

**3 UNITS**

from

- MATH 2C03 - Introduction to Differential Equations
- STATS 2D03 - Introduction to Probability

**6 UNITS**

from

- MATH 3A03 - Real Analysis I or
- MATH 3IA3 - Introduction to Analysis
- MATH 3E03
- MATH 3F03 - Ordinary Differential Equations
- MATH 3GR3 - Abstract Algebra
- MATH 3T03 - Inquiry in Topology
- MATH 3X03 - Complex Analysis I

**15 UNITS**

- Levels II-IV Mathematics or Statistics which must include at least 6 units at Levels III and/or IV

**18-21 UNITS**

- electives to total 120 units

## HONOURS ENGLISH AND CULTURAL STUDIES WITH A SPECIALIZED MINOR IN COMMERCE (B.A.)

For details on this Specialized Minor, please see *Specialized Minor in Commerce for Students Completing a Single Honours B.A. in Humanities*, offered by the DeGroote School of Business.

## Bachelor of Arts

### ENGLISH AND CULTURAL STUDIES (B.A.)

**ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 3.5 including a grade of C- in three units of Level I English.

**NOTE**

When registering, students should distribute their required English courses (See *Requirements* below) as follows:

**LEVEL II:**

- ENGLISH 2RW6 A/B - Reading and Writing Criticism
- 6 units of Level II English

**LEVEL III:**

- 18 units of Levels II and/or III English

**REQUIREMENTS**

90 units total (Levels I to III), of which 42 units may be Level I

**30 UNITS**

from

- Level I program completed prior to admission into the program

**6 UNITS**

- ENGLISH 2RW6 A/B - Reading and Writing Criticism

**6 UNITS**

from

- ENGLISH 2M03 - Concepts of Culture
- ENGLISH 2M06 A/B
- ENGLISH 2P03 - Modernity, Postmodernity, Visuality
- ENGLISH 3A03 - Critical Race Studies
- ENGLISH 3AA3 - Theories of Gender and Sexuality
- ENGLISH 3GG3 - Theories of Decolonization and Resistance
- ENGLISH 3QQ3 - Contemporary Critical Theory
- ENGLISH 3R06 A/B
- ENGLISH 3V03 - Global Anglophone Literature and Film
- WOMENST 2AA3 - Introduction to Feminist Thought

**9 UNITS**

from

- ENGLISH 2CR3 - Shakespeare: Comedies, Problem Plays, and Romances
- ENGLISH 2HT3 - Shakespeare: Histories and Tragedies
- ENGLISH 3C06 A/B
- ENGLISH 3EC3 - Eighteenth-Century Literature and Culture: Enlightenment and its Shadows
- ENGLISH 3G06 A/B
- ENGLISH 3L03 - Old English Literature in Translation
- ENGLISH 3M06 A/B
- ENGLISH 3NN3 - Medieval Literature and Culture: An Overview
- ENGLISH 3Q03 - The History of Critical Theory
- ENGLISH 3RL6 A/B
- ENGLISH 3SS3 - Topics in Medieval Literature and Culture
- ENGLISH 3TT3 - The Age of Elizabeth I
- ENGLISH 3UU3 - Renaissance and Revolution: Studies in 17th-Century Literature
- ENGLISH 3VC3 - 'We Other Victorians': Victorian Literature and Culture and Its Afterlives
- ENGLISH 3WE3 - British Romantic Literature and Culture: Revolution, War, Empire

**9 UNITS**

from

- courses listed above and
- ENGLISH 2AA3 - American Literature Before 1900
- ENGLISH 2BB3 - Topics in 20th and 21st-century American Literature and Culture
- ENGLISH 2BL3 - Twentieth- and Twenty-First Century British Literature and Film
- ENGLISH 2C03 - Contemporary Canadian Fiction
- ENGLISH 2CC3 - Settler Colonialism and Writing in Canada
- ENGLISH 2CL3 - Canadian Literature of Dissent and Social Justice
- ENGLISH 2D03 - Creative Writing Inquiry
- ENGLISH 2G06 A/B
- ENGLISH 2H06 A/B

**ENGLISH 2I06 A/B**

- ENGLISH 2KA3 - Indigenous Futurisms and Wonderworks
- ENGLISH 2KK3 - Studies in Women Writers
- ENGLISH 2NH3 - Narratives of Health
- ENGLISH 2PC3 - Popular Culture
- ENGLISH 2S03 - Spectacular Bodies
- ENGLISH 2Z03 - Nature, Literature, Culture: Introduction to the Environmental Humanities
- ENGLISH 3CC3 - Reading Film
- ENGLISH 3CL3 - Topics in Twentieth- and Twenty-First-Century British Literature and Cultural Studies
- ENGLISH 3CW3 - Creating Writing in/for/with Communities
- ENGLISH 3D03 - Science Fiction
- ENGLISH 3EE3 - African American Literature
- ENGLISH 3F03 - The Fairy Tale
- ENGLISH 3GF3 - Studies in Popular Genres

- ENGLISH 3H03 - Jane Austen
- ENGLISH 3PT3 - Perspective and Time in Fiction
- ENGLISH 3RR3
- ENGLISH 3RW3 - Experiential Practicum: Reading and Writing in the Community
- ENGLISH 3S03
- ENGLISH 3W03 - Contemporary Native Literature in Canada
- ENGLISH 3WP3 - The Writer's Process: Short Stories from Beginning to End
- ENGLISH 3X03 - Contemporary Native Literature in the United States
- ENGLISH 3Y03 - Children's Literature
- THTRFLM 3DD3 - Contemporary Canadian Drama and Theatre

**30 UNITS**

- electives

**Minor(s):****MINOR IN ENGLISH AND CULTURAL STUDIES****REQUIREMENTS**

- Six units of Level I English and 18 units of Levels II and III English.

**Department of French**

<http://french.humanities.mcmaster.ca/>

**Faculty as of January 15, 2020**

**CHAIR**

**Eugène Nshimiyimana**

**PROFESSORS**

**Suzanne Crosta**/B.A., M.A. (*McMaster*), Ph.D. (*Toronto*)

**William F. Hanley**/B.A. (*Toronto*), M. ès L. (*Paris-Sorbonne*), D.Phil. (*Oxford*)

**ASSOCIATE PROFESSORS**

**Eugène Nshimiyimana**/B.A. (*Rwanda*), M.A., Ph.D. (*Western Ontario*)

**Joëlle Papillon**/B.A., M. ès A. (*Montréal*), Ph.D. (*Toronto*)

**Nicholas Serruys**/B.A. (*Western Ontario*), B.Ed. (*Queen's*), M.A. (*Western Ontario*), Ph.D. (*Toronto*)

**John C. Stout**/B.A. (*British Columbia*), Ph.D. (*Princeton*)

**ASSISTANT PROFESSORS**

**Elzbieta Grodek**/B.A., M.A. (*Krakow*), Ph.D. (*Toronto*)

The Department of French has an overall theme of francophonie (the French-speaking world) and Diversity. This theme is reflected in the three areas of study in the following table which serves to give an overview of courses available in each area of concentration. Students are not expected to specialize officially in any one area.

Area	Courses
Translation, Literary Theory, Culture and Pedagogy	FRENCH 2G03, 2L03, 3CC3, 3GG3, 3LT3, 3P03, 3V03, 4CC3, 4P06 A/B
Francophone Literatures and Cultures of Quebec and Canada, of Africa, Asia and the Caribbean	FRENCH 2AC3, 2E03, 3AA3, 3AC3, 3FF3, 3HH3, 4LL3, 4U03
Franco-European Literatures and Cultures	FRENCH 2F03, 2JJ3, 3EE3, 3KK3, 3Q03, 3SS3, 3W03, 4I03, 4MM3, 4Y03

For the Honours Arts & Science and French program (B.Arts.Sc.), see *Arts &*

*Science Program*

**Bachelor of Arts (Honours)****COMBINED HONOURS IN FRENCH AND ANOTHER SUBJECT (B.A.)****ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in FRENCH 1A06 A/B or 2M06 A/B.

**NOTE**

Upon completion of 60 units of work (including 12 units of required Level II French courses), and with the approval of the Department of French and the Office of the Dean of the Faculty of Humanities, up to 15 units of Level III French may be replaced by courses of study at a French-language university.

**REQUIREMENTS**

*120 units total (Levels I to IV), of which 48 units may be Level I*

**30 UNITS**

- from the Level I program completed prior to admission into the program

**12 UNITS**

- FRENCH 2B03 - French Language Practice I
- FRENCH 2BB3 - French Language Practice II
- FRENCH 3C03 - French Language Practice: Written
- FRENCH 4A03 - French Language Practice

**9 UNITS**

- Level II French, excluding FRENCH 2I03 - Professional French I

**9 UNITS**

- Level III French, excluding FRENCH 3I13 - Professional French II

**6 UNITS**

- Level IV French

**36 UNITS**

- Courses specified for the other subject. (Combinations with Social Sciences may require more than 36 units.)

**18 UNITS**

- Electives to total 120 units

**HONOURS FRENCH (B.A.)****ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in FRENCH 1A06 A/B or 2M06 A/B.

**NOTES**

- Upon completion of 60 units of work (including 18 units of required Level II French courses), and with the approval of the Department of French and the Office of the Dean of the Faculty of Humanities, Level III of Honours French may be replaced by courses of study at a French-language university.

**REQUIREMENTS**

*120 units total (Levels I to IV), of which 48 units may be Level I*

**30 UNITS**

- from the Level I program completed prior to admission into the program

**12 UNITS**

- FRENCH 2B03 - French Language Practice I
- FRENCH 2BB3 - French Language Practice II
- FRENCH 3C03 - French Language Practice: Written
- FRENCH 4A03 - French Language Practice

**15 UNITS**

- Level II French, excluding FRENCH 2I03 - Professional French I

**18 UNITS**

- Level III French, excluding FRENCH 3I13 - Professional French II



**9 UNITS**

- Level IV French

**36 UNITS**

- Electives

**HONOURS FRENCH AND MATHEMATICS (B.A.)****ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in FRENCH 1A06 A/B or 2M06 A/B; and successful completion of one of MATH 1A03, 1LS3 or 1X03 and one of MATH 1AA3, 1LT3, or 1XX3 with a grade of at least C+ (*see Note 3 below*).

**NOTES**

- Upon completion of 60 units of work (including 12 units of required Level II French courses), and with the approval of the Department of French and the Office of the Dean of the Faculty of Humanities, up to 15 units of Level III French may be replaced by courses of study at a French-language university.
- MATH 1B03 must be completed by the end of Level II. Completion in Level I is strongly recommended. It is also recommended that students consider completing MATH 1C03 prior the end of Level II.
- While MATH 1LS3 and 1LT3 may be used for consideration to Level II Mathematics and Statistics programs, students are strongly encouraged to take either MATH 1A03 and 1AA3, or MATH 1X03 and 1XX3, to ensure a sufficient background in content required for MATH 2X03.

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

- from the French Level I program completed prior to admission into the program

**12 UNITS**

- FRENCH 2B03 - French Language Practice I
- FRENCH 2BB3 - French Language Practice II
- FRENCH 3C03 - French Language Practice: Written
- FRENCH 4A03 - French Language Practice

**9 UNITS**

- Level II French, excluding FRENCH 2I03 - Professional French I

**9 UNITS**

- Level III French, excluding FRENCH 3I13 - Professional French II

**6 UNITS**

- Level IV French

**3 UNITS**

- MATH 1B03 - Linear Algebra I (if not completed in Level I)

**3 UNITS**

from

- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II

**6 UNITS**

- MATH 2X03 - Advanced Calculus I
- MATH 2XX3 - Advanced Calculus II

**3 UNITS**

from

- MATH 2C03 - Introduction to Differential Equations
- STATS 2D03 - Introduction to Probability

**6 UNITS**

from

- MATH 3A03 - Real Analysis I or
- MATH 3IA3 - Introduction to Analysis
- MATH 3E03
- MATH 3F03 - Ordinary Differential Equations
- MATH 3GR3 - Abstract Algebra

- MATH 3T03 - Inquiry in Topology
- MATH 3X03 - Complex Analysis I

**15 UNITS**

- Levels II-IV Mathematics or Statistics which must include at least 6 units at Levels III or IV

**18-21 UNITS**

- Electives to total 120 units

**HONOURS FRENCH WITH A SPECIALIZED MINOR IN COMMERCE (B.A.)**

For details on this Specialized Minor, please see *Specialized Minor in Commerce for Students Completing a Single Honours B.A. in Humanities*, offered by the DeGroot School of Business.

**Bachelor of Arts****FRENCH (B.A.)****ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 3.5 including a grade of at least C- in FRENCH 1A06 A/B or FRENCH 2M06 A/B.

**REQUIREMENTS**

90 units total (Levels I to III), of which 42 units may be Level I

**30 UNITS**

- from the Level I program completed prior to admission into the program

**9 UNITS**

- FRENCH 2B03 - French Language Practice I
- FRENCH 2BB3 - French Language Practice II
- FRENCH 3C03 - French Language Practice: Written

**12 UNITS**

- Level II French, excluding FRENCH 2I03 - Professional French I

**15 UNITS**

- Level III French, excluding FRENCH 3I13 - Professional French II

**24 UNITS**

- Electives

**Minor(s):****MINOR IN FRENCH****REQUIREMENTS**

24 units total

**6 UNITS**

from

- FRENCH 1A06 A/B - Introduction to French Studies: Advanced Level
- FRENCH 2M06 A/B - Introduction to French Studies: Advanced Level

**6 UNITS**

- FRENCH 2B03 - French Language Practice I
- FRENCH 2BB3 - French Language Practice II

**12 UNITS**

Levels II or III French, excluding

- FRENCH 2C03
- FRENCH 2M06 A/B - Introduction to French Studies: Advanced Level
- FRENCH 2Z06 A/B - Beginner's Intensive French II

**Department of History**

<http://history.humanities.mcmaster.ca/>

Faculty as of January 15, 2020

CHAIR

**Stephen Heathorn**

DISTINGUISHED UNIVERSITY PROFESSOR

**John C. Weaver**/B.A. (*Queen's*), M.A., Ph.D. (*Duke*)

## PROFESSORS

**Nancy B. Bouchier**/B.A., M.A., Ph.D. (*Western Ontario*)**Kenneth Cruikshank**/B.A. (*Carleton*), M.A., Ph.D. (*York*)**Juanita De Barros**/B.A. (*Toronto*), M.A., Ph.D. (*York*)**Ruth Frager**/B.A. (*Rochester*), M.A., Ph.D. (*York*)**J. Michael Gauvreau**/B.A. (*Laurentian*), M.A., Ph.D. (*Toronto*)**Stephen Heathorn**/B.A. (*Toronto*), M.A. (*McMaster*), Ph.D. (*Toronto*)**Bonny Ibhawoh**/B.A. (*Bendel*), M.A. (*Ibadan*), Ph.D. (*Dalhousie*)**Ian McKay**/B.A. (*Dalhousie*), M.A. (*Warwick*), Ph.D. (*Dalhousie*), L.R. Wilson  
Professor in Canadian History**Alicon McQueen**/BA (*McGill*), M.A., Ph.D. (*Pittsburgh*)**Pamela Swett**/A.B. (*Bryn Mawr*), M.A., Ph.D. (*Brown*)

## ASSOCIATE PROFESSORS

**Megan Armstrong**/B.A. (*Toronto*), M.A. (*Queen's*), Ph.D. (*Toronto*)**Karen Balcom**/B.A. (*Carleton*), M.A. (*Dalhousie*), Ph.D. (*Rutgers*)**Allan Downey**/B.A. (*Mercyhurst University*), MA, PhD (*Wilfrid Laurier*)**Michael Egan**/B.A., M.A. (*Simon Fraser*), Ph.D. (*Washington State*)**Martin Horn**/B.A. (*Western Ontario*), M.A. (*McMaster*), Ph.D. (*Toronto*)**Tracy McDonald**/B.A., M.A., Ph.D. (*Toronto*)**Jaeyoon Song**/B.A., M.A. (*Korea*), Ph.D. (*Harvard*)**Stephen Streeter**/B.S. (*Bates*), M.A. (*SUNY-Stonybrook*), M.A. (*California-Riverside*), Ph.D. (*Connecticut*)

## ADJUNCT ASSISTANT PROFESSORS

**Andrew Bone**/(*Bertrand Russell Editorial Project*), B.A. (*Birmingham*), M.A., Ph.D. (*McMaster*)

## ASSOCIATE MEMBERS

**David Goutor**/(*Labour Studies*) BA, MA, PhD (*Toronto*)**Richard S. Harris**/(*Geography and Earth Sciences*) B.A. (*Cambridge*), M.A. (*Ohio State*), Ph.D. (*Queen's*)

For students who entered a History program as of 2019-2020, the Department has defined two course lists that define areas of study. Course Lists A and B apply to Level II-III courses.

Historical experiences are vast and varied across time periods, nations and identity groups. The Department of History recommends that students take courses that reflect the diverse experiences of different peoples in various time periods and geographical locations. As part of the Truth and Reconciliation process in Canada, the department also strongly recommends that students take courses that focus in whole or in part on the experiences of Indigenous peoples.

Students should consult the Program Notes for their specific program to determine the requirements regarding these course lists:

**COURSE LIST A: CANADA**

- HISTORY 2SH3 - Canadian Sport History
- HISTORY 2T03 - Survey of Canadian History, Beginnings to 1885
- HISTORY 2TT3 - Survey of Canadian History, 1885 to the Present
- HISTORY 2V03 - Re-Making History
- HISTORY 3CG3 - Canadians in a Global Age, 1914 to the Present
- HISTORY 3CW3 - Canada in a World of Empires, 1492-1919
- HISTORY 3HQ3 - History of Quebec
- HISTORY 3N03 - Poverty, Privilege and Protest in Canadian History
- HISTORY 3W03 - Women in Canada and the U.S. to 1920
- HISTORY 3WW3 - Women in Canada and the U.S. from 1920

**COURSE LIST B: CARIBBEAN, LATIN AMERICA, ASIA, AFRICA, MIDDLE EAST, BRAZIL, EUR-ASIA**

- HISTORY 2A03 - Modern Middle Eastern Societies
- HISTORY 2CS3 - Caribbean Slavery in the Atlantic World
- HISTORY 2EN3 - Caribbean History

- HISTORY 2G03 - Modern Latin America Since 1820
- HISTORY 2GW3 - A History of Global War
- HISTORY 2HH3 - Pirates, Pilgrims and Slaves in the Mediterranean, 1450-1750
- HISTORY 2IC3
- HISTORY 2J03 - Africa up to 1800
- HISTORY 2JJ3 - Africa since 1800
- HISTORY 2MC3 - Modern China
- HISTORY 2Q03 - Imperial Russia
- HISTORY 2Q03 - The Soviet Union
- HISTORY 3EC3 - Chinese Intellectual Traditions
- HISTORY 3GH3
- HISTORY 3KK3 - The Vietnam War
- HISTORY 3RU3 - Early Modern Russia

For students in program prior to 2019-2020, the Department has defined six course lists that define areas of study. Course Lists 1 to 4 apply to Level II courses, and Course Lists 5 and 6 apply to Level III courses. Students should consult the Program Notes for their specific program to determine the requirements regarding these course lists:

**COURSE LIST 1: EUROPE (INCLUDING BRITAIN)**

- CLASSICS 2HA3 - Athens and Sparta: Democracy, Oligarchy, and War
- CLASSICS 2HB3 - From Alexander to Cleopatra: Cosmopolis and Empire
- CLASSICS 2HC3 - Caesar and the Rise of Autocracy
- CLASSICS 2HD3 - Nero, Decadence, and the End of a Dynasty
- CLASSICS 2K03 - The Society of Greece and Rome
- CLASSICS 2LA3
- CLASSICS 2LB3
- CLASSICS 2LC3
- CLASSICS 2LD3
- CLASSICS 2LW3 - Ancient Law
- HISTORY 2CC3 - The Medieval World 400-1050
- HISTORY 2DD3 - The Medieval World 1050-1400
- HISTORY 2DF3 - Art and Revolutions in France, 1789-1914
- HISTORY 2EE3 - Science and Technology in World History
- HISTORY 2F03
- HISTORY 2HH3 - Pirates, Pilgrims and Slaves in the Mediterranean, 1450-1750
- HISTORY 2H03 - Tudor and Stuart Britain, 1485-1714
- HISTORY 2II3 - Modern Germany
- HISTORY 2KK3 - History of Capitalism
- HISTORY 2MM3
- HISTORY 2NN3
- HISTORY 2Q03 - Imperial Russia
- HISTORY 2Q03 - The Soviet Union
- HISTORY 2SS3 - Liberty, Empire and Industry: Britain, 1688-1867

**COURSE LIST 2: ASIA, AFRICA, MIDDLE EAST**

- HISTORY 2A03 - Modern Middle Eastern Societies
- HISTORY 2BI3
- HISTORY 2HH3 - Pirates, Pilgrims and Slaves in the Mediterranean, 1450-1750
- HISTORY 2IC3
- HISTORY 2J03 - Africa up to 1800
- HISTORY 2JJ3 - Africa since 1800
- HISTORY 2MC3 - Modern China

**COURSE LIST 3: THE AMERICAS**

- HISTORY 2CS3 - Caribbean Slavery in the Atlantic World
- HISTORY 2EN3 - Caribbean History
- HISTORY 2G03 - Modern Latin America Since 1820
- HISTORY 2IS3 - Impeached! Scandal and Intrigue in American Political and Social History
- HISTORY 2R03 - U.S. History to the Civil War

- HISTORY 2RR3 - U.S. History Since the Civil War
- HISTORY 2SH3 - Canadian Sport History
- HISTORY 2T03 - Survey of Canadian History, Beginnings to 1885
- HISTORY 2TT3 - Survey of Canadian History, 1885 to the Present
- HISTORY 2UV3 - American Foreign Relations since 1898
- HISTORY 2V03 - Re-Making History

#### **COURSE LIST 4: GLOBAL HISTORY**

- HISTORY 2EE3 - Science and Technology in World History
- HISTORY 2GW3 - A History of Global War
- HISTORY 2KK3 - History of Capitalism
- HISTORY 2NS3
- HISTORY 2S03
- HISTORY 2U03
- HISTORY 2UU3
- HISTORY 2X03
- HISTORY 2Y03

#### **COURSE LIST 5: ADVANCED COURSES IN EUROPE (INCLUDING BRITAIN AND THE AMERICAS)**

- ARTHIST 3JA3 - The History of Art 1970 to the Present
- CLASSICS 3EE3 - The Greek Historians
- CLASSICS 3HH3 - Roman Slavery
- CLASSICS 3M03 - Greek Intellectual Revolution
- CLASSICS 3MA3
- CLASSICS 3X03 - Roman Religion
- HISTORY 3CG3 - Canadians in a Global Age, 1914 to the Present
- HISTORY 3CH3 - Catastrophic History: Natural & Technological Disasters
- HISTORY 3CW3 - Canada in a World of Empires, 1492-1919
- HISTORY 3D03
- HISTORY 3DF3 - Art and Politics in Second Empire France
- HISTORY 3FF3 - Nazi Germany
- HISTORY 3G03
- HISTORY 3GH3
- HISTORY 3H03 - Italian Renaissance, 1300-1600
- HISTORY 3HH3
- HISTORY 3HP3
- HISTORY 3HQ3 - History of Quebec
- HISTORY 3I03 - The International Relations of the European Powers, 1870-1945
- HISTORY 3J03 - The United States in the 1960s
- HISTORY 3JJ3 - Crime, Criminal Justice and Punishment in Modern History
- HISTORY 3MB3
- HISTORY 3N03 - Poverty, Privilege and Protest in Canadian History
- HISTORY 3NN3
- HISTORY 3QQ3
- HISTORY 3RC3
- HISTORY 3RU3 - Early Modern Russia
- HISTORY 3VV3
- HISTORY 3W03 - Women in Canada and the U.S. to 1920
- HISTORY 3WW3 - Women in Canada and the U.S. from 1920
- HISTORY 3Y03
- HISTORY 3YY3 - Britain and the First World War

#### **COURSE LIST 6: ADVANCED COURSES IN ASIA, AFRICA, MIDDLE EAST AND GLOBAL HISTORY**

- ARTHIST 3Q03 - Colours of the World
- ARTHIST 3Z03 - The Silk Road in the First Millennium
- HISTORY 3B03
- HISTORY 3BB3
- HISTORY 3CP3
- HISTORY 3DD3 - Jews and Jesus
- HISTORY 3EC3 - Chinese Intellectual Traditions

- HISTORY 3ES3
- HISTORY 3IG3
- HISTORY 3KK3 - The Vietnam War
- HISTORY 3L03
- HISTORY 3S03
- HISTORY 3SE3
- HISTORY 3UA3 - The History of the Future
- HISTORY 3XX3 - Human Rights in History
- HISTORY 3ZZ3 - Judaism in the Modern World

For the Honours Arts & Science and History program (B.Arts.Sc), see Arts & Science Program )

## **Bachelor of Arts (Honours)**

### **COMBINED HONOURS IN HISTORY AND ANOTHER SUBJECT (B.A.)**

#### **REQUIREMENTS FOR STUDENTS WHO ENTER THE PROGRAM IN 2019-2020 OR LATER**

##### **ADMISSIONS**

Completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in three units of Level I History.

##### **NOTES**

- When registering, it is recommended that students distribute their required History courses (see Requirements below) as follows:
- Level II: 12 units from Level II or III History
- Level III: 12 units Levels II or III History
- Level IV: 3 units Level II or III History; 6 units Level IV History. (No combined Honours student may take more than six units of Level IV seminars.)
- Students considering a career in teaching are advised to take HISTORY 2T03 and HISTORY 2TT3, as many schools of education require the equivalent of six units in a Canadian History survey course.
- Students considering graduate work in History are strongly encouraged to include in their program a second language beyond the introductory level, as many graduate programs require proficiency in a second language.

##### **REQUIREMENTS**

*120 units total (Levels I to IV), of which 48 units may be Level I*

##### **30 UNITS**

- from the level I program completed prior to admission into the program

##### **3 UNITS**

- HISTORY 2HI3
- 3 units of Level II History

##### **3 UNITS**

from

- *Course List A*

##### **3 UNITS**

from

- *Course List B*

##### **18 UNITS**

from

- **Level II or III History**

*Which may also include the following:*

- ARTHIST 3JA3 - The History of Art 1970 to the Present
- ARTHIST 3Q03 - Colours of the World
- ARTHIST 3Z03 - The Silk Road in the First Millennium
- CLASSICS 2HA3 - Athens and Sparta: Democracy, Oligarchy, and War
- CLASSICS 2HB3 - From Alexander to Cleopatra: Cosmopolis and Empire
- CLASSICS 2HC3 - Caesar and the Rise of Autocracy
- CLASSICS 2HD3 - Nero, Decadence, and the End of a Dynasty

- CLASSICS 2K03 - The Society of Greece and Rome
- CLASSICS 2LA3
- CLASSICS 2LB3
- CLASSICS 2LC3
- CLASSICS 2LD3
- CLASSICS 2LW3 - Ancient Law
- CLASSICS 3EE3 - The Greek Historians
- CLASSICS 3HH3 - Roman Slavery
- CLASSICS 3M03 - Greek Intellectual Revolution
- CLASSICS 3X03 - Roman Religion

**6 UNITS**

- Level IV History

**36 UNITS**

- Courses specified by the other subject. (Combinations with Social Sciences may require more than 36 units.)

**21 UNITS**

Electives to total 120 units

**REQUIREMENTS FOR STUDENTS WHO ENTERED THE PROGRAM PRIOR TO 2019-2020****ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in three units of Level I History.

**NOTES**

- All students registered in an Honours History program must take HISTORY 2HI3 in Level II and HISTORY 3HI3 in Level III as part of their degree requirements. The requirement to take HISTORY 2HI3 will be waived for students who completed HISTORY 1FF3 in Level 1.
- Students must complete HISTORY 2HI3 and HISTORY 3HI3 before enrolling in a Level IV History seminar.
- When registering, it is recommended that students distribute their required History courses (See Requirements below) as follows:
  - Level II: HISTORY 2HI3; 9 units from Course Lists 1 to 4
  - Level III: three units from Course Lists 1 to 4; HISTORY 3HI3; 6 units from Course Lists 5 and 6
  - Level IV: three units from Course Lists 5 and 6; 6 units Level IV History. (No combined Honours student may take more than six units of Level IV seminars.)
- Students considering a career in teaching are advised to take HISTORY 2T03 and HISTORY 2TT3, as many schools of education require the equivalent of six units in a Canadian History survey course.
- Students considering graduate work in History are strongly encouraged to include in their program a second language beyond the introductory level, as many graduate programs require proficiency in a second language.

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

- from the level I program completed prior to admission into the program

**3 UNITS****3 UNITS**

from

- *Course List 1 or Course List 2*

**3 UNITS**

from

- *Course List 3 or Course List 4*

**6 UNITS**

from

- *Course Lists 1 to 4*

**3 UNITS**

- HISTORY 3HI3 - Advanced Historical Inquiry

**3 UNITS**

from

- *Course List 5*

**3 UNITS**

from

- *Course List 6*

**3 UNITS**

from

- *Course List 5 or Course List 6*

**6 UNITS**

- Level IV History

**36 UNITS**

- Courses specified by the other subject. (Combinations with Social Sciences may require more than 36 units.)

**21 UNITS**

- Electives to total 120 units

**HONOURS HISTORY (B.A.)****REQUIREMENTS FOR STUDENTS WHO ENTER THE PROGRAM IN 2019-2020 OR LATER****ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in three units of Level I History.

**NOTES**

- When registering, it is recommended that students distribute their required History courses (see Requirements below) as follows:
  - Level II: 18 units of Levels II or III History
  - Level III: 3 units of Level IV seminar; 15 units from Levels II or III History
  - Level IV: 6 units of Levels II or III History; 9 units Level IV History. (No Honours student may take more than 12 units of Level IV seminars.)
- Students considering a career in teaching are advised to take HISTORY 2T03 and HISTORY 2TT3, as many schools of education require the equivalent of six units in a Canadian History survey course.
- Students considering graduate work in History are strongly encouraged to include in their program a second language beyond the introductory level, as many graduate programs require proficiency in a second language.

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 units**

from

- the Level I program completed prior to admission into the program

**3 units**

- HISTORY 2HI3
- Level II History

**3 units**

- *Course List A*

**3 units**

- *Course List B*

**30 units**

from

- **Level II or III History**

Which may also include the following:

- ARTHIST 3JA3 - The History of Art 1970 to the Present
- ARTHIST 3Q03 - Colours of the World
- ARTHIST 3Z03 - The Silk Road in the First Millennium
- CLASSICS 2HA3 - Athens and Sparta: Democracy, Oligarchy, and War
- CLASSICS 2HB3 - From Alexander to Cleopatra: Cosmopolis and Empire
- CLASSICS 2HC3 - Caesar and the Rise of Autocracy



- CLASSICS 2HD3 - Nero, Decadence, and the End of a Dynasty
- CLASSICS 2K03 - The Society of Greece and Rome
- CLASSICS 2LA3
- CLASSICS 2LB3
- CLASSICS 2LC3
- CLASSICS 2LD3
- CLASSICS 2LW3 - Ancient Law
- CLASSICS 3EE3 - The Greek Historians
- CLASSICS 3HH3 - Roman Slavery
- CLASSICS 3M03 - Greek Intellectual Revolution
- CLASSICS 3X03 - Roman Religion

12 units

- Level IV History

39 units

- Electives

**REQUIREMENTS FOR STUDENTS WHO ENTERED THE PROGRAM PRIOR TO 2019-2020****ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in three units of Level I History.

**NOTES**

- All students registered in an Honours History program must take HISTORY 2HI3 in Level II and HISTORY 3HI3 in Level III as part of their degree requirements. **The requirement to take HISTORY 2HI3 will be waived for students who completed HISTORY 1FF3 in Level 1.**
- Students must complete HISTORY 2HI3 and HISTORY 3HI3 before enrolling in a Level IV History seminar.
- When registering, it is recommended that students distribute their required History courses (See *Requirements* below) as follows:
  - Level II: HISTORY 2HI3; 15 units from Course Lists 1 to 4
  - Level III: HISTORY 3HI3; 15 units from Course Lists 5 and 6
  - Level IV: three units from Course Lists 5 and 6; 9 units Level IV History. (No Honours student may take more than 9 units of Level IV seminars.)
- Students considering a career in teaching are advised to take HISTORY 2T03 and HISTORY 2TT3, as many schools of education require the equivalent of six units in a Canadian History survey course.
- Students considering graduate work in History are strongly encouraged to include in their program a second language beyond the introductory level, as many graduate programs require proficiency in a second language.

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

from

- the Level I program completed prior to admission into the program

**3 UNITS****3 UNITS**

- *Course List 1*

**3 UNITS**

- *Course List 2*

**3 UNITS**

- *Course List 3*

**3 UNITS**

- *Course List 4*

**3 UNITS**

- *Course Lists 1 to 4*

**3 UNITS**

- HISTORY 3HI3 - Advanced Historical Inquiry

**3 UNITS**

from

- *Course List 5*

**3 UNITS**

from

- *Course List 6*

**12 UNITS**

from

- *Course List 5* and *Course List 6* combined

**9 UNITS**

- Level IV History

**42 UNITS**

- Electives

**HONOURS HISTORY AND MATHEMATICS (B.A.)****REQUIREMENTS FOR STUDENTS WHO ENTER THE PROGRAM IN 2019-2020 OR LATER****ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in three units of Level I History; and successful completion of one of MATH 1A03, 1LS3 or 1X03; and one of MATH 1AA3, 1LT3, or 1XX3 with a grade of at least C+ (*see Note 7 below*).

**NOTES**

- When registering, it is recommended that students distribute their required History courses (See *Requirements* below) as follows:
  - Level II: 12 units of Levels II or III History
  - Level III: 12 units of Levels II or III History
  - Level IV: 3 units of Levels II or III History; 6 units Level IV History. (No combined Honours student may take more than six units of Level IV seminars.)
- Students considering a career in teaching are advised to take HISTORY 2T03 and HISTORY 2TT3, as many schools of education require the equivalent of six units in a Canadian history survey course.
- Students considering graduate work in History are strongly encouraged to include in their program a second language beyond the introductory level, as many graduate programs require proficiency in a second language.
- MATH 1B03 must be completed by the end of Level II. Completion in Level I is strongly recommended. It is also recommended that students consider completing MATH 1C03 prior the end of Level II.
- While MATH 1LS3 and 1LT3 may be used for consideration to Level II Mathematics and Statistics programs, students are strongly encouraged to take either MATH 1A03 and 1AA3, or MATH 1X03 and 1XX3, to ensure a sufficient background in content required for MATH 2X03.

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

30 units

from

- the Level I program completed prior to admission into the program

3 units

- HISTORY 2HI3
- 3 units of Level II History

3 units

from

- *Course List A*

3 units

- *Course List B*

18 units

from

- **Level II or III History**

Which may also include the following:

- ARTHIST 3JA3 - The History of Art 1970 to the Present
- ARTHIST 3Q03 - Colours of the World

- ARTHIST 3Z03 - The Silk Road in the First Millennium
- CLASSICS 2HA3 - Athens and Sparta: Democracy, Oligarchy, and War
- CLASSICS 2HB3 - From Alexander to Cleopatra: Cosmopolis and Empire
- CLASSICS 2HC3 - Caesar and the Rise of Autocracy
- CLASSICS 2HD3 - Nero, Decadence, and the End of a Dynasty
- CLASSICS 2K03 - The Society of Greece and Rome
- CLASSICS 2LA3
- CLASSICS 2LB3
- CLASSICS 2LC3
- CLASSICS 2LD3
- CLASSICS 2LW3 - Ancient Law
- CLASSICS 3EE3 - The Greek Historians
- CLASSICS 3HH3 - Roman Slavery
- CLASSICS 3M03 - Greek Intellectual Revolution
- CLASSICS 3X03 - Roman Religion

6 units

- Level IV History

3 units

- MATH 1B03 - Linear Algebra I (if not completed in Level I)

3 units

from

- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II

6 units

- MATH 2X03 - Advanced Calculus I
- MATH 2XX3 - Advanced Calculus II

3 units

from

- MATH 2C03 - Introduction to Differential Equations
- STATS 2D03 - Introduction to Probability

6 units

from

- MATH 3A03 - Real Analysis I or
- MATH 3IA3 - Introduction to Analysis
- MATH 3E03
- MATH 3F03 - Ordinary Differential Equations
- MATH 3GR3 - Abstract Algebra
- MATH 3T03 - Inquiry in Topology
- MATH 3X03 - Complex Analysis I

15 units

- Levels II-IV Mathematics or Statistics, which must include at least 6 units at Levels III and/or IV

18-21 units

- Electives to total 120 units

**REQUIREMENTS FOR STUDENTS WHO ENTERED THE PROGRAM PRIOR TO 2019-2020****ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in three units of Level I History; and successful completion of one of MATH 1A03, 1LS3 or 1X03; and one of MATH 1AA3, 1LT3, or 1XX3 with a grade of at least C+.

**NOTES**

- All students registered in an Honours History program must take HISTORY 2HI3 in Level II and HISTORY 3HI3 in Level III as part of their degree requirements. **The requirement to take HISTORY 2HI3 will be waived for students who completed HISTORY 1FF3 in Level 1.**
- Students must complete HISTORY 2HI3 and HISTORY 3HI3 before enrolling in a Level IV History seminar.
- When registering, it is recommended that students distribute their required History courses (See Requirements below) as follows:
- Level II: HISTORY 2HI3; 9 units from Course Lists 1 to 4

- Level III: three units from Course Lists 1 to 4; HISTORY 3HI3; 6 units from Course Lists 5 and 6
- Level IV: three units from Course Lists 5 and 6; 6 units Level IV History. (No combined Honours student may take more than six units of Level IV seminars.)
- Students considering a career in teaching are advised to take HISTORY 2T03 and HISTORY 2TT3, as many schools of education require the equivalent of six units in a Canadian history survey course.
- Students considering graduate work in History are strongly encouraged to include in their program a second language beyond the introductory level, as many graduate programs require proficiency in a second language.
- MATH 1B03 must be completed by the end of Level II. Completion in Level I is strongly recommended.

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

from

- the Level I program completed prior to admission into the program

**3 UNITS**

from

- *Course List 1 or Course List 2*

**3 UNITS**

from

- *Course List 3 or Course List 4*

**6 UNITS**

from

- *Course Lists 1 to 4*

**3 UNITS**

- HISTORY 3HI3 - Advanced Historical Inquiry

**3 UNITS**

from

- *Course List 5*

**3 UNITS**

from

- *Course List 6*

**3 UNITS**

from

- *Course List 5 or Course List 6*

**6 UNITS**

- Level IV History

**3 UNITS**

- MATH 1B03 - Linear Algebra I (if not completed in Level I)

**3 UNITS**

from

- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II

**6 UNITS**

- MATH 2X03 - Advanced Calculus I
- MATH 2XX3 - Advanced Calculus II

**3 UNITS**

from

- MATH 2C03 - Introduction to Differential Equations
- STATS 2D03 - Introduction to Probability

**6 UNITS**

from

- MATH 3A03 - Real Analysis I or
- MATH 3IA3 - Introduction to Analysis
- MATH 3E03
- MATH 3F03 - Ordinary Differential Equations

- MATH 3GR3 - Abstract Algebra
- MATH 3T03 - Inquiry in Topology
- MATH 3X03 - Complex Analysis I

**15 UNITS**

- Levels II-IV Mathematics or Statistics, which must include at least 6 units at Levels III and/or IV

**18-21 UNITS**

- Electives to total 120 units

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## HONOURS HISTORY WITH A SPECIALIZED MINOR IN COMMERCE (B.A.)

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For details on this Specialized Minor, please see *Specialized Minor in Commerce for Students Completing a Single Honours B.A. in Humanities*, offered by the DeGroote School of Business.

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## Bachelor of Arts

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### HISTORY (B.A.)

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#### REQUIREMENTS FOR STUDENTS WHO ENTER THE PROGRAM IN 2019-2020 OR LATER

**ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 3.5 including a grade of at least C- in three units of Level I History.

**NOTE**

In selecting courses, students must ensure that they take a minimum of three units in each of two identified areas of History.

**REQUIREMENTS**

*90 units total (Levels I to III), of which 42 units may be Level I*

**30 UNITS**

from

- the level I program completed prior to admission into the program

**3 UNITS**

- *Course List A*

**3 UNITS**

- *Course List B*

**18 UNITS**

from

- **Level II or III History**

*Which may also include the following:*

- ARTHIST 3JA3 - The History of Art 1970 to the Present
- ARTHIST 3Q03 - Colours of the World
- ARTHIST 3Z03 - The Silk Road in the First Millennium
- CLASSICS 2HA3 - Athens and Sparta: Democracy, Oligarchy, and War
- CLASSICS 2HB3 - From Alexander to Cleopatra: Cosmopolis and Empire
- CLASSICS 2HC3 - Caesar and the Rise of Autocracy
- CLASSICS 2HD3 - Nero, Decadence, and the End of a Dynasty
- CLASSICS 2K03 - The Society of Greece and Rome
- CLASSICS 2LA3
- CLASSICS 2LB3
- CLASSICS 2LC3
- CLASSICS 2LD3
- CLASSICS 2LW3 - Ancient Law
- CLASSICS 3EE3 - The Greek Historians
- CLASSICS 3HH3 - Roman Slavery
- CLASSICS 3M03 - Greek Intellectual Revolution
- CLASSICS 3X03 - Roman Religion

**36 UNITS**

- Electives

#### REQUIREMENTS FOR STUDENTS WHO ENTERED THE PROGRAM PRIOR TO 2019-2020

**ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 3.5 including a grade of at least C- in three units of Level I History.

**NOTE**

In selecting courses, students must ensure that they take a minimum of three units in each of four fields of History. All Level II and III History courses from the above list may be used towards this requirement.

**REQUIREMENTS**

*90 units total (Levels I to III), of which 42 units may be Level I*

**30 UNITS**

from

- the level I program completed prior to admission into the program

**3 UNITS**

from

- *Course List 1 or Course List 2*

**3 UNITS**

from

- *Course List 3 or Course List 4*

**6 UNITS**

from

- *Course Lists 1 to 4*

**3 UNITS**

from

- *Course List 5*

**3 UNITS**

from

- *Course List 6*

**6 UNITS**

from

- *Course List 5 and Course List 6 combined*

**36 UNITS**

- Electives

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## Minor(s):

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### MINOR IN HISTORY

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**REQUIREMENTS**

24 units of History of which no more than six units may be from Level I. Consult the Course Listings section for course prerequisites and limited enrolment courses.

## Department of Linguistics and Languages

<http://linguistics.humanities.mcmaster.ca/>

**Faculty as of January 15, 2020**

**CHAIR**

**Magda Stroinska**

**PROFESSORS**

**John J. Colarusso**/B.A. (Cornell), M.A. (Northwestern), Ph.D. (Harvard)

**John F. Connolly**/A.B. (College of the Holy Cross), M.A. (Saskatchewan), Ph.D. (University of London)

**Magda Stroinska**/M.A. (Warsaw), Ph.D. (Edinburgh)

**ASSOCIATE PROFESSORS**

**Catherine Anderson**/B.A. (McMaster), Ph.D. (Northwestern)

**Iris Bruce**/M.A., Ph.D. (Toronto)

**Ivona Kucerova**/M.A. (Charles University, Prague), Ph.D. (MIT)

**Victor Kuperman**/ B.A., M.A. (*Jerusalem*), Ph.D. (*Nijmegen*)

**Anna L. Moro**/B.A., M.A., Ph.D. (*Toronto*)

**Elisabet Service**/B.A., M.A., Ph.D. (*Helsinki*)

**Jean Wilson**/B.A. (*McMaster*), B.Ed., M.A., Ph.D. (*Toronto*)

#### ASSISTANT PROFESSORS

**Daniel Pape**/M.A. (*Technical University of Berlin*), Ph.D. (*Humboldt University of Berlin*)

**Nikolai Penner**/M.A., Ph.D. (*Waterloo*)

**Wendy M. D'Angelo**/B.A. (*McMaster*), M.A., Ph.D. (*Toronto*)

The Department of Linguistics and Languages offers B.A. Honours programs in:

- Cognitive Science of Language
- Linguistics

In addition, Minors are available, using electives only, in: German, Italian and Linguistics. **For information on the *Minor in Japanese Studies*, see the *Department of Religious Studies*.**

Language courses in American Sign Language, Chinese, Farsi, Japanese, Korean, Polish, Russian and Spanish are also offered by the Department. For the Honours Arts & Science and Linguistics program (B.Arts.Sc.), see *Arts & Science Program*

## Bachelor of Arts (Honours)

### COMBINED HONOURS IN COGNITIVE SCIENCE OF LANGUAGE AND ANOTHER SUBJECT (B.A.)

#### ADMISSION

Completion of any Level I program and a Grade Point Average of at least 5.0 including an average of at least 5.0 in LINGUIST 1A03, 1AA3 and PSYCH 1F03 or 1X03.

#### NOTES

- Students must include LINGUIST 2D03 in Level II or III of their program in order to take any Level IV seminars in Linguistics. Students who are registered in the Combined Honours Cognitive Science of Language and Communication Studies program will substitute 3 units of elective work for LINGUIST 2D03 in view of their completion of CMST 2TM6 (formerly CMST 2A03 and 2B03) Such students should consult with the Undergraduate Advisor for Linguistics to ensure access to Level IV courses.
- Students should be aware that, PSYCH 1XX3 (or 1FF3) requires either Grade 12 Biology U or BIOLOGY 1P03 as a prerequisite. Please note, however, that students can complete BIOLOGY 1P03, and PSYCH 1XX3 (or 1FF3), 2H03 in their second year of studies.
- At some time during the program, students must meet a laboratory requirement by completing one course from Course List 1 below.
- Students combining this program with Combined Honours in Psychology, Neuroscience and Behaviour should consult an academic advisor to ensure that courses are credited to the appropriate program. Required courses may not be double-counted.
- Students combining this program with a program in Social Science should consult an academic advisor to confirm which courses satisfy their statistics requirements.
- Students registered in Level IV of any Honours or Combined Honours program in Linguistics or Cognitive Science of Language with a Grade Point Average of at least 9.0 may apply to register in the Honours Thesis course (LINGUIST 4Y06 A/B) where they would conduct an individual research project under the supervision of a faculty member.

#### COURSE LIST 1

- LINGUIST 3N03
- LINGUIST 3PL3
- LINGUIST 3PS3
- LINGUIST 4D03 - Computers and Linguistic Analysis

- LINGUIST 4EL3 - Laboratory in Experimental Linguistics
- LINGUIST 4NN3 - Cognitive Neurolinguistics Laboratory
- LINGUIST 4PL3 - Programming for Linguists
- LINGUIST 4I13 A/B S - Independent Study
- LINGUIST 4Y06 A/B - Honours Thesis
- LINGUIST 4Z03

#### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- Level I program completed prior to admission into the program

#### 30 UNITS

from

- LINGUIST 2D03 - Research Methods
- LINGUIST 2DD3 - Statistics for Language Research
- LINGUIST 2L03 - Phonetics
- LINGUIST 2PH3 - Phonology
- LINGUIST 2PS3 - Psycholinguistics
- LINGUIST 2SY3 - Syntax
- LINGUIST 3A03
- LINGUIST 3B03
- LINGUIST 3C03 - Child Language Acquisition
- LINGUIST 3I03
- LINGUIST 3I13 - Semantics
- LINGUIST 3M03 - Morphology
- LINGUIST 3NL3 - Cognitive Neuroscience of Language
- LINGUIST 4F03

#### 3 UNITS

from

- Level IV Linguistics, excluding
- LINGUIST 4SL3 - SLP Practicum
- LINGUIST 4TE3 - TESL Practicum

#### 6 UNITS

from

- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour or
- PSYCH 1FF3 - Survey of Biological Basis of Psychology

and

- PSYCH 2H03 - Human Learning and Cognition

#### 3 UNITS

from

- *Course List 1*

#### 36 UNITS

- Courses specified for the other subject.  
(See *Note 4* above.)

#### 12 UNITS

- electives

### COMBINED HONOURS IN LINGUISTICS AND ANOTHER SUBJECT (B.A.)

This program is designed for students who want to combine the scientific study of language with another subject of their choice.

#### ADMISSION

Completion of any Level I program and a Grade Point Average of at least 5.0 including an average of at least 5.0 in LINGUIST 1A03 and 1AA3.

#### NOTES

- Students are required to complete 18 units of language other than English for this program, either in one or two languages. Please note that some languages have only 3 or 6 units of study available. Courses taught in English do not satisfy this requirement. The following languages are offered at McMaster:



**Romance Languages:** French, Italian, Spanish

**Classical:** Greek, Latin, Sanskrit

**Other Indo-European Languages:** German, Polish, Russian

**Non Indo-European Languages:** American Sign Language, Arabic, Cayuga, Chinese (Mandarin), Farsi, Hebrew, Inuktitut, Korean, Japanese, Mohawk, Ojibwe

- Students whose other subject involves the study of a language may substitute 12 units of language other than English with 12 units of Linguistics courses.
- Students must include LINGUIST 2D03 in Level II or III of their program in order to take any Level IV seminars in Linguistics. Students who are registered in the Combined Honours Linguistics and Communication Studies program will substitute 3 units of elective work for LINGUIST 2D03 in view of their completion of CMST 2TM6 (formerly CMST 2A03 and 2B03). Such students should consult with the Undergraduate Advisor for Linguistics to ensure access to Level IV courses.
- Upon completion of 60 units of work and with the approval of the Department of Linguistics and Languages, and the Office of the Dean of the Faculty of Humanities, one or both terms of Level III may be replaced by courses of study at a university under the *Humanities Study Elsewhere Program*.
- Students registered in Level IV of any Honours or Combined Honours program in Linguistics or Cognitive Science of Language with a Grade Point Average of at least 9.0 may apply for Honours Thesis course (LINGUIST 4Y06 A/B) where they would conduct an individual research project under the supervision of a faculty member.

#### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- Level I program completed prior to admission into the program

#### 18 UNITS

- LINGUIST 2D03 - Research Methods
- LINGUIST 2L03 - Phonetics
- LINGUIST 2PH3 - Phonology
- LINGUIST 2SY3 - Syntax
- LINGUIST 3A03
- LINGUIST 3I03
- LINGUIST 3I13 - Semantics
- LINGUIST 3M03 - Morphology

#### 6 UNITS

from

- LINGUIST 2E03 - The Nature of Texts: From Slang to Formal Discourse
- LINGUIST 2FL3 - Introduction to Forensic Linguistics
- LINGUIST 2LC3 - Historical Linguistics: Language Evolution and Change
- LINGUIST 2LL3 - Introduction to Linguistic Typology
- LINGUIST 2PS3 - Psycholinguistics
- LINGUIST 2S03 - Language and Society
- LINGUIST 3B03
- LINGUIST 3C03 - Child Language Acquisition
- LINGUIST 3F03 - Anatomy and Physiology for Speech, Language and Hearing
- LINGUIST 3IE3
- LINGUIST 3LA3 - Introduction to Second Language Acquisition
- LINGUIST 3P03 - Pragmatics
- LINGUIST 3TT3 - Perspectives on Translation
- LINGUIST 3X03
- LINGUIST 3XP3

#### 3 UNITS

from

- Level IV Linguistics, excluding

- LINGUIST 4SL3 - SLP Practicum
- LINGUIST 4TE3 - TESL Practicum
- LINGUIST 4Y06 A/B - Honours Thesis

#### 18 UNITS

from

- a language other than English (See *Notes 1 and 2* above)

#### 36 UNITS

- Courses specified for the other subject. (Combinations with Social Sciences may require more than 36 units.)

#### 9 UNITS

- electives to total 120 units

### HONOURS COGNITIVE SCIENCE OF LANGUAGE (B.A.)

#### ADMISSION

Completion of any Level I program and a Grade Point Average of at least 5.0 including an average of at least 5.0 in LINGUIST 1A03, 1AA3 and PSYCH 1F03 or 1X03.

#### NOTES

- Students should be aware that, PSYCH 1XX3 (or 1FF3) requires either Grade 12 Biology U or BIOLOGY 1P03 as a prerequisite. Please note, however, that students can complete BIOLOGY 1P03 and PSYCH 1XX3 (or 1FF3), 2E03, 2H03, 2NF3 in their second year of studies.
- Students must include LINGUIST 2D03 in Level II or III of their program in order to take any Level IV seminars in Linguistics.
- At some time during the program, students must meet a laboratory requirement by completing one course from Course List 1 below.
- In this program students are required to complete 12 units of language courses other than English, of which at least six units must be in a single language. Courses taught in English do not satisfy this requirement. The following languages are offered at McMaster:

**Romance Languages:** French, Italian, Spanish

**Classical:** Greek, Latin, Sanskrit

**Other Indo-European Languages:** German, Polish, Russian

**Non Indo-European Languages:** American Sign Language, Arabic, Cayuga, Chinese (Mandarin), Farsi, Hebrew, Inuktitut, Korean, Japanese, Mohawk, Ojibwe

- Students registered in Level IV of any Honours or Combined Honours program in Linguistics or Cognitive Science of Language with a Grade Point Average of at least 9.0 may apply to register in the Honours Thesis course (LINGUIST 4Y06 A/B) where they would conduct an individual research project under the supervision of a faculty member.
- Students interested in doing graduate work in Speech and Language Pathology should consult with the Departmental Counsellor for the Cognitive Science of Language program.

#### COURSE LIST 1

- LINGUIST 3N03
- LINGUIST 3PL3
- LINGUIST 3PS3
- LINGUIST 4D03 - Computers and Linguistic Analysis
- LINGUIST 4EL3 - Laboratory in Experimental Linguistics
- LINGUIST 4I13 A/B S - Independent Study
- LINGUIST 4NN3 - Cognitive Neurolinguistics Laboratory
- LINGUIST 4PL3 - Programming for Linguists
- LINGUIST 4Y06 A/B - Honours Thesis
- LINGUIST 4Z03

#### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- Level I program completed prior to admission into the program

**30 UNITS**

from

- LINGUIST 2D03 - Research Methods
- LINGUIST 2DD3 - Statistics for Language Research
- LINGUIST 2L03 - Phonetics
- LINGUIST 2PH3 - Phonology
- LINGUIST 2PS3 - Psycholinguistics
- LINGUIST 2SY3 - Syntax
- LINGUIST 3A03
- LINGUIST 3B03
- LINGUIST 3C03 - Child Language Acquisition
- LINGUIST 3I03
- LINGUIST 3I13 - Semantics
- LINGUIST 3M03 - Morphology
- LINGUIST 3NL3 - Cognitive Neuroscience of Language
- LINGUIST 4F03

**6 UNITS**

from

- Level IV Linguistics, excluding
- LINGUIST 4SL3 - SLP Practicum
- LINGUIST 4TE3 - TESL Practicum

**6 UNITS**

from

- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour or
- PSYCH 1FF3 - Survey of Biological Basis of Psychology

and

- PSYCH 2H03 - Human Learning and Cognition

**3 UNITS**

from

- PSYCH 2E03 - Sensory Processes
- PSYCH 2F03
- PSYCH 2N03
- PSYCH 2NF3 - Clinical Neuropsychology
- LINGUIST 3F03 - Anatomy and Physiology for Speech, Language and Hearing

**12 UNITS**

from

- a language other than English  
(See *Note 4* above.)

**3 UNITS**

from

- *Course List 1*

**30 UNITS**

- electives

**HONOURS LINGUISTICS (B.A.)**

This program is designed for students who are concentrating on the scientific study of language (phonology, morphology, syntax, semantics, etc.). Students should speak with the Departmental Counsellor for Linguistics to determine which linguistics electives are most appropriate for their academic and professional objectives.

**ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 5.0 including an average of at least 5.0 in LINGUIST 1A03 and 1AA3. It is strongly recommended that students include six units of a language other than English in their Level I program.

**NOTES**

- In this program students are required to study at least two languages for a total of 24 units of language study. The department has defined four language groups (see below) for this purpose. Of the 24 units,

students must take at least 12 units from one language group of their choice, and 6 units of a language from another group. Please note that some languages have only 6 units of study available. Example: A student completes 12 units of Language A plus 6 units of Language B; the remaining 6 units of language study (to total 24 units) may be completed as the student chooses - by adding 6 units to Language A or B, or by completing 3 or 6 units of Language C or D. Courses taught in English do not satisfy this requirement.

- **Romance Languages:** French, Italian, Spanish
- **Classical:** Greek, Latin, Sanskrit
- **Other Indo-European Languages:** German, Polish, Russian
- **Non Indo-European Languages:** American Sign Language, Arabic, Cayuga, Chinese (Mandarin), Farsi, Hebrew, Inuktitut, Korean, Japanese, Mohawk, Ojibwe
- Students must include LINGUIST 2D03 in Level II or III of their program in order to take any Level IV seminars in Linguistics.
- Upon completion of 60 units of work and with the approval of the Department of Linguistics and Languages and the Office of the Dean of the Faculty of Humanities, one or both terms of Level III may be replaced by courses of study at a university under the Humanities Study Elsewhere Program.
- It is recommended that students interested in pursuing TESL Certification after graduation include the following courses in their program of study: LINGUIST 4E03 and 4TE3. They should also consult the TESL Ontario website for certified programs and requirements of certification.
- Students registered in Level IV of any Honours or Combined Honours program in Linguistics or Cognitive Science of Language with a Grade Point Average of at least 9.0 may apply for the Honours Thesis course (LINGUIST 4Y06 A/B) where they would conduct an individual research project under the supervision of a faculty member.

**REQUIREMENTS**

*120 units total (Levels I to IV), of which 48 units may be Level I*

**30 UNITS**

from

- the Level I program completed prior to admission into the program

**21 UNITS**

from

- LINGUIST 2D03 - Research Methods
- LINGUIST 2L03 - Phonetics
- LINGUIST 2PH3 - Phonology
- LINGUIST 2SY3 - Syntax
- LINGUIST 3A03
- LINGUIST 3C03 - Child Language Acquisition
- LINGUIST 3I03
- LINGUIST 3I13 - Semantics
- LINGUIST 3M03 - Morphology

**9 UNITS**

from

- LINGUIST 2E03 - The Nature of Texts: From Slang to Formal Discourse
- LINGUIST 2FL3 - Introduction to Forensic Linguistics
- LINGUIST 2LC3 - Historical Linguistics: Language Evolution and Change
- LINGUIST 2LL3 - Introduction to Linguistic Typology
- LINGUIST 2PS3 - Psycholinguistics
- LINGUIST 2S03 - Language and Society
- LINGUIST 3B03
- LINGUIST 3F03 - Anatomy and Physiology for Speech, Language and Hearing
- LINGUIST 3IE3
- LINGUIST 3LA3 - Introduction to Second Language Acquisition
- LINGUIST 3P03 - Pragmatics
- LINGUIST 3TT3 - Perspectives on Translation

- LINGUIST 3X03
- LINGUIST 3XP3

**6 UNITS**

from Level IV Linguistics, excluding

- LINGUIST 4SL3 - SLP Practicum
- LINGUIST 4TE3 - TESL Practicum
- LINGUIST 4Y06 A/B - Honours Thesis

**12 UNITS**

from

- one language as specified in *Note 1* above

**12 UNITS**

- additional language study as specified in *Note 1* above

**30 UNITS**

- Electives

## HONOURS LINGUISTICS WITH A SPECIALIZED MINOR IN COMMERCE (B.A.)

For details on this Specialized Minor, please see *Specialized Minor in Commerce for Students Completing a Single Honours B.A. in Humanities*, offered by the DeGroote School of Business.

### Minor(s):

#### MINOR IN GERMAN STUDIES

**REQUIREMENTS**

24 units total

**6 UNITS**

- Level I German

**18 UNITS**

from

- Levels II, III, and IV German
- HISTORY 2II3 - Modern Germany
- HISTORY 3FF3 - Nazi Germany
- PHILOS 3VV3 - Kant
- PHILOS 3YY3 - Hegel

#### MINOR IN ITALIAN STUDIES

**REQUIREMENTS**

24 units total

**6 UNITS**

- Level I Italian

**18 UNITS**

from

- Levels II, III, and IV Italian
- ARTHIST 3I03 - Italian Painting and Sculpture 1400-1580
- HISTORY 3H03 - Italian Renaissance, 1300-1600

#### MINOR IN LINGUISTICS

**REQUIREMENTS****6 UNITS**

- LINGUIST 1A03 - Introduction to Linguistics: Sounds, Speech and Hearing
- LINGUIST 1AA3 - Introduction to Linguistics: Words, Sentences and Meaning

**18 UNITS**

- Levels II and III Linguistics

## Diploma(s)

### MCMASTER ENGLISH LANGUAGE DEVELOPMENT DIPLOMA (MELD)

Department of Linguistics and Languages (Faculty of Humanities)

Phone: (+1) 905.525.9140 Ext. 23718

Email: [meld@mcmaster.ca](mailto:meld@mcmaster.ca)

Web: <http://meld.mcmaster.ca>

**Students** who meet the academic admission requirements for their choice of Level 1 program, but do not meet McMaster's English Language Proficiency requirement may be admitted to the MELD bridging program which has been developed for international students, providing them with a supportive environment in which they can succeed. The diploma is a two-term, full-time intensive bridging program in English language development, acculturation and engagement.

Students accepted into MELD are given a conditional offer of admission to their program of choice, pending successful completion of the MELD diploma. Once the diploma in MELD has been successfully completed, the student may register in the program to which he/she was given conditional admission and will have completed 6 units of degree credit courses in Linguistics that may be applied as electives to that program. In exceptional circumstances, MELD will consider transfers from other McMaster programs.

Please visit [meld.mcmaster.ca](http://meld.mcmaster.ca) for more information or email [meld@mcmaster.ca](mailto:meld@mcmaster.ca).

**FALL TERM**

(September - December)

- MELD 1A03 - Academic Writing and Integrity
- MELD 1B03 - English Phonetics and Pronunciation
- MELD 1C03 - Academic Reading Skills
- MELD 1D03 - Social Perspectives on Language
- MELD 1L00 - Linguistics Lab 1
- MELD 1M00 - Mentorship Lab 1
- LINGUIST 1Z03 - Structure of Modern English I (degree credit course)

**WINTER TERM**

(January - April)

- MELD 1AA3 - Advanced Academic Writing
- MELD 1BB3 - Advanced Speaking and Presentation Skills
- MELD 1CC3 - Advanced Academic Reading Skills
- MELD 1DD3 - Advanced Academic Listening Skills
- MELD 1LL0 - Linguistics Lab 2
- MELD 1MM0 - Mentorship Lab 2
- LINGUIST 1ZZ3 - Structure of Modern English II (degree credit course)

## Peace Studies Program

<http://peacestudies.humanities.mcmaster.ca/>

**Faculty as of January 15, 2020**

DIRECTOR

**Chandrima Chakraborty**

ASSOCIATE PROFESSOR

**Nancy Doubleday** (*Philosophy*)

COMMITTEE OF INSTRUCTION

**Alpha Abebe** (*Humanities*)

**Nadine Attewell** (*English and Cultural Studies*)

**Juanita DeBarros** (*History*)

**Chandrima Chakraborty** (*English and Cultural Studies*)

**Elisabeth Gedge** (*Philosophy*)

**Martin Horn** (*History*)

**Bonny Ibhawoh** (*History*)

**Brent McKnight** (*School of Business*)

**Magda Stroin ska** (*Linguistics and Languages*)

**Wilfrid Waluchow** (*Philosophy*)

## Bachelor of Arts (Honours)

### COMBINED HONOURS IN PEACE STUDIES AND ANOTHER SUBJECT (B.A.)

Peace Studies is interdisciplinary, drawing from many disciplines, and inviting creative intellectual and practical contributions from instructors and students seeking to support social justice, sustainability and health. We recognize, and adopt the principles and the recommendations of the Truth and Reconciliation Commission of Canada, and to implement our commitment, we strongly encourage students in Peace Studies to consider the Combined Honours Program in Indigenous Studies and Peace Studies. McMaster offers a number of Peace Studies courses devoted to experiential, community-oriented, service learning. We also emphasize individual and peer to peer learning, while placing intensive research opportunities within reach of undergraduates at all program levels. Study abroad through consultation with the Faculty of Humanities Office is encouraged. In alignment with our commitment to the UN Declaration on the Rights of Indigenous Peoples and the UN 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs), Peace Studies students are also encouraged to consider minors, such as the Minor in Sustainability, the Minor in Indigenous Studies, and the Minor in Community Engagement.

#### ADMISSION

Completion of any Level I program and a Grade Point Average of at least 5.0 including a grade of at least C in PEACEST 1A03 or, if not taken, three units acceptable to the Peace Studies program. Students who have not completed PEACEST 1A03 should contact the Director of the Peace Studies Program.

#### NOTES

- Students must be aware that some courses in the Course Lists have their own disciplinary prerequisites. Given the multidisciplinary nature of the Peace Studies Program, with its different approaches and expectations, it is the responsibility of students in the Peace Studies Program to meet other Faculties', departments' and programs' requirements.
- Upon completion of 60 units of work and with the approval of both the Director of the Peace Studies Program and the Office of the Dean of the Faculty of Humanities, one or both terms of Level III of this program may be replaced by courses of study at a university or universities under the Humanities Studies Elsewhere program.

#### COURSE LIST

- ECON 2F03
- ENGLISH 2CC3 - Settler Colonialism and Writing in Canada
- ENGLISH 2CL3 - Canadian Literature of Dissent and Social Justice
- ENGLISH 3A03 - Critical Race Studies
- ENGLISH 3GG3 - Theories of Decolonization and Resistance
- ENGLISH 3R06 A/B
- ENGLISH 3V03 - Global Anglophone Literature and Film
- HISTORY 2A03 - Modern Middle Eastern Societies
- HISTORY 2II3 - Modern Germany
- HISTORY 2J03 - Africa up to 1800
- HISTORY 2JJ3 - Africa since 1800
- HISTORY 2UV3 - American Foreign Relations since 1898
- HISTORY 3KK3 - The Vietnam War
- HISTORY 3XX3 - Human Rights in History
- HISTORY 3YY3 - Britain and the First World War
- HISTORY 4G03 - Nation and Genocide in the Modern World
- INDIGST 2F03 - Residential Schools in Canada: History and Impact

- INDIGST 2G03 - Indigenous Perspectives on Peace and Conflict
- INDIGST 3K03 - Indigenous Human Rights
- LABRST 2A03 - Unions in Action
- PEACEST 2AA3
- PEACEST 2A03 - Conflict Transformation: Theory and Practice
- PEACEST 2B03 - Human Rights and Social Justice
- PEACEST 2BB3 - Introduction to the Study of War
- PEACEST 2C03 - Peace and Popular Culture
- PEACEST 2E03 - Peer-to-Peer Problem-Based Inquiry: Archival Peace Research
- PEACEST 2GW3 - A History of Global War
- PEACEST 2LS3 - Language and Society
- PEACEST 2U03
- PEACEST 2UU3
- PEACEST 3B03 - Peace-Building and Health Initiatives
- PEACEST 3C03 - Research Methods for Peace Studies
- PEACEST 3D03 - Globalization and Peace
- PEACEST 3GG3 - Theories of Decolonization and Resistance
- PEACEST 3HH3
- PEACEST 3IG3
- PEACEST 3N03
- PEACEST 3P03 - Practicum: Practical Peace Building
- PEACEST 3PA3 A/B S
- PEACEST 3Q03 - Philosophy of Law
- PEACEST 3W03 - Contemporary Native Literature in Canada
- PEACEST 3X03 - Contemporary Native Literature in the United States
- PEACEST 3XX3 - Human Rights in History
- PEACEST 3Y03 - Special Topics in Peace Studies
- PEACEST 3Z03
- PEACEST 4E03
- PEACEST 4E06
- PEACEST 4FC3 - Experiential Learning, Theory and Practice
- PEACEST 4G03 - Peace Through Health: Praxis
- PEACEST 4GG3 - Nation and Genocide in the Modern World
- PEACEST 4J03 - International Law, Peace and Ecology
- PEACEST 4K03
- PEACEST 4L03 - Peace, Environment and Health
- PEACEST 4M06 A/B
- PEACEST 4MA3 - Forensic Archival Research in Conflict and Peace
- PEACEST 4MB3
- PEACEST 4RR3 - Truth and Reconciliation After Atrocity
- PEACEST 4ST3 - Special Topics Seminar
- PHILOS 2D03 - Bioethics
- PHILOS 2G03 - Social and Political Issues
- PHILOS 2TT3 - Ethical Issues in Communication
- PHILOS 3P03 - Philosophies of War and Peace
- PHILOS 4B03
- PHILOS 4YY3 - Topics in Ethics
- POLSCI 3AA3
- POLSCI 3KK3 - Genocide: Sociological and Political Perspectives
- POLSCI 3Q03 - The Causes of War
- POLSCI 3Y03 - Democratization and Human Rights
- RELIGST 2H03
- RELIGST 2L03
- RELIGST 2MM3
- SOCIOL 3KK3 - Genocide: Sociological and Political Perspectives

#### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- the Level I program completed prior to admission to the program



**6 UNITS**

from

- PEACEST 2A03 - Conflict Transformation: Theory and Practice
- PEACEST 2BB3 - Introduction to the Study of War
- PEACEST 2B03 - Human Rights and Social Justice
- PEACEST 2C03 - Peace and Popular Culture

**3 UNITS**

from

- HISTORY 4G03 - Nation and Genocide in the Modern World
- PEACEST 4A03
- PEACEST 4B03 - Independent Research
- PEACEST 4E03
- PEACEST 4FC3 - Experiential Learning, Theory and Practice
- PEACEST 4G03 - Peace Through Health: Praxis
- PEACEST 4GG3 - Nation and Genocide in the Modern World
- PEACEST 4J03 - International Law, Peace and Ecology
- PEACEST 4K03
- PEACEST 4L03 - Peace, Environment and Health
- PEACEST 4PR3
- PEACEST 4M06 A/B
- PEACEST 4MA3 - Forensic Archival Research in Conflict and Peace
- PEACEST 4MB3
- PEACEST 4RR3 - Truth and Reconciliation After Atrocity
- PEACEST 4ST3 - Special Topics Seminar

**27 UNITS**

- from Course List

**36 UNITS**

- Courses specified for the other subject. (Combinations with Social Sciences may require more than 36 units.)

**18 UNITS**

- Electives to total 120 units

**NOTE**

With the permission of the Director of the Peace Studies Program, some courses not listed may be substituted, at the appropriate Level, from Anthropology, Biology, English, History, Indigenous Studies, Labour Studies, Philosophy, Political Science, Religious Studies, Science and Sociology provided that the course prerequisites are fulfilled.

**Minor(s):****MINOR IN PEACE STUDIES****REQUIREMENTS**

24 units total (Must include a minimum of 9 units of Peace Studies courses).

**24 UNITS**

from

- ECON 2F03
- ENGLISH 2CC3 - Settler Colonialism and Writing in Canada
- ENGLISH 2CL3 - Canadian Literature of Dissent and Social Justice
- ENGLISH 3A03 - Critical Race Studies
- ENGLISH 3GG3 - Theories of Decolonization and Resistance
- ENGLISH 3R06 A/B
- ENGLISH 3V03 - Global Anglophone Literature and Film
- HISTORY 2A03 - Modern Middle Eastern Societies
- HISTORY 2G03 - Modern Latin America Since 1820
- HISTORY 2I13 - Modern Germany
- HISTORY 2J03 - Africa up to 1800
- HISTORY 2JJ3 - Africa since 1800
- HISTORY 2UV3 - American Foreign Relations since 1898
- HISTORY 3KK3 - The Vietnam War
- HISTORY 3XX3 - Human Rights in History

- HISTORY 3YY3 - Britain and the First World War
- INDIGST 2F03 - Residential Schools in Canada: History and Impact
- INDIGST 2G03 - Indigenous Perspectives on Peace and Conflict
- INDIGST 3K03 - Indigenous Human Rights
- LABRST 2A03 - Unions in Action
- PEACEST 1A03 - Introduction to Peace Studies
- PEACEST 2AA3
- PEACEST 2A03 - Conflict Transformation: Theory and Practice
- PEACEST 2B03 - Human Rights and Social Justice
- PEACEST 2BB3 - Introduction to the Study of War
- PEACEST 2C03 - Peace and Popular Culture
- PEACEST 2GW3 - A History of Global War
- PEACEST 2LS3 - Language and Society
- PEACEST 2U03
- PEACEST 3B03 - Peace-Building and Health Initiatives
- PEACEST 3C03 - Research Methods for Peace Studies
- PEACEST 3D03 - Globalization and Peace
- PEACEST 3GG3 - Theories of Decolonization and Resistance
- PEACEST 3HH3
- PEACEST 3IG3
- PEACEST 3N03
- PEACEST 3P03 - Practicum: Practical Peace Building
- PEACEST 3UU3
- PEACEST 3Q03 - Philosophy of Law
- PEACEST 3W03 - Contemporary Native Literature in Canada
- PEACEST 3X03 - Contemporary Native Literature in the United States
- PEACEST 3XX3 - Human Rights in History
- PEACEST 3Y03 - Special Topics in Peace Studies
- PEACEST 3Z03
- PHILOS 2D03 - Bioethics
- PHILOS 2G03 - Social and Political Issues
- PHILOS 2TT3 - Ethical Issues in Communication
- PHILOS 3P03 - Philosophies of War and Peace
- POLSCI 3AA3
- POLSCI 3KK3 - Genocide: Sociological and Political Perspectives
- POLSCI 3Q03 - The Causes of War
- POLSCI 3Y03 - Democratization and Human Rights
- RELIGST 2E03

**Department of Philosophy**

<http://philos.humanities.mcmaster.ca/>

**Faculty as of January 15, 2020**

CHAIR

**Stefan Sciaraffa**

DISTINGUISHED UNIVERSITY PROFESSOR

**Barry Allen**/B.A. (Lethbridge), Ph.D. (Princeton)

PROFESSORS

**Wilfrid Waluchow**/B.A., M.A. (Western Ontario), D.Phil. (Oxford)/Senator  
William McMaster Chair in Constitutional Studies

ADJUNCT PROFESSOR

**Leslie Green**/B.A. (Queen's), M.A., M.Phil., D.Phil. (Oxon.)

ASSOCIATE PROFESSORS

**Nancy C. Doubleday**/B.Sc. (Brock), B.Ed. (Toronto), LL.B., M.E.S. (York), Ph.D. (Queen's)/Hope Chair in Peace and Health

**Claudia Emerson**/B.Sc. (Guelph), B.A., M.A., Ph.D. (McMaster)

**Elisabeth Gedge**/B.A., M.A. (Alberta), MTh. (Newman Theological College), Ph.D. (Calgary)

**Violetta Ignieski**/B.A., M.A. (Western Ontario), Ph.D. (Toronto)

**Mark Johnstone**/B.A. (Canterbury), M.A. (Melbourne), M.A., Ph.D. (Princeton)

**Alexander Klein**/B.A. (Wesleyan), M.A., Ph.D. (Indiana-Bloomington)

**Sandra Lapointe**/B.A., M.A. (*Ottawa*), Ph.D. (*Leeds*)

**Brigitte Sassen**/B.A. (*Toronto*), M.A., Ph.D. (*Pennsylvania State*)

**Stefan Sciaraffa**/B.A. (*Southern Methodist*), M.A. (*Ohio State*), J.D. (*Texas*), Ph.D. (*Arizona*)

#### ADJUNCT ASSOCIATE PROFESSORS

**Michael Giudice**/B.A. (*New Brunswick*), M.A., Ph.D. (*McMaster*)

**Francois Tanquay-Renaud**/LL.B., B.C.L. (*McGill*), B.C.L., M.Phil., D.Phil. (*Oxford*)

#### ASSISTANT PROFESSORS

**Ariella Binik**/B.A., M.A. (*McGill*), Ph.D. (*Western Ontario*)

**Johannes Steizinger**/M.A., Ph.D. (*Vienna*)

**Megan Stotts**/B.A. (*Denison*), M.A., Ph.D. (*California-Riverside*)

#### ASSOCIATE MEMBERS

**Kenneth M. Blackwell**/(*Russell Archivist, Mills Library*), B.A. (*Victoria*), M.L.S. (*Western Ontario*), M.A. (*McMaster*), Ph.D. (*Guelph*)

**Abraham Rudnick**/BMedSc., M.D. (*Hebrew University*), Ph.D., M.Psych. (*Tel Aviv University*)

**Lisa Schwartz**/B.A., M.A. (*McGill*), Ph.D. (*Glasgow*)// Arnold L. Johnson Chair in Health Care Ethics

**Dana Hollander**/B.A. (*Oberlin College*), M.A., Ph.D. (*Johns Hopkins*)

For the Honours Arts & Science and Philosophy program (B.Arts.Sc.), see *Arts & Science Program*

## Bachelor of Arts (Honours)

### COMBINED HONOURS IN PHILOSOPHY AND ANOTHER SUBJECT (B.A.)

#### ADMISSION

Completion of any Level I program and a Grade Point Average of at least 5.0 and a grade of at least C in three units of Level I Philosophy or, if no such course was taken, in three units of work acceptable to the Department of Philosophy.

#### NOTES

- Students intending to do graduate work in Philosophy are advised to include PHILOS 2B03 in their program.
- Students are advised to note carefully the prerequisites for all courses. Students are also advised to take note that not all courses are offered every year. Please consult the university Master Timetable.
- Upon completion of 60 units of work and with the approval of the Department of Philosophy and the Office of the Dean of the Faculty of Humanities, one or both terms of Level III may be replaced by courses of study at a designated university abroad.

#### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- the Level I program completed prior to admission into the program

#### 9 UNITS

- PHILOS 2P03 - Ancient Greek Philosophy
- PHILOS 2X03 - Early Modern Philosophy I
- PHILOS 2XX3 - Early Modern Philosophy II

#### 3 UNITS

from

- PHILOS 3NN3 - Philosophy of the Enlightenment
- PHILOS 3VV3 - Kant
- PHILOS 3YY3 - Hegel

#### 3 UNITS

from

- PHILOS 2B03 - Introductory Logic
- PHILOS 2CT3 - Critical Thinking

#### 15 UNITS

- Level III Philosophy

#### 6 UNITS

- Level IV Philosophy (Excluding PHILOS 4V03)

#### 36 UNITS

- Courses specified for the other subject. (Combinations with Social Sciences may require more than 36 units.)

#### 18 UNITS

- Electives to total 120 units

### HONOURS JUSTICE, POLITICAL PHILOSOPHY, AND LAW (B.A.)

The aims of this program are to foster a sophisticated understanding of the law and legal institutions that make up the social world in which we live and of the political and moral theories that address the value and justice of these institutions. Students will be well-prepared for further studies or careers in law, philosophy, politics, education, human rights or public policy.

#### ADMISSION

**Enrolment in this program is limited.** Selection is based on academic achievement and a supplemental application. See Note #1 below. It is recommended that students include three units of Level I Philosophy in their Level I program.

#### NOTES

- Students must complete a supplemental application for admission that is available on the Program website ([jtpl.humanities.mcmaster.ca](http://jtpl.humanities.mcmaster.ca), due April 30).
- Students must complete 18 units from the Interdisciplinary Core Course List, at least 3 units in each of the three categories: Policy and Law, Political and Moral Philosophy, and Human Rights and Global Justice. The remaining nine units may be from any of the three categories.
- Upon completion of 60 units of work and with the approval of the Department of Philosophy and the Office of the Dean of the Faculty of Humanities, one or both terms of Level III may be replaced by courses of study at a designated university abroad.

#### INTERDISCIPLINARY CORE COURSE LIST

##### I. POLICY AND LAW

- CLASSICS 2K03 - The Society of Greece and Rome
- CLASSICS 2LW3 - Ancient Law
- CMST 2K03 - Political Economy of the Media
- CMST 2LW3 - Communication Policy and Law
- ENGLISH 2M03 - Concepts of Culture
- HISTORY 3G03
- HISTORY 3JJ3 - Crime, Criminal Justice and Punishment in Modern History
- HISTORY 3N03 - Poverty, Privilege and Protest in Canadian History
- INDIGST 2B03 - History of Indigenous Peoples' Sovereignty
- INDIGST 2G03 - Indigenous Perspectives on Peace and Conflict
- PHILOS 2N03 - Business Ethics
- PHILOS 2TT3 - Ethical Issues in Communication
- PHILOS 3C03 - Advanced Bioethics
- PHILOS 3L03 - Environmental Philosophy

##### II. POLITICAL AND MORAL PHILOSOPHY

- CLASSICS 3M03 - Greek Intellectual Revolution
- CMST 2LW3 - Communication Policy and Law
- ENGLISH 2CL3 - Canadian Literature of Dissent and Social Justice
- ENGLISH 3Q03 - The History of Critical Theory
- INDIGST 2B03 - History of Indigenous Peoples' Sovereignty
- INDIGST 2G03 - Indigenous Perspectives on Peace and Conflict
- PHILOS 2CT3 - Critical Thinking
- PHILOS 2B03 - Introductory Logic

- PHILOS 2D03 - Bioethics
- PHILOS 2F03 - Philosophical Psychology
- PHILOS 2ZZ3 - Philosophy of Love and Sex
- PHILOS 3CC3 - Advanced Ethics
- PHILOS 3I03 - Philosophy and Feminism
- PHILOS 3M03
- PHILOS 3NN3 - Philosophy of the Enlightenment
- PHILOS 3XX3 - Plato
- PHILOS 3YY3 - Hegel
- PHILOS 3ZZ3 - Aristotle
- PHILOS 4F03 - Issues in Continental Philosophy
- WOMENST 2AA3 - Introduction to Feminist Thought

### III. HUMAN RIGHTS AND GLOBAL JUSTICE

- ARTSSCI 3GJ3 - Global Justice Inquiry
- ENGLISH 2CC3 - Settler Colonialism and Writing in Canada
- ENGLISH 3A03 - Critical Race Studies
- ENGLISH 3AA3 - Theories of Gender and Sexuality
- ENGLISH 3R06 A/B
- ENGLISH 3GG3 - Theories of Decolonization and Resistance
- ENGLISH 3V03 - Global Anglophone Literature and Film
- INDIGST 2B03 - History of Indigenous Peoples' Sovereignty
- INDIGST 2G03 - Indigenous Perspectives on Peace and Conflict
- HISTORY 2A03 - Modern Middle Eastern Societies
- HISTORY 2MC3 - Modern China
- HISTORY 3XX3 - Human Rights in History
- PEACEST 2B03 - Human Rights and Social Justice
- PEACEST 2BB3 - Introduction to the Study of War
- PEACEST 3D03 - Globalization and Peace
- PEACEST 4J03 - International Law, Peace and Ecology
- PEACEST 4K03
- PHILOS 3P03 - Philosophies of War and Peace

#### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- Level I program completed prior to admission into the program

#### 12 UNITS

- PHILOS 2G03 - Social and Political Issues
- PHILOS 2Q03 - Justice, Political Philosophy, and Law
- PHILOS 2S03 - History of Political Philosophy
- PHILOS 2YY3 - Ethics

#### 3 UNITS

from

- PHILOS 2B03 - Introductory Logic
- PHILOS 2CT3 - Critical Thinking

#### 18 UNITS

from

- *Interdisciplinary Core List*, of which 9 units must be at Level III or IV.

#### 6 UNITS

from

- PHILOS 3N03 - Political Philosophy
- PHILOS 3Q03 - Philosophy of Law

#### 3 UNITS

from

- PHILOS 3I03 - Philosophy and Feminism
- PHILOS 3P03 - Philosophies of War and Peace

#### 6 UNITS

from

- PHILOS 4B03
- PHILOS 4C03 - Philosophy of Constitutional Law
- PHILOS 4Q03 - Normative Jurisprudence

- PHILOS 4S03 - Human Rights and Global Justice
- PHILOS 4XP3 A/B - Law And Community
- PHILOS 4YY3 - Topics in Ethics

#### 42 UNITS

- electives to total 120 units

### HONOURS JUSTICE, POLITICAL PHILOSOPHY, AND LAW WITH A SPECIALIZED MINOR IN COMMERCE (B.A.)

For details on this Specialized Minor, please see *Specialized Minor in Commerce for Students Completing a Single Honours B.A. in Humanities* offered by the DeGroote School of Business.

### HONOURS PHILOSOPHY (B.A.)

#### ADMISSION

Completion of any Level I program and a Grade Point Average of at least 5.0 and a grade of at least C in three units of Level I Philosophy or, if no such course was taken, in three units of work acceptable to the Department of Philosophy.

#### NOTES

- Students are advised to note carefully the prerequisites for all courses. Students are also advised to take note that not all courses are offered every year. Please consult the university Master Timetable.
- Upon completion of 60 units of work and with the approval of the Department of Philosophy and the Office of the Dean of the Faculty of Humanities, one or both terms of Level III may be replaced by courses of study at a designated university abroad.

#### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- the Level I program completed prior to admission into the program

#### 24 UNITS

- PHILOS 2B03 - Introductory Logic
- PHILOS 2P03 - Ancient Greek Philosophy
- PHILOS 2X03 - Early Modern Philosophy I
- PHILOS 2XX3 - Early Modern Philosophy II
- PHILOS 2YY3 - Ethics
- PHILOS 3HH3 - Metaphysics
- PHILOS 3N03 - Political Philosophy
- PHILOS 3O03 - Theory of Knowledge

#### 6 UNITS

- Level II Philosophy

#### 3 UNITS

from

- PHILOS 3NN3 - Philosophy of the Enlightenment
- PHILOS 3VV3 - Kant
- PHILOS 3YY3 - Hegel

#### 9 UNITS

- Level III Philosophy

#### 6 UNITS

- Level IV Philosophy (Excluding PHILOS 4V03 )

#### 42 UNITS

- Electives

### HONOURS PHILOSOPHY AND BIOLOGY (B.A.)

#### ADMISSION

Completion of any Level I program and a Grade Point Average of at least 5.0 and a grade of at least C in three units of Level I Philosophy (or, if no such course was taken, in three units of work acceptable to the Department

of Philosophy) and Grade 12 Biology U or BIOLOGY 1P03 (High School replacement) and three units of Level I Mathematics. Students are cautioned to observe that CHEM 1AA3 is the normal prerequisite for BIOLOGY 2B03 and 2C03 which are listed in a 24-unit series of courses from which students must complete 12 units. **Enrolment in this program is limited.**

**NOTES**

- Students are advised to note carefully the prerequisites for all courses. Students are also advised to take note that not all courses are offered every year. Please consult the university Master Timetable.
- Students should seek counselling from both the Department of Philosophy and the Department of Biology.
- Upon completion of 60 units of work and with the approval of the Department of Philosophy and the Office of the Dean of the Faculty of Humanities, one or both terms of Level III may be replaced by courses of study at a designated university abroad.

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

from

- the Level I program completed prior to admission into the program

**6 UNITS**

- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity

**12 UNITS**

from

- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- BIOLOGY 2A03 - Integrative Physiology of Animals
- BIOLOGY 2B03 - Cell Biology
- BIOLOGY 2C03 - Genetics
- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2EE3 - Introduction to Microbiology and Biotechnology
- BIOLOGY 2F03 - Fundamental and Applied Ecology
- CHEM 2E03 - Introductory Organic Chemistry

**9 UNITS**

from

- BIOLOGY 2G03
- Levels III or IV Biology

**9 UNITS**

from

- courses offered by the Faculty of Science

**15 UNITS**

- PHILOS 2P03 - Ancient Greek Philosophy
- PHILOS 2X03 - Early Modern Philosophy I
- PHILOS 2XX3 - Early Modern Philosophy II
- PHILOS 3HH3 - Metaphysics
- PHILOS 3O03 - Theory of Knowledge

**3 UNITS**

- PHILOS 2B03 - Introductory Logic

**3 UNITS**

from

- PHILOS 2D03 - Bioethics
- PHILOS 2F03 - Philosophical Psychology
- PHILOS 2G03 - Social and Political Issues

**3 UNITS**

from

- PHILOS 3CC3 - Advanced Ethics
- PHILOS 3N03 - Political Philosophy

**6 UNITS**

- Level III Philosophy

**3 UNITS**

from

- PHILOS 3C03 - Advanced Bioethics
- PHILOS 3D03 - Philosophy of Science

**3 UNITS**

- Level IV Philosophy (Excluding PHILOS 4V03)

**18 UNITS**

- Electives

**HONOURS PHILOSOPHY AND MATHEMATICS (B.A.)****ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 5.0; and successful completion of one of MATH 1A03, 1LS3 or 1X03; and one of MATH 1AA3, 1LT3, or 1XX3 with a grade of at least C+ (*see Note 4 below*); and a grade of at least C in three units of Level I Philosophy or, if no such course was taken, in three units of work acceptable to the Department of Philosophy.

**NOTES**

- Students are advised to note carefully the prerequisites for all courses. Students are also advised to take note that not all courses are offered every year. Please consult the university Master Timetable.
- MATH 1B03 must be completed by the end of Level II. Completion in Level 1 is strongly recommended. It is also recommended that students consider completing MATH 1C03 prior the end of Level II.
- Upon completion of 60 units of work and with the approval of the Department of Philosophy and the Office of the Dean of the Faculty of Humanities, one or both terms of Level III may be replaced by courses of study at a designated university abroad.
- While MATH 1LS3 and 1LT3 may be used for consideration to Level II Mathematics and Statistics programs, students are strongly encouraged to take either MATH 1A03 and 1AA3, or MATH 1X03 and 1XX3, to ensure a sufficient background in content required for MATH 2X03.

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

from

- the Level I program completed prior to admission into the program

**3 UNITS**

- MATH 1B03 - Linear Algebra I (if not completed in Level I)

**3 UNITS**

from

- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II

**6 UNITS**

- MATH 2X03 - Advanced Calculus I
- MATH 2XX3 - Advanced Calculus II

**3 UNITS**

from

- MATH 2C03 - Introduction to Differential Equations
- STATS 2D03 - Introduction to Probability

**6 UNITS**

from

- MATH 3A03 - Real Analysis I or
- MATH 3IA3 - Introduction to Analysis
- MATH 3F03 - Ordinary Differential Equations
- MATH 3GR3 - Abstract Algebra
- MATH 3T03 - Inquiry in Topology
- MATH 3X03 - Complex Analysis I

**15 UNITS**

- Levels II, III or IV Mathematics or Statistics which must include at least 6 units at Levels III and/or IV



**9 UNITS**

- PHILOS 2P03 - Ancient Greek Philosophy
- PHILOS 2X03 - Early Modern Philosophy I
- PHILOS 2XX3 - Early Modern Philosophy II

**3 UNITS**

from

- PHILOS 3NN3 - Philosophy of the Enlightenment
- PHILOS 3VV3 - Kant
- PHILOS 3YY3 - Hegel

**3 UNITS**

- PHILOS 2B03 - Introductory Logic

**6 UNITS**

- Level II Philosophy

**15 UNITS**

- Level III Philosophy

**3 UNITS**

- Level IV Philosophy (Excluding PHILOS 4V03)

**15-18 UNITS**

- Electives

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## HONOURS PHILOSOPHY WITH A SPECIALIZED MINOR IN COMMERCE (B.A.)

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For details on this Specialized Minor, please see *Specialized Minor in Commerce for Students Completing a Single Honours B.A. in Humanities*, offered by the DeGroot School of Business.

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## Bachelor of Arts

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### PHILOSOPHY (B.A.)

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**ADMISSION**

Completion of any Level I program and a Grade Point Average of at least 3.5 and a grade of at least C- in three units of Level I Philosophy or, if no such course was taken, in three units of work acceptable to the Department of Philosophy.

**NOTE**

Students are advised to note carefully the prerequisites for all courses. Students are also advised to take note that not all courses are offered every year. Please consult the university Master Timetable.

**REQUIREMENTS**

90 units total (Levels I to III), of which 42 units may be Level I

**30 UNITS**

from

- the Level I program completed prior to admission into the program

**9 UNITS**

- PHILOS 2P03 - Ancient Greek Philosophy
- PHILOS 2X03 - Early Modern Philosophy I
- PHILOS 2XX3 - Early Modern Philosophy II

**3 UNITS**

from

- PHILOS 3NN3 - Philosophy of the Enlightenment
- PHILOS 3VV3 - Kant
- PHILOS 3YY3 - Hegel

**3 UNITS**

from

- PHILOS 2B03 - Introductory Logic
- PHILOS 2CT3 - Critical Thinking

**3 UNITS**

- Level II Philosophy

**6 UNITS**

- Level III Philosophy

**36 UNITS**

- Electives

## Minor(s):

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### MINOR IN PHILOSOPHY

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**REQUIREMENTS****24 UNITS**

- 24 units of Philosophy, of which no more than six units may be from Level I

## Women's Studies

<http://gsfr.humanities.mcmaster.ca/minor-in-womens-studies/>

Togo Salmon Hall, Room 721

ACTING DIRECTOR**Christine Quail**

ASSOCIATE PROFESSOR

**Karen Balcom** (*History; Women's Studies*) B.A. (Carleton), M.A. (Dalhousie), Ph.D. (Rutgers)

**Amber Dean** (*English and Cultural Studies; Women's Studies*) B.A. (Alberta), M.A. (S.F.U.), Ph.D. (Alberta)

**Melinda Gough** (*English and Cultural Studies; Women's Studies*) B.A. (McGill), M.A., Ph.D. (Yale)

**Christine Quail** (*Communication Studies & Multimedia; Women's Studies*) B.A., M.A. (Pennsylvania), Ph.D. (Oregon)

COMMITTEE OF INSTRUCTION

**As of January 15, 2020**

**Christina Baade** (*Communication Studies & Multimedia*)

**Nancy Bouchier** (*History*)

**Ruth Frager** (*History*)

**Elisabeth Gedge** (*Philosophy*)

**Catherine Graham** (*School of the Arts*)

## Minor(s):

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### MINOR IN WOMEN'S STUDIES

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A Minor in Women's Studies consists of 24 units including the courses listed below. If students wish to propose that a course not cross-listed and not on the course list be considered as a credit toward the Minor in Women's Studies, they must contact the Office of Interdisciplinary Studies at 905-525-9140, ext. 27734 (Togo Salmon Hall 721).

**NOTE:**

Students must be aware that some courses in the Course Lists have their own disciplinary prerequisites. Given the multidisciplinary nature of the Women's Studies Minor, with its different approaches and expectations, it is the responsibility of the students in the Women's Studies Minor to meet other Faculties', departments' and programs' requirements.

**REQUIREMENTS**

24 units total

**3 UNITS**

from

- WOMENST 1A03 - Women, Culture, Power
- WOMENST 1AA3 - Women Transforming the World

**3 UNITS**

- WOMENST 2AA3 - Introduction to Feminist Thought

**18 UNITS**

from

- WOMENST 1A03 - Women, Culture, Power (if not previously taken) or
- WOMENST 1AA3 - Women Transforming the World

(if not previously taken)

- CMST 2H03 - Gender and Performance
- CMST 3RR3 - Race, Religion and Media
- ENGLISH 2KK3 - Studies in Women Writers
- ENGLISH 3A03 - Critical Race Studies
- ENGLISH 3AA3 - Theories of Gender and Sexuality
- ENGLISH 4QA3 - Queerness in the Archives: Lesbian and Gay Writing, Art and Activism in Canada, 1969-1989
- HTHSCI 2T03 - Sex, Gender, & Health
- HISTORY 3W03 - Women in Canada and the U.S. to 1920
- HISTORY 3WW3 - Women in Canada and the U.S. from 1920
- LABRST 3E03 - Gender, Sexuality and Work
- LINGUIST 4G03 - Language, Sex and Gender
- PEACEST 2B03 - Human Rights and Social Justice
- PHILOS 3I03 - Philosophy and Feminism
- RELIGST 2BN3
- WOMENST 2B03
- WOMENST 2BB3 - Images of the Divine Feminine
- WOMENST 3BB3 - Women and Visual Culture
- WOMENST 3BW3 - Women in the Biblical Tradition
- WOMENST 3FF3 - Gender and Religion
- WOMENST 4D03

## Faculty of Science

Burke Science Building, Room 129, ext. 27590

<http://www.science.mcmaster.ca/>[science@mcmaster.ca](mailto:science@mcmaster.ca)DEAN OF SCIENCE**M.J. MacDonald**/B.Sc., M.Sc., Ph.D.ASSOCIATE DEAN OF SCIENCE (ACADEMIC)**M.J. Farquharson**/B.Sc., M.Sc., Ph.D.ASSISTANT DEAN (ACADEMIC)**J. Smith**/B.A.MANAGER OF UNDERGRADUATE RECRUITMENT AND EDUCATION (ACTING)**B. O'Connor**/B.A.ACADEMIC AND RECRUITMENT ADVISOR (ACTING)**S. McCollin**/B.Sc., B.Sc.ACADEMIC ADVISORS**R. Campbell**/B.Sc.**T. Gammon**/B.A., B.A.**C. Mifflin**/B.A.**R. Tebbutt**/B.A.FACULTY ACADEMIC OFFICER (ACTING)**K. Bernacci**/B.Com.ACADEMIC SUPPORT ASSOCIATES**E. dos Santos**/B.A.**K. Ramsay**/B.Sc.MANAGER, SCIENCE CAREER AND COOPERATIVE EDUCATION (ACTING)**J. Kunar**/B.Sc.CAREER DEVELOPMENT AND RELATIONSHIP MANAGERS**S. Couch**/B.A.**G. Jacobs****R. Jones****A. Sandher**/B.Sc.**K. Stewart**/B.Sc.CAREER INTEGRATION SPECIALIST**C. Maybrey**/B.A., M.A., Ph.D.RECRUITMENT ASSISTANT**A. Selkirk**CAREER ASSISTANT**S. Abdulla**/B.Sc., M.Sc.PROGRAM MANAGER, HIRE MCMASTER**D. Hess**/B.SM., M.A.The Faculty of Science provides studies through the following Departments/  
Programs/Schools:

- Biochemistry and Biomedical Sciences
- Biology
- Chemistry and Chemical Biology
- Geography and Earth Sciences
- Interdisciplinary Science
- Kinesiology
- Mathematics and Statistics
- Physics and Astronomy
- Psychology, Neuroscience & Behaviour

## Degree Programs

### HONOURS BACHELOR OF SCIENCE PROGRAMS

An Honours B.Sc. normally requires the completion of 120 units, including a set of courses in a specific discipline and allows for interdisciplinary, and/or liberal arts studies through electives from other Departments and Faculties.

An Honours B.Sc. with Specialization or Sub-Plan requires the completion of the same courses required for the Honours program, as well as designated upper level courses in a specialized area of study. Please refer to departmental

program descriptions for details.

Honours Integrated Science is a limited enrolment, interdisciplinary research-based science program designed to develop students as broadly educated research scientists capable of contributing to all modern fields of science. Program courses will develop scientific understanding through integration of multiple disciplines in the study of a series of relevant themes or problems. Many disciplines of science will contribute toward courses offered in the Integrated Science program. Students will be involved in individual and team research projects throughout the program.

Students who successfully complete the first three levels of any Honours B.Sc. degree may request permission from the Office of the Associate Dean of Science (Academic) to transfer to graduate with a three-level B.Sc. degree.

#### **HONOURS BACHELOR OF SCIENCE KINESIOLOGY PROGRAM**

Similar to the Honours Bachelor of Science, the Honours Bachelor of Science Kinesiology (Honours B.Sc.Kin.) requires 120 units, including the completion of a set of required courses and electives. Honours Bachelor of Science Kinesiology, a limited enrolment, direct-entry program is only available to students who completed Level I Honours Kinesiology. Kinesiology students who successfully complete the first three levels of the Honours B.Sc.Kin. degree may request permission from the Office of the Associate Dean of Science (Academic) to transfer to graduate with the three-level B.Sc.Kin. (exit) degree.

#### **HONOURS BACHELOR OF APPLIED SCIENCE PROGRAMS**

An Honours Human Behaviour (B.A.Sc.) program is available, as well as two Specializations offered in collaboration with Mohawk College of Applied Arts and Technology. Graduates of the Specializations will be eligible to receive both the McMaster B.A.Sc. (Honours) and either the Mohawk College Certificate in Autism & Behavioural Science or the Early Childhood Education (ECE) Diploma. The Honours B.A.Sc. requires the completion of 120 units, including a set of courses in a specific discipline and allows for interdisciplinary and/or liberal arts studies through electives from other Departments and Faculties. The Honours B.A.Sc. with a Specialization requires the completion of 150 units, including similar courses for the affiliated Honours B.A.Sc. program, as well as designated upper level courses and applied placements, in the area of the Specialization. Levels II through IV of the program run consecutively from September of Level II to completion of the program at the end of April in Level IV. Honours B.A.Sc. students who successfully complete 90 units, including the first three levels of the Honours B.A.Sc. degree, may request permission from the Office of the Associate Dean of Science (Academic) to transfer to graduate with the B.A.Sc. (exit) degree.

#### **CO-OP PROGRAMS**

The Faculty of Science has Cooperative Education programs, beginning in Level III, in Honours Actuarial and Financial Mathematics, Honours Biochemistry, Honours Chemical Biology, Honours Chemistry, Honours Earth and Environmental Sciences, Honours Environmental Sciences, Honours Geography and Environmental Sciences, Honours Life Sciences, Honours Mathematics and Statistics, Honours Medical and Biological Physics, Honours Molecular Biology and Genetics, and Honours Physics.

Co-op programs have **limited enrolment** and admission is by selection. Please see the admission statement for each program in this section of the Calendar. Students must complete SCIENCE 2C00 and all mandatory orientation activities, including SCIENCE 3C00, prior to the start of the first work term. It is strongly recommended that students complete SCIENCE 2C00 in Level II. Employment must be full-time, academically relevant and approved by the Science Career and Cooperative Education office. Students enrolled in Co-op programs must be registered in full-time studies, including all prescribed courses, during the academic terms of their program (a minimum of 9 units in a term) and will be charged per unit registered. An annual administrative fee of \$150 will be charged in each of the three years a student is enrolled in a Co-op program, and additional Science Co-op fees will be charged for each work term of a Co-op program. With written permission from the work term supervisor, academic work may be taken during each four-month period of a

work term and the student will be responsible for the additional tuition. For further information, please consult Science Career and Cooperative Education in the Faculty of Science.

#### **INTERNSHIPS**

The Faculty of Science offers students the opportunity to participate in 4, 8, 12, or 16 month full-time, paid work placements in academically relevant areas, as approved by the Science Career and Cooperative Education office. Internship placements are available to students registered as full time students in good standing in Level II or III of an Honours B.Sc. program and who will have at least 9 units left to complete upon their return. Students must complete SCIENCE 2C00 and all mandatory orientation activities prior to the start of their internship. Students self-generate placements, in consultation with the Science Career and Cooperative Education office, with participating companies through an application and interview process. A fee is assessed following the start of the placement. For further information, please consult Science Career and Cooperative Education in the Faculty of Science.

#### **MINORS**

Within the Faculty of Science, Minors are available to students registered in an Honours program only. In addition to the University's regulations governing the designation of a Minor, all Departments in the Faculty of Science require the inclusion of at least six units of Level III or IV courses to complete a Minor in a Science subject. At least 12 units (above Level 1) toward the Minor must be considered elective to degree.

Please see *Minors* in the *General Academic Regulations* section of this Calendar for further information. All courses have an enrolment capacity and the Faculty cannot guarantee registration in courses, even when all requisites have been met. Therefore, the completion of a Minor is not guaranteed.

Minors offered by the Faculty of Science include:

- Astronomy
- Biochemistry
- Biology
- Chemical Biology
- Chemistry
- Environmental Sciences
- Environmental Studies
- Geographic Information Systems (GIS)
- Geography
- Geography and Earth Sciences
- Mathematics
- Physics
- Psychology
- Statistics

#### **BACHELOR OF SCIENCE PROGRAMS**

Three-level B.Sc. programs offered by the Faculty of Science include: Environmental Sciences, Life Sciences, Mathematical Science and Chemical and Physical Sciences (formerly Physical Sciences). B.Sc. programs require completion of 90 units, including a set of required courses and electives. Students interested in the Environmental Sciences program are encouraged to see *School of Earth, Environment & Society* in this section of the Calendar. Students interested in the Life Sciences program are encouraged to see *School of Interdisciplinary Science (SIS)* in this section of the Calendar. Students interested in the Mathematical Science program are encouraged to see *Department of Mathematics and Statistics* in this section of the Calendar. Students interested in the Chemical and Physical Sciences are encouraged to see *Chemical and Physical Sciences* in the *Department of Physics and Astronomy* section of the Calendar.

**Students who successfully complete the first three levels of any Honours B.Sc. program may request permission from the Office of the Associate Dean of Science (Academic) to transfer to graduate with a B.Sc. degree.**

### BACHELOR OF MEDICAL RADIATION SCIENCES PROGRAM

The Bachelor of Medical Radiation Sciences Program is offered jointly in partnership by McMaster University and Mohawk College of Applied Arts and Technology. Students pursue two qualifications simultaneously, and graduates receive the McMaster Bachelor of Medical Radiation Sciences degree and the Ontario College Advanced Diploma in Medical Radiation Sciences from Mohawk. The program requires 150 units. Levels II through IV of the program run consecutively from September of Level II to completion of the program at the end of April in Level IV.

## Academic Regulations

### STUDENT ACADEMIC RESPONSIBILITY

You are responsible for adhering to the statement on student academic responsibility found in the *General Academic Regulations* of this calendar.

### ACCESS TO COURSES

All undergraduate courses at McMaster have an enrolment capacity. The University is committed to making every effort to accommodate students in required courses so that their program of study is not extended. Unless otherwise specified, registration is on a first-come basis and in some cases, priority is given to students from particular programs or Faculties. Students will be informed of their enrolment periods and are encouraged to enrol as soon as online enrolment is available to them in the Student Centre in Mosaic. In addition, in the Faculty of Science, there are two types of courses for which permission must be obtained prior to registration. For these courses, students will be given seat authorizations rather than being admitted on a first-come basis.

### STUDENT COMMUNICATION RESPONSIBILITY

It is the student's responsibility to:

- maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- use the University provided e-mail address or maintain a valid forwarding e-mail address.
- regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.
- accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.

Students enrolled in Science programs, in addition to meeting the *General Academic Regulations* of the University, shall be subject to additional Faculty Regulations.

### ADMISSION TO LEVEL II PROGRAMS

All Level I students who wish to be reviewed for admission to a Level II program in the Faculty of Science for the following Fall/Winter term must submit an Application for Admission to Level II through MOSAIC by the University stated deadline (normally in April). Students may rank up to four program choices. Rank ordering must be done very carefully because once admitted to a program, no further consideration is given to lower ranked choices.

Level I students must meet the admission criteria for a Level II program according to the Calendar in effect when they registered for Level I. Students must follow the program requirements of the Calendar in effect when they enter Level II, except when a later Calendar explicitly modifies such requirements.

Students who are in good academic standing, but who do not achieve the admission requirements for any Level II program may continue in the Faculty of Science in the undeclared 'Science' program, or may seek transfer to another Faculty.

### LIMITED ENROLMENT PROGRAMS

Admission at Level I (and above) is limited for the following programs:

- Honours Integrated Science
- Honours Kinesiology
- All Medical Radiation Sciences programs

Admission at Level II (and above) is limited for the following:

- Honours Actuarial and Financial Mathematics
- Honours Astrophysics
- All Honours Biochemistry programs
- Honours Biology - Discovery Sub-Plan
- Honours Biology (Physiology)
- Honours Biology and Mathematics
- Honours Biology and Psychology, Neuroscience & Behaviour
- Honours Chemical Biology
- Honours Human Behaviour - Autism and Behavioural Science Specialization
- Honours Human Behaviour - Early Childhood Education Specialization
- All Honours Life Sciences Specializations
- Honours Mathematics and Statistics - Mathematics Sub-Plan
- Honours Mathematics and Statistics - Statistics Sub-Plan
- Honours Molecular Biology and Genetics
- Honours Neuroscience
- All Honours Psychology, Neuroscience & Behaviour programs

All Co-op programs, beginning at Level III, are limited enrolment.

### MINIMUM REQUIREMENTS TO CONTINUE IN THE FACULTY OF SCIENCE

Further to the information found in the *General Academic Regulations* section of this Calendar:

### REINSTATEMENT

Students with an Academic Standing of *May Not Continue at the University* who wish to be considered for undergraduate studies must apply for reinstatement. Application for reinstatement must be made to the Office of the Registrar using the Reinstatement Request Form by the stated deadline. The Faculty of Science does not consider Requests for Reinstatement for the Spring/Summer session. See the *Application Procedures* section of this Calendar. Reinstatement forms will be carefully reviewed and the evidence considered will include the student's academic performance before and after admission to McMaster, a letter of explanation and other appropriate documentation. **Reinstatement is not automatic or guaranteed.** Decisions are normally made after June 30 for September entry.

Effective September 1997, the Grade Point Average (formerly Cumulative Average) for students who are reinstated is reset to 0.0 on zero units. Credit is retained for courses in which passing grades have been achieved. **Note: If at a review after reinstatement the Grade Point Average falls below 3.5, the student will be required to withdraw from the University for a period of at least 12 months.**

Former Kinesiology students will be considered for reinstatement to Kinesiology upon completion of a minimum of 24 units of university work taken on a full-time basis in a non-Kinesiology program with a minimum average of 7.0 (B-). Application forms are available from the Office of the Associate Dean of Science (Academic) or the Department of Kinesiology. The application deadline is April 30 for September entry. **Reinstatement is not guaranteed.** Former Medical Radiation Sciences students will be considered for reinstatement to their program upon completion of a minimum of 24 units of university work taken on a full-time basis in a non-Medical Radiation Sciences program with a minimum average of 7.0 (B-). Application forms are available from the Office of the Associate Dean of Science (Academic) or the School of Interdisciplinary Science. The application deadline is April 30 for September entry. **Reinstatement is not guaranteed.**



## DEADLINES

The Faculty of Science will not consider applications for admission, admission to a second degree or continuing studies, registration, deleting, cancelling, or adding of courses after the deadlines stated in this Calendar under Sessional Dates and Application Procedures sections, unless documentation showing good cause is submitted to the Office of the Associate Dean of Science (Academic).

## LIMITED ENROLMENT COURSES REQUIRING PRE-REGISTRATION BALLOTING

The Life Sciences program pre-registration ballot will include all Level IV Life Sciences research seminar courses. Students entering Level IV Honours Life Sciences (excluding those enrolled in a Specialization) must complete and submit a ballot, rank ordering their preference for enrolment in Level IV seminar offerings by **the end of March**. Students will be informed of their ballot result by the end of May. Failure to submit a ballot by the stated deadline may compromise enrolment in preferred seminar. Ballots will be sent directly to students in Honours Life Sciences in the Winter term.

The Department of Psychology, Neuroscience & Behaviour pre-registration ballot will include the thesis courses (PNB 4D06 A/B, 4D09 A/B, 4DD6 A/B) and the Individual Study courses (PNB 3Q03 A/B S, 3Q03 A/B S, 4Q03 A/B S, 4Q03 A/B S). Students wishing to take these courses must complete and submit a ballot by **mid February**. Students will be informed of the outcome of the first phase by **mid March**. Specific dates will be announced during the Fall term. Ballots can be obtained from the Department of Psychology, Neuroscience & Behaviour's web site at <http://www.science.mcmaster.ca/pnb/>.

## WORKLOAD

All programs in the Faculty of Science may be taken by full-time and part-time students, with the exception of all Honours Co-op programs. Students enrolled in Co-op programs must maintain a full academic load during the study terms of their program.

Students must maintain a full academic load during the Fall/Winter term to be eligible for scholarships available to full-time students.

Students are expected to avoid timetable conflicts among their courses, and students on a full academic load should ensure the number of courses is balanced in each term. Students who wish to take more courses than recommended for a single level of their program may do so if their Grade Point Average on completion of the previous Fall/Winter term is at least 7.0. Students registered in the final level of their program are permitted to overload by up to six additional units in order to become eligible to graduate.

## COURSES REQUIRING AN ADDITIONAL FEE

The Faculty offers courses that may require a payment of a fee, above the regular associated tuition. Examples include: field courses and experiential offerings. Some of these courses may be taken outside of the University's Sessional Dates.

Students who enrol in these types of offerings must pay **both**:

- a fee to the Department to cover travel expenses, room and board and
- the associated tuition fee to McMaster at time of registration.

Although students initially register for field courses through the appropriate departmental offices, it is their responsibility to include field courses on their registration forms for the appropriate session.

Detailed information regarding field courses and deadlines for registration may be obtained from the individual departmental offices.

## LETTER OF PERMISSION

All students in good academic standing, with the exception of students registered in second degree programs, may apply to the Office of the Associate Dean of Science (Academic) to take courses at another university on Letter of Permission. Students must achieve a grade of at least C- for transfer of credit. The transcript designation reads 'T', indicating *transfer*, when a grade of C- or better is attained, or *NC*, indicating *not complete*, when a grade of less than C- is attained.

Required courses given by the department offering the program may not be

taken elsewhere unless departmental approval is given. Electives may be taken elsewhere.

Courses taken at another university cannot be used to satisfy the University's minimum residence requirements, will not be included in the calculation of the Grade Point or Term Averages, and therefore cannot be used to raise standing. Students may take up to six units of courses towards a Minor on Letter of Permission.

## STUDENT EXCHANGES

McMaster University has agreements with institutions in Canada and abroad including Australia, Denmark, France and the United Kingdom to provide students with the opportunity to participate in an exchange program for one year or term. Exchanges allow students to gain a varied perspective on their course of study and enhance their professional and personal goals. In addition, exchange programs offer students the most inexpensive means of studying abroad as students participating in these exchanges avoid the foreign fees by paying fees to McMaster.

All students must have completed at least one year of continuous study and be in good standing to be eligible to participate in an exchange. In most cases, students who participate in exchange programs go abroad for the third level of an Honours program.

Students interested should begin discussions with the Office of the Associate Dean of Science (Academic) about one year before they plan to enrol elsewhere. Students must propose and submit an academic program to their Department for approval. Academic approval must be completed by the end of February for registration in the following Fall/Winter session. In certain cases, students may be recommended for the Deans' Honour List on the basis of work undertaken while on exchange.

For further information please see *International Study* in the *General Academic Regulations* section in this Calendar. Information concerning exchanges can also be found from International Student Services. Acceptance to the Ontario and University-wide Exchange Programs is by recommendation. Application forms can be obtained from:

## International Student Services / MacAbroad

Gilmour Hall, Room 110

Telephone: (905) 525-9140, extension 24748

## TRANSFERS

Science students may be permitted to transfer between programs or students in other Faculties may apply to transfer to a program in the Faculty of Science provided they have obtained a Grade Point Average of at least 3.5 and have completed the necessary admission requirements. The Faculty of Science will include the grades of all courses attempted (including failures) in the calculation of the Grade Point Average to determine eligibility to transfer into the Faculty. Students who do not meet these requirements must consult with the Office of the Associate Dean of Science (Academic).

Students in Levels II or III who wish to transfer to another program in the Faculty of Science must speak with an Academic Advisor in the Office of the Associate Dean of Science (Academic).

## TRANSFER/APPLICATION TO LEVEL I HONOURS KINESIOLOGY

In-course, McMaster students seeking transfer/admission to Level I Honours Kinesiology for the following Fall or Winter term must submit an Application for Admission through Mosaic by the stated deadline (normally April). Additionally, transfer students must submit the mandatory Supplemental Application to the Department of Kinesiology by the stated deadline. Students will be notified of their eligibility for transfer to Level I Honours Kinesiology through their Student Centre on MOSAIC in June. McMaster students interested in transferring may contact the Undergraduate Administrative Assistant (Kinesiology) or the Office of the Associate Dean of Science (Academic). Students transferring from another university should see the Admission Requirements and *Application Procedures* sections of this Calendar. A limited number of exceptionally qualified students are admitted each year. To be considered, applicants must have an average of at least 9.0 (B+) in a minimum of 24 units of university

work, taken during the Fall and Winter terms, including an average of at least 6.0 in BIOLOGY 1A03 and 1M03. Given the number of required units and prerequisites of Kinesiology courses, transfer students may not be able to complete the requirements in three additional years of study.

### GRADUATION

#### FROM AN HONOURS B.SC., HONOURS B.A.SC. AND B.SC. PROGRAMS

To graduate from a program, students must meet all course requirements for their degree program.

The requirements for graduation from these programs are described under the heading *Graduation* in the *General Academic Regulations* section in this Calendar.

#### TRANSFERRING TO GRADUATE WITH A THREE-LEVEL B.SC. DEGREE FROM AN HONOURS B.SC. PROGRAM

Students who successfully complete at least 90 units including all admission requirements and expected course requirements up to the end of Level III of any Honours B.Sc. degree, with a minimum Grade Point Average of 3.5 may request permission from the Office of the Associate Dean of Science (Academic) for transfer to graduate with a corresponding three-level B.Sc. degree as follows:

Honours Biochemistry qualifies for the B.Sc. Science degree. Honours Biology, Chemical Biology, Life Sciences, Molecular Biology and Genetics and Psychology, Neuroscience & Behaviour programs qualify for the B.Sc. Life Sciences degree. All Environmental Sciences programs qualify for the B.Sc. Environmental Sciences degree. All Mathematics and Statistics programs qualify for the B.Sc. Mathematical Science degree. All Biophysics, Chemistry, Medical Physics, and Physics programs qualify for the B.Sc. Chemical and Physical Sciences degree. Students enrolled in Honours Biology and Environmental Sciences may be given the option of either the B.Sc. Environmental Sciences or Life Sciences degree. Honours B.Sc. Kinesiology qualifies for the B.Sc.Kin. degree. Integrated Sciences (iSci) programs, with a concentration, will qualify for the exit degree most relevant to the concentration. Integrated Sciences (iSci), without a concentration, qualifies for the B.Sc. Science degree. Students who do not qualify for the degrees, as stated above, may request to be considered to graduate with the B.Sc. Science degree.

#### TRANSFERRING TO GRADUATE WITH A THREE-LEVEL B.A.SC. DEGREE FROM AN HONOURS B.A.SC. PROGRAM

Students who successfully complete at least 90 units including all admission requirements and expected course requirements up to the end of Level III of any Honours B.A.Sc. degree, with a minimum Grade Point Average of 3.5 may request permission from the Office of the Associate Dean of Science (Academic) for transfer to graduate with the B.A.Sc. (exit) degree.

## Level I Programs

The Faculty of Science offers the following Level I gateway programs leading to the Honours Bachelor of Science, Honours Bachelor of Applied Science and Bachelor of Science programs at Level II:

- Chemical and Physical Sciences Gateway
- Environmental and Earth Sciences Gateway
- Life Sciences Gateway
- Mathematics and Statistics Gateway

Review of the Admission Requirements of Level II programs and successful completion of recommended courses in Level I will allow students a range of Level II program options including those from within their chosen Gateway as well as the others.

Additionally, the Faculty offers the following direct-entry Level I programs (and degrees):

- Honours Integrated Science (Leading to the Honours Bachelor of Science degree)
- Honours Kinesiology (Leading to the Honours Bachelor of Science

Kinesiology degree)

- Medical Radiation Sciences (Leading to the Bachelor of Medical Radiation Sciences degree)

## Important Note for Level I Students:

Level I courses must be selected carefully to meet the admission requirements for entry to Level II of a specific program. **For details of the various admission requirements see Faculty of Science program descriptions in this section of the Calendar.** Students are also encouraged to review the McMaster Academic Planner (MAP) at [www.mapsci.ca](http://www.mapsci.ca). Additionally, in late June and early July, Academic Advisors from the Office of the Associate Dean of Science (Academic) are readily available to provide Level I students with academic advice and registration assistance.

Students in the Level I Gateway programs will have the opportunity to take units from the *Science I Course List*, consisting of:

- ASTRON 1F03 - Introduction to Astronomy and Astrophysics
- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity
- BIOPHYS 1S03 - Biophysics of Movement and the Senses: From Microbes to Moose
- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II
- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVSOCY 1HA3 - Society, Culture and Environment
- ENVSOCY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3
- LIFESCI 1D03 - Medical Imaging Physics
- MATH 1A03 - Calculus For Science I
- MATH 1AA3 - Calculus For Science II
- MATH 1B03 - Linear Algebra I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1AA3 - Introduction To Modern Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences
- PSYCH 1F03 - Survey of Psychology
- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour
- SCIENCE 1A03 - Investigating Science: Opportunities & Experiences

## Bachelor of Science (Honours)

### CHEMICAL AND PHYSICAL SCIENCES GATEWAY

#### ADMISSION

Prior to registration, Level I students must review the admission requirements of the Level II programs they are considering. Courses must be selected carefully to meet the admission requirements for entry to Level II of a specific program. **For details of the various admission requirements see Faculty of Science program descriptions in this section of the Calendar.** Students are also encouraged to review the McMaster Academic Planner (MAP) at [www.mapsci.ca](http://www.mapsci.ca). Additionally, in late June and early July, Academic Advisors from the Office of the Associate Dean of Science (Academic) are readily available to provide Level I students with academic advice and registration assistance. To maximize the selection of Level II programs from the disciplines of Chemical and Physical Sciences, students

should complete the courses recommended below.

### PROGRAM NOTES

- BIOLOGY 1P03, which may be completed as an elective, serves as the prerequisite for BIOLOGY 1A03 and 1M03 for those students who did not complete Grade 12 Biology U.
- WHMIS 1A00, a one-hour mandatory on-line Introduction to Health and Safety course, is a co-requisite to Level I courses with a lab component and must be completed prior to the first lab.
- BIOSAFE 1BS0, a mandatory on-line introduction to bio-safety lab training, is a co-requisite to BIOLOGY 1A03 and must be completed prior to the first lab.

### SCIENCE I COURSE LIST

- ASTRON 1F03 - Introduction to Astronomy and Astrophysics
- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity
- BIOPHYS 1S03 - Biophysics of Movement and the Senses: From Microbes to Moose
- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II
- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVSOCY 1HA3 - Society, Culture and Environment
- ENVSOCY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3
- LIFESCI 1D03 - Medical Imaging Physics
- MATH 1A03 - Calculus For Science I
- MATH 1AA3 - Calculus For Science II
- MATH 1B03 - Linear Algebra I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1AA3 - Introduction To Modern Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences
- PSYCH 1F03 - Survey of Psychology
- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour
- SCIENCE 1A03 - Investigating Science: Opportunities & Experiences

### RECOMMENDED COURSES: 30 UNITS

#### 12 UNITS FROM:

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II
- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1AA3 - Introduction To Modern Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences

#### 6 UNITS FROM:

- MATH 1A03 - Calculus For Science I
- MATH 1AA3 - Calculus For Science II
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1LT3 - Calculus for the Life Sciences II

#### 6 UNITS

from

- the *Science I Course List*

#### 6 UNITS

- Electives (See *Program Note 1* above.)

## ENVIRONMENTAL AND EARTH SCIENCES GATEWAY

### ADMISSION

Prior to registration, Level I students must review the admission requirements of the Level II programs they are considering. Courses must be selected carefully to meet the admission requirements for entry to Level II of a specific program. **For details of the various admission requirements see Faculty of Science program descriptions in this section of the Calendar.** Students are also encouraged to review the McMaster Academic Planner (MAP) at [www.mapsci.ca](http://www.mapsci.ca). Additionally, in late June and early July, Academic Advisors from the Office of the Associate Dean of Science (Academic) are readily available to provide Level I students with academic advice and registration assistance. To maximize the selection of Level II programs from the disciplines of Environmental and Earth Sciences, students should complete the courses recommended below.

### PROGRAM NOTES

- Students without Grade 12 Calculus and Vectors U must complete MATH 1F03.
- Students who did not complete Grade 12 Biology U must complete BIOLOGY 1P03 in Level I. BIOLOGY 1P03 serves as the prerequisite for BIOLOGY 1A03 and 1M03 for those students who did not complete Grade 12 Biology U.
- CHEM 1R03 serves as the prerequisite for CHEM 1A03 for those students who did not complete Grade 12 Chemistry U. CHEM 1A03 is required for admission to Level II Honours Earth and Environmental Sciences.
- PHYSICS 1A03 may be taken by students who did not complete Grade 12 Physics U.
- WHMIS 1A00, a one-hour mandatory on-line Introduction to Health and Safety course, is a co-requisite to Level I courses with a lab component and must be completed prior to the first lab.
- BIOSAFE 1BS0, a mandatory on-line introduction to bio-safety lab training, is a co-requisite to BIOLOGY 1A03 and must be completed prior to the first lab.

### SCIENCE I COURSE LIST

- ASTRON 1F03 - Introduction to Astronomy and Astrophysics
- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity
- BIOPHYS 1S03 - Biophysics of Movement and the Senses: From Microbes to Moose
- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II
- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVSOCY 1HA3 - Society, Culture and Environment
- ENVSOCY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3
- LIFESCI 1D03 - Medical Imaging Physics
- MATH 1A03 - Calculus For Science I
- MATH 1AA3 - Calculus For Science II
- MATH 1B03 - Linear Algebra I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1AA3 - Introduction To Modern Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences
- PSYCH 1F03 - Survey of Psychology
- PSYCH 1FF3 - Survey of Biological Basis of Psychology

- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour
- SCIENCE 1A03 - Investigating Science: Opportunities & Experiences

**RECOMMENDED COURSES: 30 UNITS****6 UNITS**

from:

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment

**3 UNITS**

from:

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

**15 UNITS**

from:

- the *Science I Course List*

**6 UNITS**

- Electives (See *Program Notes 1, 2, 3 and 4* above.)

**HONOURS INTEGRATED SCIENCE (LEVEL I)****Enrolment in this program is limited.****PROGRAM NOTES**

- As places in the Honours Integrated Science program are limited to approximately 60 students, admission is by selection, and possession of published minimum requirements does not guarantee admission.
- The University reserves the right to grant admission to a limited number of students and to refuse readmission to any student whose academic performance or general conduct has been unsatisfactory, or who has withdrawn from the program for a period in excess of one academic year.
- All Level I Integrated Science students may be asked to complete an online orientation course prior to the start of classes in September. The course will serve to review and consolidate material covered by the secondary school math and science curriculum and will be especially valuable to those who have not completed one of Grade 12 Biology U, Chemistry U or Physics U.
- WHMIS 1A00, a one-hour mandatory on-line Introduction to Health and Safety course, is a co-requisite to ISCI 1A24 A/B and must be completed prior to the first lab.
- BIOSAFE 1BS0, a mandatory on-line introduction to bio-safety lab training, is a co-requisite to ISCI 1A24 A/B and must be completed prior to the first lab.
- The Geography and Environmental Sciences Concentration requires completion of two additional Level I GEOG courses, which must be completed by the end of Level II.
- ISCI students, completing a concentration, are eligible to obtain a maximum of one minor, provided that the subject area is not integral to the requirements of the concentration. ISCI students not completing a concentration may be eligible for up to two minors provided that, for each minor, at least 12 units (above Level I) is elective to the degree. All students should consult the Academic Program Advisor.

**REQUIREMENTS: 30 UNITS****24 UNITS**

- ISCI 1A24 A/B - Integrated Science I

**6 UNITS**

- Electives (See *Program Notes 6 and 7* above.)

**LIFE SCIENCES GATEWAY****ADMISSION**

Prior to registration, Level I students must review the admission requirements of the Level II programs they are considering. Courses must be selected carefully to meet the admission requirements for entry to Level II of a specific program. **For details of the various admission requirements see Faculty of Science program descriptions in this section of the Calendar.** Students are also encouraged to review the McMaster Academic Planner (MAP) at [www.mapsci.ca](http://www.mapsci.ca). Additionally, in late June and early July, Academic Advisors from the Office of the Associate Dean of Science (Academic) are readily available to provide Level I students with academic advice and registration assistance. To maximize the selection of Level II programs from the disciplines of Life Sciences, students should complete the courses recommended below.

**PROGRAM NOTES**

- Students without Grade 12 Calculus and Vectors U must complete MATH 1F03.
- CHEM 1R03 serves as the prerequisite for CHEM 1A03 for those students who did not complete Grade 12 Chemistry U.
- WHMIS 1A00, a one-hour mandatory on-line Introduction to Health and Safety course, is a co-requisite to Level I courses with a lab component and must be completed prior to the first lab.
- BIOSAFE 1BS0, a mandatory on-line introduction to bio-safety lab training, is a co-requisite to BIOLOGY 1A03 and must be completed prior to the first lab.

**SCIENCE I COURSE LIST**

- ASTRON 1F03 - Introduction to Astronomy and Astrophysics
- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity
- BIOPHYS 1S03 - Biophysics of Movement and the Senses: From Microbes to Moose
- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II
- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVSOCY 1HA3 - Society, Culture and Environment
- ENVSOCY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3
- LIFESCI 1D03 - Medical Imaging Physics
- MATH 1A03 - Calculus For Science I
- MATH 1AA3 - Calculus For Science II
- MATH 1B03 - Linear Algebra I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1AA3 - Introduction To Modern Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences
- PSYCH 1F03 - Survey of Psychology
- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour
- SCIENCE 1A03 - Investigating Science: Opportunities & Experiences

**RECOMMENDED COURSES: 30 UNITS****9 UNITS**

from:

- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity



- PSYCH 1F03 - Survey of Psychology
- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour

**3 UNITS**

from:

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

**3 UNITS**

from:

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

**9 UNITS**

from

- the *Science I Course List*

**6 UNITS**

- Electives (See *Program Notes 1 and 2* above.)

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## MATHEMATICS AND STATISTICS GATEWAY

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**ADMISSION**

Prior to registration, Level I students must review the admission requirements of the Level II programs they are considering. Courses must be selected carefully to meet the admission requirements for entry to Level II of a specific program. **For details of the various admission requirements see Faculty of Science program descriptions in this section of the Calendar.** Students are also encouraged to review the McMaster Academic Planner (MAP) at [www.mapsci.ca](http://www.mapsci.ca). Additionally, in late June and early July, Academic Advisors from the Office of the Associate Dean of Science (Academic) are readily available to provide Level I students with academic advice and registration assistance. To maximize the selection of Level II programs from the disciplines of Mathematics and Statistics, students should complete the courses recommended below.

**PROGRAM NOTES**

- MATH 1A03 and 1AA3 or MATH 1LS3 and 1LT3 may be used as substitutions for MATH 1X03 and 1XX3 for consideration to Level II Mathematics and Statistics programs for students from other Level I programs. However, Mathematics and Statistics Gateway students are strongly discouraged from taking MATH 1LS3 and 1LT3 as they do not cover all content needed for MATH 2X03.
- Students may substitute COMPSCI 1JC3, 1MD3, 1XA3 for the 3 units required from the Faculty of Science.
- Completion of COMPSCI 1MD3 or MATH 1MP3 is required for admission to the Honours Mathematics and Computer Science program.
- Completion of ECON 1B03 and 1BB3 is required by the end of Level II for the Honours Actuarial and Financial Mathematics program. Completion in Level I is recommended.
- Effective September 2019, completion of MATH 1C03 is required by the end of Level II for all Honours Mathematics and Statistics programs, excluding Honours Actuarial and Financial Mathematics.
- WHMIS 1A00, a one-hour mandatory on-line Introduction to Health and Safety course, is a co-requisite to Level 1 courses with a lab component and must be completed prior to the first lab.
- BIOSAFE 1BS0, a mandatory on-line introduction to bio-safety lab training, is a co-requisite to BIOLOGY 1A03 and must be completed prior to the first lab.

**SCIENCE I COURSE LIST**

- ASTRON 1F03 - Introduction to Astronomy and Astrophysics
- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity
- BIOPHYS 1S03 - Biophysics of Movement and the Senses: From

Microbes to Moose

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II
- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVSOCY 1HA3 - Society, Culture and Environment
- ENVSOCY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3
- LIFESCI 1D03 - Medical Imaging Physics
- MATH 1A03 - Calculus For Science I
- MATH 1AA3 - Calculus For Science II
- MATH 1B03 - Linear Algebra I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1AA3 - Introduction To Modern Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences
- PSYCH 1F03 - Survey of Psychology
- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour
- SCIENCE 1A03 - Investigating Science: Opportunities & Experiences

**RECOMMENDED COURSES: 30 UNITS****15 UNITS**

- MATH 1B03 - Linear Algebra I
- MATH 1C03 - Introduction to Mathematical Reasoning
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- MATH 1X03 - Calculus for Math and Stats I
- MATH 1XX3 - Calculus for Math and Stats II

(See *Program Notes 1 and 5* above.)**3 UNITS**

from

- the *Science I Course List* (See *Program Notes 2 and 3* above.)

**12 UNITS**

- Electives (See *Program Note 4* above.)

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## Bachelor of Science Kinesiology (Honours)

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**HONOURS KINESIOLOGY (LEVEL I)****Enrolment in this program is limited.****PROGRAM NOTES**

- Application is made to Level I of the Honours Kinesiology program.
- Students must complete MATH 1A03 or 1LS3 by the end of Level II.
- Students who do not have credit in Grade 12 Calculus and Vectors U (or Grade 12 Advanced Functions and Introductory Calculus U), must complete MATH 1F03, which serves as the prerequisite for MATH 1A03 or 1LS3.
- PHYSICS 1A03 serves as excellent preparation for KINESIOL 2A03, especially for students who did not complete Grade 12 Physics U. Completion in Level I is recommended.
- Upon completion of Level I Honours Kinesiology (including KINESIOL 1A03, 1AA3, 1C03, 1E03, 1F03), students whose Grade Point Average is between 5.5 and 5.9 may register in the Level II Honours Kinesiology program but will be placed on program probation for one reviewing period. Effective September 2019, upon completion of Level I Honours Kinesiology (including KINESIOL 1A03, 1AA3, 1E03, 1F03, 1K03), students whose Grade Point Average is between 5.5 and 5.9 may

register in the Level II Honours Kinesiology program but will be placed on program probation for one reviewing period. A student may be on program probation only once, and, therefore, by the next academic review must raise their Grade Point Average to at least 6.0 to continue in the Honours Kinesiology program.

Upon completion of Level I Honours Kinesiology, students whose Grade Point Average is between 3.5 and 5.4 and/or who have failed to successfully complete each of KINESIOL 1A03, 1AA3, 1C03, 1E03, 1F03 may register in Level II Kinesiology General and may take the Level II Kinesiology required courses for which the prerequisites have been met. Such students must attend a mandatory preregistration counselling session with an Academic Advisor. Eligibility to transfer to Honours Kinesiology at the next review will require a Grade Point Average of at least 6.0 and the successful completion of KINESIOL 1A03, 1AA3, 1C03, 1E03, 1F03. (Students with a Grade Point Average between 5.5 and 5.9, including successful completion of KINESIOL 1A03, 1AA3, 1C03, 1E03, 1F03, may transfer to the Honours Kinesiology program, but, will be placed on program probation. Students may be on program probation only once during their program, including upon admittance.) Effective September 2019, upon completion of Level I Honours Kinesiology, students whose Grade Point Average is between 3.5 and 5.4 and/or who have failed to successfully complete each of KINESIOL 1A03, 1AA3, 1E03, 1F03, 1K03 may register in Level II Kinesiology General and may take the Level II Kinesiology required courses for which the prerequisites have been met. Such students must attend a mandatory preregistration counselling session with an Academic Advisor. Eligibility to transfer to Honours Kinesiology at the next review will require a Grade Point Average of at least 6.0 and the successful completion of KINESIOL 1A03, 1AA3, 1E03, 1F03, 1K03. (Students with a Grade Point Average between 5.5 and 5.9, including successful completion of KINESIOL 1A03, 1AA3, 1E03, 1F03, 1K03 may transfer to the Honours Kinesiology program, but, will be placed on program probation. Students may be on program probation only once during their program, including upon admittance.) Students who fail to meet the minimum requirements must transfer to a non-Kinesiology program for which they qualify.

Upon completion of Level I Honours Kinesiology, students whose Grade Point Average is between 3.0 and 3.4 may request transfer to Science II.

- WHMIS 1A00, a one-hour mandatory on-line Introduction to Health and Safety course, is a co-requisite to Level I courses with a lab component and must be completed prior to the first lab.
- BIOSAFE 1B00, a mandatory on-line introduction to bio-safety lab training, is a co-requisite to BIOLOGY 1A03 and must be completed prior to the first lab.
- *Routine Practices*, an on-line module available through Mosaic (Health and Safety Training), must be completed prior to attendance in the first lab associated with each of: KINESIOL 1A03, 1AA3.

#### REQUIREMENTS: 30 UNITS

##### 15 UNITS

- KINESIOL 1A03 - Human Anatomy and Physiology I
- KINESIOL 1AA3 - Human Anatomy and Physiology II
- KINESIOL 1E03 - Motor Control and Learning
- KINESIOL 1F03 - Human Nutrition and Health
- KINESIOL 1K03 - Foundations in Kinesiology

##### 15 UNITS

- Electives (See *Program Notes 2 and 3* above.)

## Bachelor of Medical Radiation Sciences

### MEDICAL RADIATION SCIENCES (LEVEL I)

#### NOTE

Students considering the Medical Radiation Sciences program should refer to the Regulations for License to Practice and Functional Demands in the Medical Radiation Sciences section of this Calendar.

**Enrolment in this program is limited.**

#### PROGRAM NOTES

- As places in the Medical Radiation Sciences program are limited, admission is by selection, and possession of published minimum requirements does not guarantee admission.
- The University reserves the right to grant admission to a limited number of students and to refuse readmission to any student whose academic performance or general conduct has been unsatisfactory, or who has withdrawn from the program for a period in excess of one academic year.
- WHMIS 1A00, a one-hour mandatory on-line Introduction to Health and Safety course, is a co-requisite to Level I courses with a lab component and must be completed prior to the first lab.
- BIOSAFE 1B00 a mandatory on-line introduction to bio-safety lab training, is a co-requisite to BIOLOGY 1A03 and must be completed prior to the first lab.
- *Routine Practices*, an on-line module available through Mosaic (Health and Safety Training), must be completed prior to attendance in the first lab associated with each of: KINESIOL 1Y03, 1YY3.
- For consideration to a Level II Medical Radiation Specialization, Medical Radiation Sciences students must complete at least 24 units during the Fall/Winter session, including BIOLOGY 1A03, KINESIOL 1Y03, 1YY3, LIFESCI 1D03, MATH 1A03 or 1LS3, MEDRADSC 1B03, 1E03, 1F03 and achieve a Grade Point Average of at least 5.0. Failure to complete these minimum requirements may compromise consideration for admission to a Specialization.

#### REQUIREMENTS: 30 UNITS

##### 3 UNITS

- BIOLOGY 1A03 - Cellular and Molecular Biology

##### 6 UNITS

- KINESIOL 1Y03 - Human Anatomy and Physiology I
- KINESIOL 1YY3 - Human Anatomy and Physiology II

##### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

##### 12 UNITS

- LIFESCI 1D03 - Medical Imaging Physics
- MEDRADSC 1B03 - Introduction to Pathology
- MEDRADSC 1E03 - Inquiry in Medical Radiation Sciences
- MEDRADSC 1F03 - Professions in Medical Radiation Sciences

##### 6 UNITS

- Electives

## Department of Biochemistry & Biomedical Sciences

<https://healthsci.mcmaster.ca/biochem>

**Faculty as of January 15, 2020**

CHAIR

**Brian Coombes**

ASSOCIATE CHAIRS

**Deborah Sloboda** (*Research*)

**Michelle MacDonald** (*Undergraduate Studies*)

**Matthew Miller** (*Graduate Studies*)

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**Jeffrey I. Weitz**/(*Medicine*) B.Sc., M.D. (*Ottawa*)/Canada Research Chair

#### NOTES APPLICABLE TO ALL HONOURS BIOCHEMISTRY PROGRAMS

- In addition to the Honours Biochemistry program, the Department offers a Specialization in Biomedical Research. The Honours program has a specified set of basic requirements and a wide choice of electives (including those from outside the Faculty of Science), allowing for interdisciplinary studies or the opportunity to complete a Minor in another subject. Alternatively, students may wish to apply to the Biomedical Research Specialization which is strongly recommended for students intending to pursue graduate studies.
- Admission to the Honours Biochemistry program is limited.** Selection is based on academic achievement but requires, as a minimum, completion of the Level I requirements listed below.
- Admission to the Honours Biochemistry - Biomedical Research Specialization program is limited.** Effective September 2021, admission to this program will begin at Level III and will require, as a minimum, completion of Level II Honours Biochemistry. Last cohort of students to enter at Level II will be in September 2019 and selection is based on academic achievement but requires, as a minimum, completion of the Level I requirements listed below.
- Transfer between programs is possible at any time, subject to satisfying the admission requirements and availability of space.
- Students considering graduate studies in Biochemistry are recommended to complete one of BIOCHEM 4F09 A/B or 4T15 A/B.

## Bachelor of Science (Honours)

### HONOURS BIOCHEMISTRY (B.SC.)

#### ADMISSION

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Admission is by selection but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

#### 6 UNITS

- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity

#### 6 UNITS

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II

#### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

#### 3 UNITS

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

#### 6 UNITS

from

- the Science I Course List

**NOTE**

A grade of at least C+ in four of BIOLOGY 1A03, 1M03, CHEM 1A03, 1AA3 and either MATH 1A03 or 1LS3 is required.

**PROGRAM NOTES**

- There are Level II and III prerequisites for many Level III and IV courses. The prerequisites should be considered when choosing Level II and III courses.
- Both CHEMBIO 2A03 and 2P03 are highly recommended for students interested in pursuing an undergraduate thesis or graduate studies in biophysical chemistry.

**BIOCHEMISTRY COURSE LIST**

- ANTHROP 2U03 - Plagues and People
- ANTHROP 3BD3 - The Black Death
- BIOCHEM 3BP3 - Practical Bioinformatics in the Genomics Era
- BIOCHEM 3EE3 - Research Advances in Cell Biology and Biochemistry
- BIOCHEM 3H03 - Clinical Biochemistry
- BIOCHEM 3LA3 - Advanced Biochemistry Techniques
- BIOCHEM 3MI3 - Microbial Interactions
- BIOCHEM 3X03
- BIOCHEM 3Y03
- BIOCHEM 3Z03 - Structural Determination and Analysis of Macromolecules
- BIOCHEM 4EA3
- BIOCHEM 4H03 - Biotechnology and Drug Discovery
- BIOCHEM 4J03 - Immunological Principles in Practice
- BIOCHEM 4M03 - Cellular and Integrated Metabolism
- BIOCHEM 4N03 - Molecular Membrane Biology
- BIOCHEM 4Q03 - Biochemical Pharmacology
- BIOCHEM 4S03 - Introduction to Molecular Biophysics
- BIOCHEM 4Y03
- BIOLOGY 2B03 - Cell Biology
- BIOLOGY 2EE3 - Introduction to Microbiology and Biotechnology
- BIOMEDDC 2C03 - Exploring Careers in Biomedical Sciences
- CHEM 2A03 - Quantitative Chemical Analysis
- CHEM 2AA3
- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry
- CHEMBIO 2P03 - Physical Chemistry Tools for Chemical Biology
- CHEMBIO 3OA3 - Organic Mechanistic Tools for Chemical Biology
- MOLBIOL 3O03 - Microbial Genetics

**REQUIREMENTS**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

30 units

- (See *Admission* above.)

**LEVEL II: 30 UNITS**

12 units

- BIOCHEM 2B03 - Nucleic Acid Structure and Function
- BIOCHEM 2BB3 - Protein Structure and Enzyme Function
- BIOCHEM 2L06 A/B - Inquiry in Biochemical Techniques

3 units

- BIOLOGY 2C03 - Genetics

3 units

from

- the *Biochemistry Course List* (See *Program Note 2* above.)

6 units

- CHEM 2OA3 - Organic Chemistry I
- CHEM 2OB3 - Organic Chemistry II

6 units

- Electives

**LEVEL III: 30 UNITS**

3 units

- BIOCHEM 3D03 - Metabolism and Regulation

12 units

from

- the *Biochemistry Course List* (See *Program Note 2* above.)

3 units

- STATS 2B03 - Statistical Methods for Science

12 units

- Electives

**LEVEL IV: 30 UNITS**

3 units

- BIOCHEM 4E03 - Gene Regulation in Stem Cells and Development

9 units

from

- the *Biochemistry Course List* (See *Program Note 2* above.)

6-15 units

from

- Levels III, IV Biochemistry, Biology, Chemical Biology, Chemistry, Molecular Biology courses
- HTHSCI 3I03 - Introductory Immunology
- HTHSCI 3K03 - Introductory Virology
- HTHSCI 4I13 - Advanced Concepts in Immunology
- HTHSCI 4O03 - Principles of Virus Pathogenesis

which must include one of:

- BIOCHEM 3A03 - Biochemical Research Practice
- BIOCHEM 3R06 A/B S - Research Project
- BIOCHEM 4C03 - Inquiry in Biochemistry
- BIOCHEM 4F09 A/B - Senior Thesis
- BIOCHEM 4T15 A/B - Senior Thesis
- BIOCHEM 4Z03 - Senior Project

3-12 units

- Electives

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2020**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

30 units

- (See *Admission* above.)

**LEVEL II: 30 UNITS**

12 units

- BIOCHEM 2B03 - Nucleic Acid Structure and Function
- BIOCHEM 2BB3 - Protein Structure and Enzyme Function
- BIOCHEM 2L06 A/B - Inquiry in Biochemical Techniques

3 units

- BIOLOGY 2C03 - Genetics

3 units

from

- the *Biochemistry Course List* (See *Program Note 2* above.)

6 units

- CHEM 2OA3 - Organic Chemistry I
- CHEM 2OB3 - Organic Chemistry II

6 units

- Electives

**LEVEL III: 30 UNITS**

3 units

- BIOCHEM 3D03 - Metabolism and Regulation

6 units

from

- the *Biochemistry Course List* (See *Program Note 2* above.)

3 units

- STATS 2B03 - Statistical Methods for Science

18 units



- Electives

**LEVEL IV: 30 UNITS**3 units

- BIOCHEM 4E03 - Gene Regulation in Stem Cells and Development

3 units

from

- the *Biochemistry Course List* (See *Program Note 2* above.)

12-15 units

from

- Levels III, IV Biochemistry, Biology, Chemical Biology, Chemistry, Molecular Biology courses
- HTHSCI 3I03 - Introductory Immunology
- HTHSCI 3K03 - Introductory Virology
- HTHSCI 4I13 - Advanced Concepts in Immunology
- HTHSCI 4O03 - Principles of Virus Pathogenesis

which must include one of:

- BIOCHEM 3A03 - Biochemical Research Practice
- BIOCHEM 3R06 A/B S - Research Project
- BIOCHEM 4C03 - Inquiry in Biochemistry
- BIOCHEM 4F09 A/B - Senior Thesis
- BIOCHEM 4T15 A/B - Senior Thesis
- BIOCHEM 4Z03 - Senior Project

9-12 units

- Electives

**HONOURS BIOCHEMISTRY - BIOMEDICAL RESEARCH SPECIALIZATION (B.SC.)****ADMISSION NOTE**

Effective September 2021, admission to this program will be at Level III. Last cohort of students to enter at Level II was September 2019.

**ADMISSION (EFFECTIVE SEPTEMBER 2021)**

**Effective September 2021, admission to this program will begin at Level III.** Therefore, no admissions at Levels II or III will be assessed in September 2020. **Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Admission is by selection but requires, as a minimum, completion of Level II Honours Biochemistry with a Grade Point Average of at least 5.0 and completion of the following courses:

**12 UNITS**

- BIOCHEM 2B03 - Nucleic Acid Structure and Function
- BIOCHEM 2BB3 - Protein Structure and Enzyme Function
- BIOCHEM 2L06 A/B - Inquiry in Biochemical Techniques

**3 UNITS**

- BIOLOGY 2C03 - Genetics

**3 UNITS**

from

- the *Biochemistry Course List* (See *Program Note 4* below.)

**6 UNITS**

- CHEM 20A3 - Organic Chemistry I
- CHEM 20B3 - Organic Chemistry II

**PROGRAM NOTES**

- There are Level II and III prerequisites for many Level III and IV courses. The prerequisites should be considered when choosing Level II and III courses.
- Completion of one of BIOCHEM 4F09 A/B, 4T15 A/B or 4Z03 is required in Level IV.
- A 'research intensive' option, available to students registered in this Specialization, offers additional laboratory research experience through completion of BIOCHEM 3R06 A/B S and 4T15 A/B. This option is intended for students planning to pursue graduate studies or a career

in research and development. Enrolment in the courses is limited and admission is by selection.

- Both CHEMBIO 2A03 and 2P03 are highly recommended for students interested in pursuing an undergraduate thesis or graduate studies in biophysical chemistry.

**BIOCHEMISTRY COURSE LIST**

- ANTHROP 2U03 - Plagues and People
- ANTHROP 3BD3 - The Black Death
- BIOCHEM 3BP3 - Practical Bioinformatics in the Genomics Era
- BIOCHEM 3EE3 - Research Advances in Cell Biology and Biochemistry
- BIOCHEM 3H03 - Clinical Biochemistry
- BIOCHEM 3LA3 - Advanced Biochemistry Techniques
- BIOCHEM 3MI3 - Microbial Interactions
- BIOCHEM 3X03
- BIOCHEM 3Y03
- BIOCHEM 3Z03 - Structural Determination and Analysis of Macromolecules
- BIOCHEM 4EA3
- BIOCHEM 4H03 - Biotechnology and Drug Discovery
- BIOCHEM 4J03 - Immunological Principles in Practice
- BIOCHEM 4M03 - Cellular and Integrated Metabolism
- BIOCHEM 4N03 - Molecular Membrane Biology
- BIOCHEM 4O03 - Biochemical Pharmacology
- BIOCHEM 4S03 - Introduction to Molecular Biophysics
- BIOCHEM 4Y03
- BIOLOGY 2B03 - Cell Biology
- BIOLOGY 2EE3 - Introduction to Microbiology and Biotechnology
- BIOMEDDC 2C03 - Exploring Careers in Biomedical Sciences
- CHEM 2A03 - Quantitative Chemical Analysis
- CHEM 2AA3
- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry
- CHEMBIO 2P03 - Physical Chemistry Tools for Chemical Biology
- CHEMBIO 30A3 - Organic Mechanistic Tools for Chemical Biology
- MOLBIOL 3003 - Microbial Genetics

**REQUIREMENTS**

*120 units total (Levels I to IV), of which no more than 48 units may be Level I*

**LEVEL I: 30 UNITS**30 units

- Completed prior to admission to the program

**LEVEL II: 30 UNITS**30 units

- Completion of Level II Honours Biochemistry

**LEVEL III: 30 UNITS**3 units

- BIOCHEM 3D03 - Metabolism and Regulation

3-6 units

from

- BIOCHEM 3A03 - Biochemical Research Practice
- BIOCHEM 3LA3 - Advanced Biochemistry Techniques
- BIOCHEM 3R06 A/B S - Research Project

12 units

from

- the *Biochemistry Course List* (See *Program Note 4* above.)

3 units

- STATS 2B03 - Statistical Methods for Science

6-9 units

- Electives

**LEVEL IV: 30 UNITS**3 units

- BIOCHEM 4E03 - Gene Regulation in Stem Cells and Development

9 units

from

- the *Biochemistry Course List* (See *Program Note 4* above.)

12-15 units

from

- Levels III, IV Biochemistry, Biology, Chemical Biology, Chemistry, Molecular Biology courses
- HTHSCI 3I03 - Introductory Immunology
- HTHSCI 3K03 - Introductory Virology
- HTHSCI 4I13 - Advanced Concepts in Immunology
- HTHSCI 4O03 - Principles of Virus Pathogenesis

which must include one of:

- BIOCHEM 4F09 A/B - Senior Thesis
- BIOCHEM 4T15 A/B - Senior Thesis
- BIOCHEM 4Z03 - Senior Project

(See *Program Note 2* above.)

3-6 units

- Electives

### REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2020

*120 units total (Levels I to IV), of which no more than 48 units may be Level I*

#### LEVEL I: 30 UNITS

30 units

- Completed prior to admission to the program

#### LEVEL II: 30 UNITS

12 units

- BIOCHEM 2B03 - Nucleic Acid Structure and Function
- BIOCHEM 2BB3 - Protein Structure and Enzyme Function
- BIOCHEM 2L06 A/B - Inquiry in Biochemical Techniques

3 units

- BIOLOGY 2C03 - Genetics

3 units

from

- the *Biochemistry Course List* (See *Program Note 4* above.)

6 units

- CHEM 20A3 - Organic Chemistry I
- CHEM 20B3 - Organic Chemistry II

6 units

- Electives

#### LEVEL III: 30 UNITS

3 units

- BIOCHEM 3D03 - Metabolism and Regulation

3-6 units

from

- BIOCHEM 3A03 - Biochemical Research Practice
- BIOCHEM 3LA3 - Advanced Biochemistry Techniques
- BIOCHEM 3R06 A/B S - Research Project

15 units

from

- the *Biochemistry Course List* (See *Program Note 4* above.)

3 units

- STATS 2B03 - Statistical Methods for Science

3-6 units

- Electives

#### LEVEL IV: 30 UNITS

3 units

- BIOCHEM 4E03 - Gene Regulation in Stem Cells and Development

9 units

from

- the *Biochemistry Course List* (See *Program Note 4* above.)

12-15 units

from

- Levels III, IV Biochemistry, Biology, Chemical Biology, Chemistry, Molecular Biology courses
- HTHSCI 3I03 - Introductory Immunology
- HTHSCI 3K03 - Introductory Virology
- HTHSCI 4I13 - Advanced Concepts in Immunology
- HTHSCI 4O03 - Principles of Virus Pathogenesis

which must include one of:

- BIOCHEM 4F09 A/B - Senior Thesis
- BIOCHEM 4T15 A/B - Senior Thesis
- BIOCHEM 4Z03 - Senior Project

(See *Program Note 2* above.)

3-6 units

- Electives

## HONOURS BIOCHEMISTRY - BIOMEDICAL RESEARCH SPECIALIZATION CO-OP (B.SC.)

### ADMISSION

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline and completion of Level II Honours Biochemistry with a Grade Point Average of at least 5.0 and completion of the following courses:

#### 12 UNITS

- BIOCHEM 2B03 - Nucleic Acid Structure and Function
- BIOCHEM 2BB3 - Protein Structure and Enzyme Function
- BIOCHEM 2L06 A/B - Inquiry in Biochemical Techniques

#### 3 UNITS

- BIOLOGY 2C03 - Genetics

#### 3 UNITS

from

- the *Biochemistry Course List* (See *Program Note 6* below.)

#### 6 UNITS

- CHEM 20A3 - Organic Chemistry I
- CHEM 20B3 - Organic Chemistry II

### PROGRAM NOTES

- This is a five-level (year) co-op program which includes two eight-month work terms which must be spent in biochemistry related placements.
- Students must be registered full-time and take a full academic workload, as prescribed by Level and Term.
- Students are required to complete SCIENCE 2C00 and SCIENCE 3C00 before the first work placement and are strongly recommended to complete SCIENCE 2C00 in Level II.
- There are Level II and III prerequisites for many Level III and IV courses. The prerequisites should be considered when choosing Level II and III courses.
- Completion of one of BIOCHEM 4F09 A/B, 4T15 A/B or 4Z03 is required in Level IV.
- Both CHEMBIO 2A03 and 2P03 are highly recommended for students interested in pursuing an undergraduate thesis or graduate studies in biophysical chemistry.

### BIOCHEMISTRY COURSE LIST

- ANTHROP 2U03 - Plagues and People
- ANTHROP 3BD3 - The Black Death
- BIOCHEM 3BP3 - Practical Bioinformatics in the Genomics Era
- BIOCHEM 3EE3 - Research Advances in Cell Biology and Biochemistry
- BIOCHEM 3H03 - Clinical Biochemistry
- BIOCHEM 3LA3 - Advanced Biochemistry Techniques
- BIOCHEM 3MI3 - Microbial Interactions
- BIOCHEM 3X03

- BIOCHEM 3Y03
- BIOCHEM 3Z03 - Structural Determination and Analysis of Macromolecules
- BIOCHEM 4EA3
- BIOCHEM 4H03 - Biotechnology and Drug Discovery
- BIOCHEM 4J03 - Immunological Principles in Practice
- BIOCHEM 4M03 - Cellular and Integrated Metabolism
- BIOCHEM 4N03 - Molecular Membrane Biology
- BIOCHEM 4Q03 - Biochemical Pharmacology
- BIOCHEM 4S03 - Introduction to Molecular Biophysics
- BIOCHEM 4Y03
- BIOLOGY 2B03 - Cell Biology
- BIOLOGY 2EE3 - Introduction to Microbiology and Biotechnology
- BIOMEDDC 2C03 - Exploring Careers in Biomedical Sciences
- CHEM 2A03 - Quantitative Chemical Analysis
- CHEM 2AA3
- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry
- CHEMBIO 2P03 - Physical Chemistry Tools for Chemical Biology
- CHEMBIO 3OA3 - Organic Mechanistic Tools for Chemical Biology
- MOLBIOL 3003 - Microbial Genetics

**REQUIREMENTS**

120 units total (Levels I to V), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**30 units

- Completed prior to admission to the program

**LEVEL II: 30 UNITS**30 units

Completion of Level II Honours Biochemistry, including completion of:

- SCIENCE 2C00 - Skills for Career Success in Science

(See *Program Note 3* above.)

**LEVEL III**

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:**3 units**

- STATS 2B03 - Statistical Methods for Science

**3 units**

- BIOCHEM 3D03 - Metabolism and Regulation

**3 units**

from

- Level III, IV Biochemistry, Biology, Chemical Biology, Chemistry, Molecular Biology courses
- HTHSCI 3I03 - Introductory Immunology
- HTHSCI 3K03 - Introductory Virology
- HTHSCI 4I13 - Advanced Concepts in Immunology
- HTHSCI 4003 - Principles of Virus Pathogenesis

**3 units**

from

- the *Biochemistry Course List* (See *Program Note 6* above.)

**3 units**

- Electives

**2 courses**

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

**1 course**

- SCIENCE 3WTO - Science Co-op Work Term

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 3WTO - Science Co-op Work Term

**LEVEL IV**

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:**3 units**

- BIOCHEM 4E03 - Gene Regulation in Stem Cells and Development

**9 units**

from

- the *Biochemistry Course List* (See *Program Note 6* above.)

**12-15 units**

from

- Levels III, IV Biochemistry, Biology, Chemical Biology, Chemistry, Molecular Biology courses
- HTHSCI 3I03 - Introductory Immunology
- HTHSCI 3K03 - Introductory Virology
- HTHSCI 4I13 - Advanced Concepts in Immunology
- HTHSCI 4003 - Principles of Virus Pathogenesis

which must include one of:

- BIOCHEM 4F09 A/B - Senior Thesis
- BIOCHEM 4T15 A/B - Senior Thesis
- BIOCHEM 4Z03 - Senior Project

(See *Program Note 5* above.)

**3-6 units**

- Electives

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 4WTO - Science Co-op Work Term

**LEVEL V**

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

**1 course**

- SCIENCE 5WTO - Science Co-op Work Term

Winter Term: 15 units:**6 units**

from

- the *Biochemistry Course List* (See *Program Note 6* above.)

**6 units**

- Levels III, IV Biochemistry, Biology, Chemical Biology, Chemistry, Molecular Biology courses
- HTHSCI 3I03 - Introductory Immunology
- HTHSCI 3K03 - Introductory Virology
- HTHSCI 4I13 - Advanced Concepts in Immunology
- HTHSCI 4003 - Principles of Virus Pathogenesis

**3 units**

- Electives

**CO-OP PROGRAM CHART**

	<b>FALL TERM (September to December)</b>	<b>WINTER TERM (January to April)</b>	<b>SPRING/ SUMMER TERM (May to August)</b>

<b>Level III</b>	15 units from Academic Level III and SCIENCE 2C00 (if not completed) and SCIENCE 3C00	Work Term SCIENCE 3WTO	Work Term SCIENCE 3WTO
<b>Level IV</b>	30-31 units from Academic Levels III and IV		Work Term SCIENCE 4WTO
<b>Level V</b>	Work Term SCIENCE 5WTO	15 units from Academic Level IV	

## Minor(s):

### MINOR IN BIOCHEMISTRY

#### NOTES

- Students who have already completed CHEM 2BA3 and 2BB3 may substitute these courses for CHEM 20A3 and 20B3.
- ISCI 1A24 A/B is a substitution for CHEM 1A03 and 1AA3.
- ISCI 2A18 A/B is a substitution for 3 units of Level II Biochemistry toward the Minor in Biochemistry.
- In order to obtain a Minor in Biochemistry at least 12 units (above Level I) must be elective to degree.

#### REQUIREMENTS

24 units total

#### 6 UNITS

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II

(See *Note 2* above.)

#### 6 UNITS

- CHEM 20A3 - Organic Chemistry I
- CHEM 20B3 - Organic Chemistry II

(See *Note 1* above.)

#### 6 UNITS

from

- BIOCHEM 2B03 - Nucleic Acid Structure and Function
- BIOCHEM 2BB3 - Protein Structure and Enzyme Function
- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- BIOCHEM 3D03 - Metabolism and Regulation
- BIOCHEM 3G03 - Proteins and Nucleic Acids
- HTHSCI 2E03 - Inquiry II: Biochemistry

(See *Note 3* above.)

#### 6 UNITS

- Levels III, IV Biochemistry

## Department of Biology

<http://www.biology.mcmaster.ca>

Faculty as of January 15, 2020

#### CHAIR

**Marie Elliot**

#### ASSOCIATE CHAIRS

**Rosa da Silva** (*Undergraduate*)

**Jianping Xu** (*Graduate*)

#### UNIVERSITY SCHOLAR

**Joanna Wilson** (2019-2023)

#### PROFESSORS

**Robert Baker**/B.Sc., M.Sc. (*Guelph*), Ph.D. (*Alberta*)

**André Bédard**/B.Sc. (*Montreal*), Ph.D. (*McGill*)

**Ben Bolker**/(*Mathematics and Statistics*) B.S. (*Yale*), Ph.D. (*Cambridge*)

**Robin K. Cameron**/B.Sc. (*Waterloo*), Ph.D. (*McGill*)

**Ana Campos**/B.Sc., M.Sc. (*Rio de Janeiro*), Ph.D. (*Brandeis*)

**Patricia Chow-Fraser**/B.Sc., M.Sc. (*Waterloo*), Ph.D. (*Toronto*)

**Juliet M. Daniel**/B.Sc. (*Queen's*), Ph.D. (*British Columbia*)

**Susan A. Dudley**/B.Sc., M.Sc. (*McGill*), Ph.D. (*Chicago*)

**Jonathan Dushoff**/B.Sc. (*Pennsylvania*), Ph.D. (*Princeton*)

**Marie Elliot**/B.Sc., Ph.D. (*Alberta*)

**Ben Evans**/B.S. (*Tufts*), M.S., M.Phil., Ph.D. (*Columbia*)

**Turlough M. Finan**/B.Sc., M.Sc. (*Galway*), Ph.D. (*Guelph*)

**G. Brian Golding**/B.Sc. (*Dalhousie*), Ph.D. (*Alberta*)

**Bhagwati Gupta**/B.Sc. (*Banaras Hindu*), M.Sc. (*Jawaharlal Nehru*), Ph.D. (*TATA Institute*)

**Suleiman A. Igdoura**/B.Sc. (*Victoria*), M.Sc. (*Western Ontario*), Ph.D. (*McGill*)

**J. Roger Jacobs**/B.Sc. (*Calgary*), M.Sc., Ph.D. (*Toronto*)

**Karen Kidd**/B.Sc. (*Guelph*), Ph.D. (*Alberta*)

**Jurek Kolasa**/M.Sc., Ph.D. (*Poznan*)

**Grant B. McClelland**/B.Sc. (*Ottawa*), Ph.D. (*British Columbia*)

**Carmel E. Mothersill**/B.Sc., Ph.D. (*University College Dublin*)/Senior Canada Research Chair

**Michael J. O'Donnell**/B.Sc., Ph.D. (*Toronto*)

**James S. Quinn**/B.Sc. (*Queen's*), M.Sc. (*Brock*), Ph.D. (*Oklahoma*)

**C. David Rollo**/B.Sc., M.Sc. (*Guelph*), Ph.D. (*British Columbia*)

**Herbert E. Schellhorn**/B.Sc., M.Sc. (*Guelph*), Ph.D. (*North Carolina*)

**Colin B. Seymour**/DCR(RT) (*Guy's Hospital*), B.L. (*King's Inn*), Ph.D. (*Trinity College Dublin*)

**Rama S. Singh**/B.Sc. (*Agra*), M.Sc. (*Kanpur*), Ph.D. (*California-Davis*)

**Elizabeth A. Weretilnyk**/B.Sc., Ph.D. (*Alberta*)

**Joanna Wilson**/B.Sc. (*McMaster*), M.Sc. (*Victoria*), Ph.D. (*MIT/Woods Hole Oceanographic Institution*)

**Jianping Xu**/B.Sc. (*Jiangxi*), M.Sc. (*Nanjing and Toronto*), Ph.D. (*Toronto*)

**Xu-Dong Zhu**/B.Sc. (*Nanjing*), M.Sc. (*Regina*), Ph.D. (*Toronto*)

#### ADJUNCT PROFESSORS

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**Thomas A. Edge**/B.Sc. (*Guelph*), M.Sc. (*Ottawa*), Ph.D. (*Carleton*)

**Kelly Munkittrick**/B.Sc., M.Sc. (*Guelph*), Ph.D. (*Waterloo*)

**James S. Pringle**/A.B. (*Dartmouth*), M.S. (*New Hampshire*), Ph.D. (*Tennessee*)

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**Lovaya Kajiura**/B.Sc., M.Sc., Ph.D. (*McMaster*)

**Graham Scott**/B.Sc. (*McMaster*), M.Sc., Ph.D. (*British Columbia*)/Canada Research Chair

**Jonathon Stone**/B.Sc., M.Sc., Ph.D. (*Toronto*)/SHARCNet Chair in Computational Biology/Associate Director, Origins Institute

#### ADJUNCT ASSOCIATE PROFESSORS

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**Patricia Gillis**/B.Sc., M.Sc. (*Guelph*), Ph.D. (*Waterloo*)

**Ethan Paschos**/Ph.D. (*Munich*)

#### ASSISTANT PROFESSOR

**Rosa da Silva**/B.Sc., Ph.D. (*Toronto*)

#### ADJUNCT ASSISTANT PROFESSORS

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**Erik J.S. Emilson**/B.Sc. (*Guelph*), M.Sc., Ph.D. (*Laurentian*)

**David Liscombe**/B.Sc. (*McMaster*), Ph.D. (*University of Calgary*)

**Jonathan Midwood**/B.Sc., Ph.D. (*McMaster*)



**Ze-Chun Yuan**/B.Sc. (*Henan*), M.Sc., Ph.D. (*McMaster*)

#### ASSOCIATE MEMBERS

**Sigal Balshine**/(*Psychology, Neuroscience & Behaviour*) B.Sc. (*Toronto*), Ph.D. (*Cambridge*)/Canada Research Chair

**Kimberley DeJ**/(*Interdisciplinary Science*) B.Sc. (*Toronto*), Ph.D. (*John Hopkins*)

**Reuven Dukas**/(*Psychology, Neuroscience & Behaviour*) B.Sc. (*Jerusalem*), Ph.D. (*North Carolina State*)

**David Earn**/(*Mathematics and Statistics*) B.Sc., M.Sc. (*Toronto*), Ph.D. (*Cambridge*)

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**Jonathan N. Pruitt**/(*Psychology, Neuroscience & Behaviour*) B.A. (*South Florida*), Ph.D. (*Tennessee*)/Canada 150 Research Chair

**Elyanne Ratcliffe**/(*Pediatrics*) B.Arts Sc., M.D. (*McMaster*), F.R.C.P.C.

**Angela Scott**/(*Pathology*) B.Sc., B.A., Ph.D. (*Saskatchewan*)

**J. Michael Waddington**/(*Earth, Environment & Society*) B.Sc. (*McMaster*), M.Sc., Ph.D. (*York*)

**Eva S. Werstiuik**/(*Medicine*) B.Sc., Ph.D. (*London, U.K.*)

#### NOTES APPLICABLE TO ALL HONOURS BIOLOGY PROGRAMS

- The department offers the following Honours programs:
- Honours Biology
- Honours Biology - Discovery Sub-Plan
- Honours Biology (Physiology)
- Honours Biology and Environmental Sciences
- Honours Biology and Psychology, Neuroscience & Behaviour
- Honours Biology and Mathematics
- Honours Molecular Biology and Genetics
- Honours Molecular Biology and Genetics Co-op (entry at Level III)

As well, Honours Neuroscience is offered jointly with the Department of Psychology, Neuroscience & Behaviour. (See *Department of Psychology, Neuroscience & Behaviour* section of the Calendar for program details.)

All options are suitable for students wishing to pursue graduate studies in Biology.

- Transfer between programs is possible, subject to satisfying the admission requirements and availability of space.
- There are Level II and III prerequisites for many Level III and IV courses. The prerequisites should be considered when choosing Level II and III courses.
- Students wishing to include more mathematical statistics may replace STATS 2B03 with 2D03, 2MB3. In this case, students are advised to complete MATH 1AA3 or 1LT3 in Level I.
- Students considering graduate studies in Biology are recommended to complete BIOLOGY 2L03 (or 2L06 A/B) and either BIOLOGY 4C12 A/B S or 4F06 A/B S.

#### B.SC. THREE-LEVEL DEGREE

A three-level program with a general Life Sciences orientation is available through the B.Sc. in Life Sciences.

## Bachelor of Science (Honours)

### HONOURS BIOLOGY (B.SC.)

#### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 5.0 including:

#### 6 UNITS

from the following courses, where an average of at least 6.0 (between the courses) is required

- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity

#### 6 UNITS

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II

#### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

#### 3 UNITS

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

#### 6 UNITS

from

- the Science I Course List

#### PROGRAM NOTES

- The Honours Biology program allows students to choose Biology courses which reflect their own interests. Students are encouraged to discuss their course selections with a Biology undergraduate counsellor.
- Students who wish to take Level III or IV Biochemistry or Chemistry courses should take both CHEM 20A3 and 20B3. Students are advised to check prerequisites carefully.
- Students must complete nine units from BIOLOGY 2A03, 2B03, 2D03, 2EE3, 2F03. Additional units from this list may be used towards the Biology course list requirement.
- Completion of STATS 2B03 by the end of Level III is required.
- Students interested in microbiology and biotechnology and especially those considering postgraduate studies in this area should take the following courses: BIOLOGY 2EE3, 4PP3, MOL BIOL 3CC3, 3O03, 3V03, 4P03.
- Students interested in biodiversity and especially those considering postgraduate studies in this area should take the following courses: BIOLOGY 2C03, 2D03, 2F03, 3DD3, 3ET3, 3FF3, 3PG3, 4AA3, ENVSOCTY 2GI3.

#### BIOLOGY COURSE LIST

- ANTHROP 2U03 - Plagues and People
- ANTHROP 3FA3 - Forensic Anthropology
- ARTSSCI 4CF3 - How Science Speaks to Power
- all Biology and Molecular Biology Level II, III and IV courses
- all Biochemistry courses for which the prerequisites are met
- BIOPHYS 2A03 - Biophysics of the Cell and Living Organisms
- BIOPHYS 3D03 - Origin of Life
- BIOPHYS 3G03 - Modelling Life
- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry
- CHEMBIO 2P03 - Physical Chemistry Tools for Chemical Biology
- CHEMBIO 3BM3 - Implanted Biomaterials
- CHEMBIO 3OA3 - Organic Mechanistic Tools for Chemical Biology
- CHEMBIO 4OA3 - Natural Products
- CHEMBIO 4OB3 - Medicinal Chemistry: Drug Design and Development

- EARTHSC 2B03
- EARTHSC 2C03
- EARTHSC 2E03 - Earth History
- EARTHSC 2E13
- EARTHSC 2G13
- EARTHSC 2Q03
- EARTHSC 2W03
- EARTHSC 3B03
- EARTHSC 3G13
- EARTHSC 4C03
- EARTHSC 4EA3
- EARTHSC 4FF3 - Topics of Field Research
- ENVIRSC 2B03 - Soils and the Environment
- ENVIRSC 2C03 - Surface Climate Processes and Environmental Interactions
- ENVIRSC 2Q03 - Introduction to Environmental Geochemistry
- ENVIRSC 2W03 - Physical Hydrology
- ENVIRSC 3B03 - Ecosystems and Global Change
- ENVIRSC 3MB3
- ENVIRSC 4C03 - Advanced Physical Climatology
- ENVIRSC 4EA3 - Environmental Assessment
- ENVIRSC 4GA3
- ENVSOCY 2E13 - Environment & Society: Challenges and Solutions
- ENVSOCY 2G13 - Geographic Information Systems
- ENVSOCY 3G13 - Advanced Raster GIS
- GEOG 2E13
- GEOG 2G13
- GEOG 3G13
- HTHSCI 3I03 - Introductory Immunology
- HTHSCI 3K03 - Introductory Virology
- HTHSCI 4I13 - Advanced Concepts in Immunology
- LIFESCI 2D03 - Behavioural Processes
- LIFESCI 3AA3 - Human Pathophysiology
- LIFESCI 3K03 - Neural Control of Human Movement
- MEDPHYS 4B03 - Radioactivity and Radiation Interactions
- MEDPHYS 4U03 - Radiation Biology
- NEUROSCI 3SN3 - Neural Circuits
- PSYCH 2E03 - Sensory Processes
- PSYCH 2GG3 - Learning, Measuring, and Shaping Behaviour
- PSYCH 2NF3 - Clinical Neuropsychology
- PSYCH 3A03 - Audition
- PSYCH 3F03 - Evolution and Human Behaviour
- PSYCH 3FA3 - The Neurobiology of Learning and Memory
- PSYCH 3SE3 - Comparative Social Evolution
- PSYCH 3SN3
- PSYCH 3T03 - Behavioural Ecology
- PSYCH 4R03 - Special Topics in Animal Behaviour
- PSYCH 4Y03
- SCIENCE 2P03 - Impactful Initiatives in Health

#### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

#### LEVELS II-IV: 90 UNITS

3 units

- BIOLOGY 2C03 - Genetics

3 units

- STATS 2B03 - Statistical Methods for Science

(See *Program Note 4* above.)

9 units

from

- BIOLOGY 2A03 - Integrative Physiology of Animals
- BIOLOGY 2B03 - Cell Biology
- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2EE3 - Introduction to Microbiology and Biotechnology
- BIOLOGY 2F03 - Fundamental and Applied Ecology

(See *Program Note 3* above.)

3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I
- CHEM 2OC3
- CHEM 2OG3 - Structure and Reactivity of Organic Molecules

15 units

from

- the *Biology Course List* (See *Program Note 3* above.)

18 units

from

- Levels III, IV Biology and Molecular Biology courses, which must include at least three units of Level IV

And one of:

- BIOLOGY 4C12 A/B S - Senior Thesis
- BIOLOGY 4F06 A/B S - Senior Project

OR

- Levels III, IV Biology and Molecular Biology courses, which must include at least six units of Level IV

39 units

- Electives

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## HONOURS BIOLOGY - DISCOVERY SUB-PLAN (B.SC.)

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### ADMISSION

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

#### 6 UNITS

from the following courses, where an average of at least 6.0 (between the courses) is required

- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity

#### 6 UNITS

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II

#### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

#### 3 UNITS

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

#### 6 UNITS

from

- the Science I Course List

### PROGRAM NOTES

- The Honours Biology - Discovery Sub-Plan program allows students to choose Biology courses which reflect their own interests and includes additional lab and/or field and research experience as compared to the Honours Biology program. Students are encouraged to discuss their course selections with a Biology undergraduate counsellor.

- Students who wish to take Level III or IV Biochemistry and Chemistry courses should take both CHEM 20A3 and 20B3. Students are advised to check prerequisites carefully.
- Students must complete nine units from BIOLOGY 2A03, 2B03, 2D03, 2EE3, 2F03. Additional units from this list may be used towards the Biology course list requirement.
- Completion of STATS 2B03 by the end of Level III is required.
- Students interested in microbiology and biotechnology and especially those considering postgraduate studies in this area should take the following courses: BIOLOGY 2EE3, 4PP3, MOL BIOL 3CC3, 3O03, 3V03, 4P03.
- Students interested in biodiversity and especially those considering postgraduate studies in this area should take the following courses: BIOLOGY 2C03, 2D03, 2F03, 3DD3, 3ET3, 3FF3, 3PG3, 4AA3, ENVSOCTY 2E13.
- Discovery Sub-Plan students are required to complete nine units from the list of lab and field offerings listed below, however, additional units are recommended. When completed, the additional units may be used towards the Level III and IV Biology and Molecular Biology program requirements.
- Discovery Sub-Plan students must complete one of BIOLOGY 4C12 A/B S or 4F06 A/B S. Students who have not obtained the minimum Grade Point Average as stated in the prerequisite, may request a requisite waiver from the Undergraduate Associate Chair. Students denied permission may not continue in the program and must apply to transfer to the Honours Biology program.

#### BIOLOGY COURSE LIST

- ANTHROP 2U03 - Plagues and People
- ANTHROP 3FA3 - Forensic Anthropology
- ARTSSCI 4CF3 - How Science Speaks to Power
- all Biology and Molecular Biology Level II, III and IV courses
- BIOPHYS 2A03 - Biophysics of the Cell and Living Organisms
- BIOPHYS 3D03 - Origin of Life
- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry
- CHEMBIO 2P03 - Physical Chemistry Tools for Chemical Biology
- CHEMBIO 3BM3 - Implanted Biomaterials
- CHEMBIO 3OA3 - Organic Mechanistic Tools for Chemical Biology
- CHEMBIO 4OA3 - Natural Products
- CHEMBIO 4OB3 - Medicinal Chemistry: Drug Design and Development
- EARTHSC 2B03
- EARTHSC 2C03
- EARTHSC 2E03 - Earth History
- EARTHSC 2E13
- EARTHSC 2GI3
- EARTHSC 2W03
- EARTHSC 3B03
- EARTHSCI 3GI3
- EARTHSCI 4C03
- EARTHSC 4EA3
- EARTHSC 4FF3 - Topics of Field Research
- ENVIRSC 2B03 - Soils and the Environment
- ENVIRSC 2C03 - Surface Climate Processes and Environmental Interactions
- ENVIRSC 2Q03 - Introduction to Environmental Geochemistry
- ENVIRSC 2W03 - Physical Hydrology
- ENVIRSC 3B03 - Ecosystems and Global Change
- ENVIRSC 3MB3
- ENVIRSC 4C03 - Advanced Physical Climatology
- ENVIRSC 4EA3 - Environmental Assessment
- ENVIRSC 4GA3
- ENVSOCTY 2E13 - Environment & Society: Challenges and Solutions

- ENVSOCTY 2GI3 - Geographic Information Systems
- ENVSOCTY 3GI3 - Advanced Raster GIS
- GEOG 2E13
- GEOG 2GI3
- GEOG 3GI3
- HTHSCI 3I03 - Introductory Immunology
- HTHSCI 3K03 - Introductory Virology
- HTHSCI 4I13 - Advanced Concepts in Immunology
- LIFESCI 2D03 - Behavioural Processes
- LIFESCI 3AA3 - Human Pathophysiology
- LIFESCI 3K03 - Neural Control of Human Movement
- MEDPHYS 4B03 - Radioactivity and Radiation Interactions
- MEDPHYS 4U03 - Radiation Biology
- NEUROSCI 3SN3 - Neural Circuits
- PSYCH 2E03 - Sensory Processes
- PSYCH 2GG3 - Learning, Measuring, and Shaping Behaviour
- PSYCH 2NF3 - Clinical Neuropsychology
- PSYCH 3A03 - Audition
- PSYCH 3F03 - Evolution and Human Behaviour
- PSYCH 3FA3 - The Neurobiology of Learning and Memory
- PSYCH 3SE3 - Comparative Social Evolution
- PSYCH 3SN3
- PSYCH 3T03 - Behavioural Ecology
- PSYCH 4R03 - Special Topics in Animal Behaviour
- PSYCH 4Y03
- SCIENCE 2P03 - Impactful Initiatives in Health

#### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

#### LEVELS II-IV: 90 UNITS

3 units

- BIOLOGY 2C03 - Genetics

3 units

- STATS 2B03 - Statistical Methods for Science

(See *Program Note 4* above.)

9 units

from

- BIOLOGY 2A03 - Integrative Physiology of Animals
- BIOLOGY 2B03 - Cell Biology
- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2EE3 - Introduction to Microbiology and Biotechnology
- BIOLOGY 2F03 - Fundamental and Applied Ecology

(See *Program Note 3* above.)

3 units

from

- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 20A3 - Organic Chemistry I
- CHEM 20C3
- CHEM 20G3 - Structure and Reactivity of Organic Molecules

12 units

from

- the *Biology Course List* (See *Program Notes 3* and *7* above.)

18 units

from

- Levels III, IV Biology and Molecular Biology courses

which must include one of

- BIOLOGY 4C09 A/B S
- BIOLOGY 4C12 A/B S - Senior Thesis
- BIOLOGY 4F06 A/B S - Senior Project

(See *Program Notes 7 and 8* above.)

3 units

from

- Level IV Biology and Molecular Biology courses

9 units

from the following list of lab and field placement offerings

- BIOLOGY 2L03 - Experimental Design in Biology
- BIOLOGY 2L06 A/B
- BIOLOGY 3B03 - Plant Physiology
- BIOLOGY 3IR3 A/B S - Independent Research Project
- BIOLOGY 3JJ3 - Field Methods In Ecology
- BIOLOGY 3MM3 - Invertebrate Form and Function
- BIOLOGY 3R03 - Field Biology I /BIOLOGY 3RF0 - Field Work I
- BIOLOGY 3U03 - Animal Physiology - Homeostasis
- BIOLOGY 3VV3 - Laboratory Methods in Molecular Biology
- BIOLOGY 3XL3 - Comparative Vertebrate Anatomy & Physiology
- BIOLOGY 4J03 - Field Biology II /BIOLOGY 4JF0 - Field Work II
- MOLBIOL 3D03 - Experimental Approaches in Cell Biology
- MOLBIOL 3M03 - Fundamental Concepts of Development
- MOLBIOL 3V03 - Techniques in Molecular Genetics

(See *Program Note 7* above.)

30 units

- Electives (See *Program Note 2* above.)

## HONOURS BIOLOGY - PHYSIOLOGY (B.SC.)

### ADMISSION NOTE

One of PHYSICS 1A03 or 1C03 is required for admission. Completion of PHYSICS 1AA3 or 1CC3 is also recommended.

### ADMISSION

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

#### 6 UNITS

from the following courses, where an average of at least 6.0 (between the courses) is required

- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity

#### 6 UNITS

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II

#### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

#### 3 UNITS

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

#### 6 UNITS

from

- the Science I Course List

### PROGRAM NOTES

- It is recommended that students take both PSYCH 1X03 and 1XX3 if they are interested in upper level Psychology courses.
- All students must take BIOLOGY 2A03 in Level II.
- Completion of BIOLOGY 4C12 A/B S or 4F06 A/B S is required in Level IV. Students who do not obtain the minimum Grade Point Average as stated in the prerequisite, may request a requisite waiver from the Undergraduate Associate Chair. Students denied permission may not

continue in the program and must apply to transfer to the Honours Biology program.

- Completion of STATS 2B03 by the end of Level III is required.
- Completion of BIOLOGY 3ZZ3 by the end of Level III is recommended.
- Students who previously completed KINESIOL 3Y03 may use these units toward the Physiology Course List requirement.
- Students are strongly encouraged to complete two of BIOLOGY 3XL3, 4T03, 4X03.

### PHYSIOLOGY COURSE LIST

- BIOCHEM 4M03 - Cellular and Integrated Metabolism
- BIOCHEM 4N03 - Molecular Membrane Biology
- BIOLOGY 2L03 - Experimental Design in Biology
- BIOLOGY 2L06 A/B
- BIOLOGY 3AA3 - Fundamental Concepts of Pharmacology
- BIOLOGY 3B03 - Plant Physiology
- BIOLOGY 3DD3 - Communities and Ecosystems
- BIOLOGY 3EP3 A/B S - Applied Biology Placement
- BIOLOGY 3FF3 - Evolution
- BIOLOGY 3IR3 A/B S - Independent Research Project
- BIOLOGY 3MM3 - Invertebrate Form and Function
- BIOLOGY 3R03 - Field Biology I
- BIOLOGY 3S03 - An Introduction to Bioinformatics
- BIOLOGY 3SS3 - Population Ecology
- BIOLOGY 3XL3 - Comparative Vertebrate Anatomy & Physiology
- BIOLOGY 4C12 A/B S - Senior Thesis
- BIOLOGY 4F06 A/B S - Senior Project
- BIOLOGY 4T03 - Molecular and Cellular Neuroscience
- BIOLOGY 4X03 - Environmental Physiology
- BIOPHYS 2A03 - Biophysics of the Cell and Living Organisms
- KINESIOL 2C03 - Neuromuscular Exercise Physiology
- KINESIOL 2CC3 - Cardiorespiratory and Metabolic Exercise Physiology
- KINESIOL 4C03 - Integrative Physiology of Human Performance
- KINESIOL 4CC3
- LIFESCI 3AA3 - Human Pathophysiology
- MEDPHYS 4B03 - Radioactivity and Radiation Interactions
- MOLBIOL 3M03 - Fundamental Concepts of Development
- NEUROSCI 3J03 - Visual Neuroscience
- NEUROSCI 3SN3 - Neural Circuits
- PSYCH 2E03 - Sensory Processes
- PSYCH 2NF3 - Clinical Neuropsychology
- PSYCH 3A03 - Audition
- PSYCH 3F03 - Evolution and Human Behaviour
- PSYCH 3FA3 - The Neurobiology of Learning and Memory
- PSYCH 3J03
- PSYCH 3SN3
- PSYCH 3T03 - Behavioural Ecology
- PSYCH 4Y03

### REQUIREMENTS

*120 units total (Levels I to IV), of which no more than 48 units may be Level I*

#### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

#### LEVELS II-IV: 90 UNITS

12 units

- BIOLOGY 2A03 - Integrative Physiology of Animals
- BIOLOGY 2B03 - Cell Biology
- BIOLOGY 2C03 - Genetics
- BIOLOGY 2F03 - Fundamental and Applied Ecology

(See *Program Note 2* above.)

6 units

- CHEM 20A3 - Organic Chemistry I



- CHEM 2OB3 - Organic Chemistry II

3 units

- STATS 2B03 - Statistical Methods for Science

(See *Program Note 4* above.)

3 units

- BIOCHEM 3G03 - Proteins and Nucleic Acids

12 units

- BIOLOGY 3P03 - Cell Physiology
- BIOLOGY 3U03 - Animal Physiology - Homeostasis
- BIOLOGY 3UU3 - Animal Physiology - Regulatory Systems
- BIOLOGY 3ZZ3 - Topics in Physiology

(See *Program Note 5* above.)

6 units

from

- the *Physiology Course List*

which must include at least one of:

- BIOLOGY 3XL3 - Comparative Vertebrate Anatomy & Physiology
- BIOLOGY 4T03 - Molecular and Cellular Neuroscience
- BIOLOGY 4X03 - Environmental Physiology

(See *Program Note 7* above.)

27 units

from

- the *Physiology Course List*

which must include one of:

- BIOLOGY 4C12 A/B S - Senior Thesis
- BIOLOGY 4F06 A/B S - Senior Project

(See *Program Notes 3* and *6* above.)

21 units

- Electives

## HONOURS BIOLOGY AND ENVIRONMENTAL SCIENCES (B.Sc.)

**Effective September 2021, this program will be renamed Honours Biodiversity and Environmental Sciences (B.Sc.).**

**Students who enrolled prior to September 2021 will be given the choice to remain in Honours Biology and Environmental Sciences (B.Sc.) or transfer into Honours Biodiversity and Environmental Sciences (B.Sc.).**

Honours Biodiversity and Environmental Sciences is a flexible program that enables students to obtain an understanding of how a variety of organisms are able to adapt to their changing environments at the community and ecosystem levels. Offered jointly by the Department of Biology and the School of Earth, Environment & Society, this program enables students to select courses according to their interests; to develop broad knowledge, and understanding of the linkages between biodiversity and environmental processes; and to apply these to questions of biological, biomedical, or environmental interests. This program prepares students for graduate studies, careers in industry or academic research laboratories.

### ADMISSION NOTE

Students are strongly recommended to take CHEM 1A03 and 1AA3 in Level I.

### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 5.0 including:

### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

### 6 UNITS

from the following courses, where an average of at least 6.0 (between the courses) is required

- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity

### 3 UNITS

from the following courses, with a grade of at least C+

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03

### 12 UNITS

from

- ASTRON 1F03 - Introduction to Astronomy and Astrophysics
- BIOPHYS 1S03 - Biophysics of Movement and the Senses: From Microbes to Moose
- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II
- COMPSCI 1JC3 - Introduction to Computational Thinking
- COMPSCI 1MD3 - Introduction to Programming
- COMPSCI 1XA3
- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03
- ENVSOCY 1HA3 - Society, Culture and Environment
- ENVSOCY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3
- LIFESCI 1D03 - Medical Imaging Physics
- LIFESCI 1E03
- MATH 1AA3 - Calculus For Science II
- MATH 1B03 - Linear Algebra I
- MATH 1LT3 - Calculus for the Life Sciences II
- MEDPHYS 1E03
- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1AA3 - Introduction To Modern Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences
- PSYCH 1F03 - Survey of Psychology
- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour
- SCIENCE 1A03 - Investigating Science: Opportunities & Experiences

(See *Admission Note* above.)

### PROGRAM NOTES

- The Biology and Environmental Sciences program allows students (especially those focused on ecology and conservation) to choose Biology and Environmental Science courses that reflect their own interests. Students are strongly encouraged to discuss their course selections with an academic advisor in the Department of Biology or the School of Earth, Environment & Society.
- Prerequisites for upper year courses must be checked carefully when selecting courses in Level II. Biochemistry and Organic Chemistry prerequisites exist in many upper year biology courses. Students are encouraged to take six units from CHEM 2E03, 2OA3, 2OB3, 2OC3, 2OD3, 2OG3.
- Students interested in completing a thesis may take one of BIOLOGY 4C12 A/B S, 4F06 A/B S or EARTHSC 4MT6 A/B in Level IV, subject to meeting the prerequisites. Students considering graduate studies are recommended to complete a thesis course.
- Only one of BIOLOGY 4C12 A/B S, 4F06 A/B S or EARTHSC 4MT6 A/B may be completed as part of the program requirements. Completion

of EARTHSC 3RD3 in Level III is required preparation for EARTHSC 4MT6 A/B.

#### COURSE LIST 1

- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- BIOCHEM 3G03 - Proteins and Nucleic Acids
- BIOLOGY 2A03 - Integrative Physiology of Animals
- BIOLOGY 2B03 - Cell Biology
- BIOLOGY 2C03 - Genetics
- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2EE3 - Introduction to Microbiology and Biotechnology
- BIOLOGY 2F03 - Fundamental and Applied Ecology
- BIOLOGY 3ET3 - Ecotoxicology
- CHEM 2A03 - Quantitative Chemical Analysis
- CHEM 2AA3
- CHEM 2OA3 - Organic Chemistry I
- CHEM 2OB3 - Organic Chemistry II
- CHEM 2OC3
- CHEM 2OD3 - Synthesis and Function of Organic Molecules
- CHEM 2OG3 - Structure and Reactivity of Organic Molecules
- CHEM 2P03 - Applications of Physical Chemistry
- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry
- CHEMBIO 2P03 - Physical Chemistry Tools for Chemical Biology
- LIFESCI 2X03 - Environmental Change and Human Health
- PSYCH 3T03 - Behavioural Ecology

#### COURSE LIST 2

- EARTHSC 2E03 - Earth History
- EARTHSC 2FE3 - Introduction to Field Methods in Earth Sciences
- EARTHSC 3CC3 - Earth's Changing Climate
- EARTHSC 3E03 - Clastic Sedimentary Environments
- EARTHSC 3RD3 - Research Design and Dissemination in Earth and Environmental Sciences
- EARTHSC 3W03 - Physical Hydrogeology
- EARTHSC 4CC3 - Stable Isotopes in Earth and Environmental Systems
- EARTHSC 4FF3 - Topics of Field Research
- EARTHSC 4G03 - Glacial Sediments and Environments
- EARTHSC 4MI3
- EARTHSC 4MT6 A/B - Senior Thesis
- EARTHSC 4P03 - Coral Reef Environments
- EARTHSCI 4VV3
- EARTHSC 4WB3 - Contaminant Hydrogeology
- ENVIRSC 2B03 - Soils and the Environment
- ENVIRSC 2C03 - Surface Climate Processes and Environmental Interactions
- ENVIRSC 2E03
- ENVIRSC 2EI3
- ENVIRSC 2GI3
- ENVIRSC 2L03
- ENVIRSC 2Q03 - Introduction to Environmental Geochemistry
- ENVIRSC 2W03 - Physical Hydrology
- ENVIRSC 3B03 - Ecosystems and Global Change
- ENVIRSC 3CC3
- ENVIRSC 3E03
- ENVIRSC 3EE3
- ENVIRSC 3MB3
- ENVIRSC 3ME3 - Environmental Field Camp
- ENVIRSC 3O03 - Contaminant Fate and Transport
- ENVIRSC 3SR3
- ENVIRSC 3U03 - Environmental Systems Modelling
- ENVIRSC 3W03
- ENVIRSC 4C03 - Advanced Physical Climatology
- ENVIRSC 4CC3

- ENVIRSC 4FF3
- ENVIRSC 4G03
- ENVIRSC 4GA3
- ENVIRSC 4HH3
- ENVIRSC 4MI3 - Independent Study in Earth and Environmental Sciences
- ENVIRSC 4N03 - Global Biogeochemical Cycles
- ENVIRSC 4W03 - Hydrologic Modelling
- ENVIRSC 4WB3
- ENVSOCTY 2EI3 - Environment & Society: Challenges and Solutions
- ENVSOCTY 2GI3 - Geographic Information Systems
- ENVSOCTY 3EE3 - Energy and Society
- ENVSOCTY 3GI3 - Advanced Raster GIS
- ENVSOCTY 3GV3 - Advanced Vector GIS
- ENVSOCTY 3MB3 - Data Analysis
- ENVSOCTY 3SR3 - Remote Sensing
- ENVSOCTY 4GA3 - Applied Spatial Statistics
- ENVSOCTY 4HH3 - Environment and Health
- GEOG 2EI3
- GEOG 2GI3
- GEOG 3EE3
- GEOG 3GI3
- GEOG 3GV3
- GEOG 3MB3
- GEOG 3DT3
- GEOG 4GA3
- GEOG 4HH3

#### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

##### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

##### LEVEL II: 30 UNITS

9 units

from

- BIOLOGY 2F03 - Fundamental and Applied Ecology
- ENVIRSC 2W03 - Physical Hydrology
- ENVSOCTY 2GI3 - Geographic Information Systems
- GEOG 2GI3

3 units

from

- BIOLOGY 2C03 - Genetics
- LIFESCI 2G03 - Genes, Genomes and Society

3 units

from

- ENVSOCTY 3MB3 - Data Analysis
- GEOG 3MB3
- STATS 2B03 - Statistical Methods for Science

3 units

from

- BIOLOGY 2B03 - Cell Biology
- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2EE3 - Introduction to Microbiology and Biotechnology
- LIFESCI 2X03 - Environmental Change and Human Health

3 units

from

- EARTHSC 2E03 - Earth History
- ENVIRSC 2B03 - Soils and the Environment
- ENVIRSC 2C03 - Surface Climate Processes and Environmental Interactions
- ENVIRSC 2Q03 - Introduction to Environmental Geochemistry

9 units

- Electives

**LEVEL III: 30 UNITS**6 units

from

- BIOLOGY 3E13 - Ecological Indicators
- BIOLOGY 3ET3 - Ecotoxicology
- BIOLOGY 3JJ3 - Field Methods In Ecology
- ENVIRSC 3B03 - Ecosystems and Global Change
- ENVIRSC 3ME3 - Environmental Field Camp

6 units

from

- BIOLOGY 3DD3 - Communities and Ecosystems
- BIOLOGY 3E13 - Ecological Indicators
- BIOLOGY 3ET3 - Ecotoxicology
- BIOLOGY 3JJ3 - Field Methods In Ecology
- BIOLOGY 3R03 - Field Biology I
- BIOLOGY 3SS3 - Population Ecology
- ENVIRSC 3B03 - Ecosystems and Global Change

6 units

from

- EARTHSC 3RD3 - Research Design and Dissemination in Earth and Environmental Sciences
- EARTHSC 3W03 - Physical Hydrogeology
- ENVIRSC 3O03 - Contaminant Fate and Transport
- ENVIRSC 3U03 - Environmental Systems Modelling
- ENVSOCY 3GI3 - Advanced Raster GIS
- ENVSOCY 3SR3 - Remote Sensing
- GEOG 3HI3
- GEOG 3SR3

12 units

- Electives

**LEVEL IV: 30 UNITS**6 units

from

- *Course List 1 or Course List 2*

6 units

- Levels III, IV courses from *Course List 2*

6 units

- Levels III, IV Biology, Molecular Biology courses

3 units

- ENVIRSC 4EA3 - Environmental Assessment

9 units

- Electives

**REQUIREMENTS FOR STUDENTS WHO ENTERED IN SEPTEMBER 2018***120 units total (Levels I to IV), of which no more than 48 units may be Level I***LEVEL I: 30 UNITS**30 units(See *Admission* above.)**LEVEL II: 30 UNITS**9 units

from

- BIOLOGY 2F03 - Fundamental and Applied Ecology
- ENVIRSC 2W03 - Physical Hydrology
- ENVSOCY 2GI3 - Geographic Information Systems
- GEOG 2GI3

3 units

from

- BIOLOGY 2C03 - Genetics
- LIFESCI 2G03 - Genes, Genomes and Society

3 units

from

- ENVSOCY 3MB3 - Data Analysis
- GEOG 3MB3
- STATS 2B03 - Statistical Methods for Science

3 units

from

- BIOLOGY 2B03 - Cell Biology
- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2EE3 - Introduction to Microbiology and Biotechnology
- LIFESCI 2X03 - Environmental Change and Human Health

3 units

from

- EARTHSC 2E03 - Earth History
- ENVIRSC 2B03 - Soils and the Environment
- ENVIRSC 2C03 - Surface Climate Processes and Environmental Interactions
- ENVIRSC 2Q03 - Introduction to Environmental Geochemistry

9 units

- Electives

**LEVELS III-IV: 60 UNITS**6 units

from

- *Course List 1 or Course List 2*

21 units

- Levels III, IV courses from *Course List 2*

18 units

- Levels III, IV Biology, Molecular Biology courses

3 units

- ENVIRSC 4EA3 - Environmental Assessment

12 units

- Electives

**NOTE**

Students who entered the program prior to September 2018 may refer to their Academic Advisement report or contact an Academic Advisor in the Office of the Associate Dean of Science (Academic) for program requirements.

**HONOURS BIOLOGY AND MATHEMATICS (B.SC.)****ADMISSION NOTE**

MATH 1B03 must be completed by the end of Level II. Completion in Level I is strongly recommended.

**ADMISSION**

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

**6 UNITS**

from the following courses, where an average of at least 6.0 (between the courses) is required

- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity

**3 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1X03 - Calculus for Math and Stats I
- MATH 1ZA3 - Engineering Mathematics I

**3 UNITS**

from the following courses, with a grade of at least C+

- MATH 1AA3 - Calculus For Science II
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1XX3 - Calculus for Math and Stats II

- MATH 1ZB3 - Engineering Mathematics II-A

### PROGRAM NOTES

- Students may seek academic advising for this program in either the Department of Mathematics and Statistics or the Department of Biology.
- Completion of MATH 1B03 (or 1ZC3) is required by the end of Level II. Completion in Level I is strongly recommended.
- While not required for this program, PHYSICS 1A03, 1C03, CHEM 1A03, 1AA3 and one of CHEM 2BA3, 2E03, 2OA3, CHEMBIO 2OA3 are prerequisites for many courses in Biology.
- MATH 2C03, 2R03, 3F03 are prerequisites for MATH 4MB3.
- Many of the courses in the *Course List* have additional prerequisites. Students are advised to check the Course Listings section of this Calendar.
- Students considering graduate studies in Biology are recommended to complete BIOLOGY 4C12 A/B S or 4F06 A/B S. Students taking BIOLOGY 4C12 A/B S or 4F06 A/B S may be supervised by faculty from the Department of Mathematics & Statistics as long as they are co-supervised by faculty from the Department of Biology.
- Students considering graduate studies in Mathematics are strongly recommended to complete MATH 3NA3, 3X03, 4A03, 4GR3 and 4MB3.

### COURSE LIST

- ANTHROP 3C03 - Health and Environment: Anthropological Approaches
- ANTHROP 3HI3 - Medical Anthropology
- all Biology and Molecular Biology Level II, III and IV courses
- BIOPHYS 3D03 - Origin of Life
- BIOPHYS 3G03 - Modelling Life
- PSYCH 3T03 - Behavioural Ecology
- PSYCH 4KK3 - Bayesian Inference
- PSYCH 4R03 - Special Topics in Animal Behaviour

### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

#### LEVELS II-IV: 90 UNITS

3 units

- BIOLOGY 2C03 - Genetics

6 units

from

- BIOLOGY 2A03 - Integrative Physiology of Animals
- BIOLOGY 2B03 - Cell Biology
- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2EE3 - Introduction to Microbiology and Biotechnology
- BIOLOGY 2F03 - Fundamental and Applied Ecology

3 units

from

- BIOLOGY 3FF3 - Evolution
- BIOLOGY 3S03 - An Introduction to Bioinformatics
- BIOLOGY 3SS3 - Population Ecology

0-3 units

from the following courses, if not completed in Level I

- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

(See *Program Note 2* above.)

9 units

- MATH 2X03 - Advanced Calculus I
- STATS 2D03 - Introduction to Probability
- STATS 2MB3 - Statistical Methods and Applications

6 units

from

- MATH 2C03 - Introduction to Differential Equations

- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II
- MATH 2T03
- MATH 2XX3 - Advanced Calculus II

(See *Program Notes 4 and 7* above.)

3 units

- MATH 3MB3 - Introduction to Modelling

3 units

from

- MATH 3A03 - Real Analysis I
- MATH 3DC3 - Discrete Dynamical Systems and Chaos
- MATH 3F03 - Ordinary Differential Equations
- MATH 3FF3 - Partial Differential Equations
- MATH 3IA3 - Introduction to Analysis
- MATH 3NA3 - Numerical Linear Algebra
- MATH 3Q03
- MATH 3U03 - Combinatorics
- MATH 3V03 - Graph Theory
- MATH 3X03 - Complex Analysis I
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3D03 - Mathematical Statistics
- STATS 3U03\* - Stochastic Processes

(See *Program Note 7* above.)

3 units

from

- COMPSCI 1MD3 - Introduction to Programming
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 2G03 - Scientific Computing

9 units

from

- *Course List*
- (See *Program Note 5* above.)

12 units

from

- Levels III, IV Mathematics, Statistics, Biology, Molecular Biology courses

which must include one of

- BIOLOGY 4C09 A/B S
- BIOLOGY 4C12 A/B S - Senior Thesis
- BIOLOGY 4F06 A/B S - Senior Project
- MATH 4MB3 - Mathematical Biology

(See *Program Notes 4, 6 and 7* above.)

30-33 units

- Electives

## HONOURS BIOLOGY AND PHARMACOLOGY CO-OP (B.SC.)

Effective September 2018, the Honours Biology and Pharmacology Co-op program is administered by the Faculty of Health Sciences. Students interested in applying to this program should see the Honours Biology and Pharmacology program (B.H.Sc.) in the Faculty of Health Sciences section of the Calendar. Students who are currently registered in the program, seeking the B.Sc. (Hons) degree, should refer to the 2017-2018 Undergraduate Calendar or their personal Advisement Reports for program requirements. Such students will graduate at a Faculty of Science convocation.

## HONOURS BIOLOGY AND PSYCHOLOGY, NEUROSCIENCE & BEHAVIOUR (B.SC.)

### ADMISSION NOTES

- One of PHYSICS 1A03 or 1C03 is required for admission.
- Either PSYCH 1FF3 or 1XX3 is required for admission, however PSYCH 1XX3 is recommended.



- Completion of either PSYCH 1F03 or 1X03 is required by the end of Level II, however, PSYCH 1X03 is recommended in Level I.

### ADMISSION

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

#### 6 UNITS

from the following courses, where an average of 7.0 (between the courses) is required

- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity

#### 3 UNITS

from the following courses, with a grade of at least B-

- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour

(See *Admission Note 2* above.)

#### 6 UNITS

from the following courses, where an average of at least 7.0 (between the courses) is required

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II

#### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

#### 3 UNITS

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

#### 3 UNITS

from

- the Science I Course List (See *Admission Note 3* above.)

### PROGRAM NOTES

- Academic advising for this program is shared by the Departments of Biology and Psychology, Neuroscience & Behaviour. Information may be obtained through the Undergraduate Advisors in the Life Sciences Building, Room 118 or Psychology Building, Room 109.
- The Department of Psychology, Neuroscience & Behaviour pre-registration ballot will include the thesis courses (PNB 4D09 A/B, 4DD6 A/B), and Independent Research and Library courses (PNB 3Q03 A/B S, 3Q03 A/B S, 4Q03 A/B S, 4Q03 A/B S). Students wishing to take these courses must complete and submit a ballot by **mid February**. Ballots can be obtained from the Department of Psychology, Neuroscience & Behaviour web site at [www.pnb.mcmaster.ca](http://www.pnb.mcmaster.ca).
- Students who have not obtained the minimum Grade Point Average as stated in the prerequisite of one of BIOLOGY 4C12 A/B S, 4F06 A/B S, PNB 4D09 A/B or 4DD6 A/B may request a requisite waiver from the Undergraduate Associate Chair of the Department. Students denied permission may not continue in the program and must apply to transfer to Honours Biology or Honours Psychology, Neuroscience & Behaviour and apply to graduate with a Minor in the alternate subject area.
- Both PNB 2XD3, 2XF3 are highly recommended but not required. PNB 2XD3 is included in the Psychology Course List and may be used towards the Level III Psychology requirements.

### BIOLOGY COURSE LIST

- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- BIOCHEM 3G03 - Proteins and Nucleic Acids
- BIOCHEM 3H03 - Clinical Biochemistry
- BIOCHEM 4E03 - Gene Regulation in Stem Cells and Development
- BIOCHEM 4M03 - Cellular and Integrated Metabolism

- BIOCHEM 4Q03 - Biochemical Pharmacology
- all Level II, III and IV Biology and Molecular Biology courses
- BIOPHYS 2A03 - Biophysics of the Cell and Living Organisms
- BIOPHYS 3D03 - Origin of Life
- CHEMBIO 3BM3 - Implanted Biomaterials
- HTHSCI 3I03 - Introductory Immunology
- HTHSCI 3K03 - Introductory Virology
- HTHSCI 4BB3 - Neuroimmunology
- HTHSCI 4I03 - Advanced Concepts in Immunology

### PSYCHOLOGY COURSE LIST

- HUMBEHV 3MD3 - Research Methods for Human Behaviour
- KINESIOL 3E03 - Neural Control of Human Movement
- LIFESCI 3BB3 - Neurobiology of Disease
- LIFESCI 3E03 - Reproductive Endocrinology
- LIFESCI 3K03 - Neural Control of Human Movement
- LINGUIST 2PS3 - Psycholinguistics
- LINGUIST 3C03 - Child Language Acquisition
- LINGUIST 3NL3 - Cognitive Neuroscience of Language
- MUSICCOG 2MP3 - Introduction to Music Cognition
- all Level III and IV MUSICCOG courses
- NEUROSCI 3J03 - Visual Neuroscience
- NEUROSCI 3SN3 - Neural Circuits
- PNB 2A03 - Python for PNB
- PNB 2XD3 - Integrative PNB Through Scientific Writing
- all Level III and IV PNB courses
- all Level III and IV PSYCH courses (PSYCH 2AA3, 2AP3, 2B03, 2C03, 2S03, 3AB3, 3AC3, 3AG3, 3BA3, 3CB3, 3CD3 may only be used as elective credit.)

### REQUIREMENTS

*120 units total (Levels I to IV), of which no more than 48 units may be Level I*

#### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

#### LEVELS II-IV: 90 UNITS

9 units

- BIOLOGY 2C03 - Genetics
- CHEM 20A3 - Organic Chemistry I
- CHEM 20B3 - Organic Chemistry II

15 units

- PNB 2XA3 - Human Perception & Cognition
- PNB 2XB3 - Neuroanatomy & Neurophysiology
- PNB 2XC3 - Animal Behaviour & Evolution
- PNB 2XE3 - Descriptive Statistics and Research Methods
- PNB 2XT0 - PNB Tutorial
- PNB 3XE3 - Inferential Statistics and Research Methods

3 units

from

- PNB 3EE3 - Perception Laboratory
- PNB 3EV3 - Evolutionary Psychology Lab
- PNB 3L03 - Neurodevelopment & Plasticity Lab
- PNB 3MM3 - Cognitive Neuroscience Lab
- PNB 3Q03 A/B S - Intermediate Independent Research
- PNB 3S03 - Animal Behaviour Lab
- PNB 3V03 - Laboratory in Human Memory and Cognition

3 units

from

- BIOLOGY 2A03 - Integrative Physiology of Animals
- BIOLOGY 2B03 - Cell Biology
- BIOLOGY 2F03 - Fundamental and Applied Ecology

12 units

from

- Levels III, IV Biology or Molecular Biology courses, which must include at least three units of Level IV

3 units

from

- the *Psychology Course List* (See *Program Note 4* above.)

27 units

from

- the *Biology Course List* or Levels III, IV from the *Psychology Course List* (including at least nine units from the *Biology Course List* and at least nine units of Levels III, IV from the *Psychology Course List*)

and which must include one of

- BIOLOGY 4C09 A/B S
- BIOLOGY 4C12 A/B S - Senior Thesis
- BIOLOGY 4F06 A/B S - Senior Project
- PNB 4D09 A/B - Senior Honours Thesis
- PNB 4DD6 A/B - Senior Thesis

(See *Program Notes 2 and 3* above.)

0-3 units

from the following courses, if not completed in Level I

- PSYCH 1F03 - Survey of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

(See *Admission Note 3* above.)

15-18 units

- Electives (See *Program Note 4* above.)

### REQUIREMENTS FOR STUDENTS WHO ENTERED IN SEPTEMBER 2018 OR SEPTEMBER 2019

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

#### LEVELS II-IV: 90 UNITS

9 units

- BIOLOGY 2C03 - Genetics
- CHEM 20A3 - Organic Chemistry I
- CHEM 20B3 - Organic Chemistry II

15 units

- PNB 2XA3 - Human Perception & Cognition
- PNB 2XB3 - Neuroanatomy & Neurophysiology
- PNB 2XC3 - Animal Behaviour & Evolution
- PNB 2XE3 - Descriptive Statistics and Research Methods
- PNB 2XT0 - PNB Tutorial
- PNB 3XE3 - Inferential Statistics and Research Methods

3 units

from

- HUMBEHV 3MD3 - Research Methods for Human Behaviour
- PNB 3EE3 - Perception Laboratory
- PNB 3EV3 - Evolutionary Psychology Lab
- PNB 3LQ3 - Neurodevelopment & Plasticity Lab
- PNB 3MM3 - Cognitive Neuroscience Lab
- PNB 3QQ3 A/B S - Intermediate Independent Research
- PNB 3RM3
- PNB 3S03 - Animal Behaviour Lab
- PNB 3V03 - Laboratory in Human Memory and Cognition

3 units

from

- BIOLOGY 2A03 - Integrative Physiology of Animals
- BIOLOGY 2B03 - Cell Biology
- BIOLOGY 2F03 - Fundamental and Applied Ecology

12 units

from

- Levels III, IV Biology or Molecular Biology courses, which must include at

least three units of Level IV

3 units

from

- the *Psychology Course List* (See *Program Note 4* above.)

27 units

from

- the *Biology Course List* or Levels III, IV from the *Psychology Course List* (including at least nine units from the *Biology Course List* and at least nine units of Levels III, IV from the *Psychology Course List*)

and which must include one of:

- BIOLOGY 4C09 A/B S
- BIOLOGY 4C12 A/B S - Senior Thesis
- BIOLOGY 4F06 A/B S - Senior Project
- PNB 4D09 A/B - Senior Honours Thesis
- PNB 4DD6 A/B - Senior Thesis

(See *Program Notes 2 and 3* above.)

0-3 units

from the following courses, if not completed in Level I

- PSYCH 1F03 - Survey of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

(See *Admission Note 3* above.)

15-18 units

- Electives (See *Program Note 4* above.)

#### NOTE

Students who entered the program prior to September 2018 may refer to their Academic Advisement report or contact an Academic Advisor in the Office of the Associate Dean of Science (Academic) for program requirements.

## HONOURS MOLECULAR BIOLOGY AND GENETICS (B.SC.)

#### ADMISSION NOTE

One of PHYSICS 1A03 or 1C03 is required for admission. Completion of PHYSICS 1AA3 or 1CC3 by the end of Level II is also recommended.

#### ADMISSION

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

#### 6 UNITS

from the following courses, where an average of at least 6.0 (between the courses) is required

- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity

#### 6 UNITS

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II

#### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

#### 3 UNITS

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

(See *Admission Note* above.)

#### 6 UNITS

from

- the Science I Course List (See *Admission Note* above.)

#### PROGRAM NOTES

- BIOLOGY 2B03, 2EE3 and MOLBIOL 2C03 must be completed in Level II.
- Six units of BIOLOGY 2A03, 2D03, 2F03, 3FF3 are required. However,

completion of at least nine units is recommended.

- Completion of STATS 2B03 is required for admission to the Honours Molecular Biology and Genetics (Co-op) program and therefore, students intending to apply for the Co-op option must complete STATS 2B03 in Level II.
- Students interested in microbiology and biotechnology and especially those considering postgraduate studies in this area should take the following courses: BIOLOGY 4PP3, MOLBIOL 3CC3, 4P03.
- BIOLOGY 2L03 (or 2L06 A/B), MOLBIOL 3A03 and 3I03 A/B S are recommended as preparatory courses for BIOLOGY 4C12 A/B S, 4F06 A/B S or MOLBIOL 4G12 A/B S.
- Completion of BIOLOGY 4C12 A/B S, 4F06 A/B S or MOLBIOL 4G12 A/B S is required in Level IV. Students who have not obtained the minimum Grade Point Average as stated in the prerequisite, may request a requisite waiver from the Undergraduate Associate Chair. Students denied permission may not continue in the program and must apply to transfer to the Honours Biology program.

#### MOLECULAR BIOLOGY AND GENETICS COURSE LIST I

- BIOLOGY 4C09 A/B S
- BIOLOGY 4C12 A/B S - Senior Thesis
- BIOLOGY 4F06 A/B S - Senior Project
- MOLBIOL 3A03 - Current Topics in Molecular Biology and Genetics
- MOLBIOL 3CC3 - Genomics and Systems Biology (or 4CC3)
- MOLBIOL 3D03 - Experimental Approaches in Cell Biology
- MOLBIOL 3I03 A/B S - Independent Research Project
- MOLBIOL 3M03 - Fundamental Concepts of Development
- MOLBIOL 3Y03 - Plant Responses to the Environment
- MOLBIOL 4BB3 - Plant Metabolism and Molecular Biology
- MOLBIOL 4DD3 - Molecular Evolution
- MOLBIOL 4G12 A/B S - Senior Thesis
- MOLBIOL 4H03 - Molecular Biology of Cancer
- MOLBIOL 4K03 - Research Advances in Biology of Aging
- MOLBIOL 4P03 - Medical Microbiology
- MOLBIOL 4RR3 - Human Genetics

#### MOLECULAR BIOLOGY AND GENETICS COURSE LIST II

- BIOCHEM 2B03 - Nucleic Acid Structure and Function
- BIOCHEM 2BB3 - Protein Structure and Enzyme Function
- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- BIOCHEM 3G03 - Proteins and Nucleic Acids
- BIOCHEM 4E03 - Gene Regulation in Stem Cells and Development
- BIOLOGY 2A03 - Integrative Physiology of Animals
- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2F03 - Fundamental and Applied Ecology
- BIOLOGY 2L03 - Experimental Design in Biology
- BIOLOGY 2L06 A/B
- BIOLOGY 3FF3 - Evolution
- BIOLOGY 3PG3 - Population Genetics
- BIOLOGY 4ED3 - Evolutionary Developmental Biology
- BIOLOGY 4EE3 - Human Diversity and Human Nature
- BIOLOGY 4PP3 - Environmental Microbiology and Biotechnology
- BIOPHYS 2A03 - Biophysics of the Cell and Living Organisms
- BIOPHYS 3G03 - Modelling Life
- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry
- CHEMBIO 2P03 - Physical Chemistry Tools for Chemical Biology
- CHEMENG 3BK3 - Bio-Reaction Engineering
- CHEMENG 3BM3 - Bioseparations Engineering
- HTHSCI 3I03 - Introductory Immunology
- HTHSCI 3K03 - Introductory Virology
- HTHSCI 4I13 - Advanced Concepts in Immunology

#### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

#### LEVELS II-IV: 90 UNITS

6 units

- CHEM 20A3 - Organic Chemistry I
- CHEM 20B3 - Organic Chemistry II

3 units

- STATS 2B03 - Statistical Methods for Science

(See *Program Note 3* above.)

6 units

from

- BIOLOGY 2A03 - Integrative Physiology of Animals
- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2F03 - Fundamental and Applied Ecology
- BIOLOGY 3FF3 - Evolution

(See *Program Note 2* above.)

24 units

- BIOLOGY 2B03 - Cell Biology
- BIOLOGY 2EE3 - Introduction to Microbiology and Biotechnology
- BIOLOGY 3S03 - An Introduction to Bioinformatics
- MOLBIOL 2C03 - Genetics
- MOLBIOL 3B03 - Advanced Cell Biology
- MOLBIOL 3I13 - Molecular Genetics of Eukaryotes
- MOLBIOL 3O03 - Microbial Genetics
- MOLBIOL 3V03 - Techniques in Molecular Genetics

(See *Program Note 1* above.)

18 units

from

- the *Molecular Biology and Genetics Course List I*

which must include one of:

- BIOLOGY 4C09 A/B S
- BIOLOGY 4C12 A/B S - Senior Thesis
- BIOLOGY 4F06 A/B S - Senior Project
- MOLBIOL 4G12 A/B S - Senior Thesis

(See *Program Note 6* above.)

3 units

from

- Level IV courses from the *Molecular Biology and Genetics Course List I*, excluding BIOLOGY 4C12 A/B S, 4F06 A/B S and MOLBIOL 4G12 A/B S

6 units

from

- the *Molecular Biology and Genetics Course List I or II*

24 units

- Electives (See *Program Note 2* above.)

### HONOURS MOLECULAR BIOLOGY AND GENETICS CO-OP (B.SC.)

#### ADMISSION

**Enrolment in this program is limited.** Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline, completion of Level II of the Honours Molecular Biology and Genetics program with a Grade Point Average of at least 5.0 and completion of the following courses:

#### 9 UNITS

- BIOLOGY 2B03 - Cell Biology
- BIOLOGY 2EE3 - Introduction to Microbiology and Biotechnology
- MOLBIOL 2C03 - Genetics

#### 6 UNITS

from

- BIOLOGY 2A03 - Integrative Physiology of Animals
- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2F03 - Fundamental and Applied Ecology

**6 UNITS**

- CHEM 20A3 - Organic Chemistry I
- CHEM 20B3 - Organic Chemistry II

**3 UNITS**

- STATS 2B03 - Statistical Methods for Science

**3 UNITS**

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

**1 COURSE**

- SCIENCE 2C00 - Skills for Career Success in Science

**NOTES**

- Admission is by selection, and possession of the published minimum requirements does not guarantee admission. (It is anticipated that a Grade Point Average of at least 8.0 will be required.) Information about this program and the selection procedure can be obtained from Science Career and Cooperation Education Office.
- BIOLOGY 2A03 is only available as a Winter Term offering and, therefore, completion in Level II (prior to admission to the Co-op program) is strongly recommended for students who intend to complete this course.

**PROGRAM NOTES**

- This is a five-level (year) co-op program, which includes two eight-month work terms which must be spent in molecular biology and genetics related placements.
- Students must be registered full-time and take a full academic workload as prescribed by Level and Term.
- Students are required to complete SCIENCE 2C00 and SCIENCE 3C00 before the first work placement and are strongly recommended to complete SCIENCE 2C00 in Level II.
- Students should seek academic advising for this program in the Department of Biology.
- Completion of BIOLOGY 2B03 and MOLBIOL 2C03 is required prior to admission to this program.
- STATS 2B03 is required for admission. Students who enrol in the program in September 2016 (or earlier) must complete the requirement by the end of Level III.
- Students should consult the MOLBIOL 4G12 A/B S Course Coordinator regarding supervision arrangements. Students are strongly encouraged to carry out their thesis in an academic lab.
- Students must take a minimum of 15 units from the *Molecular Biology and Genetics Co-op Course Lists I and II*, at least 12 of these units must be from *Course List I*, and at least 3 of these units must be at Level IV.
- Six units from BIOLOGY 2A03, 2D03, 2F03 are required for admission, however, students are encouraged to complete each of these courses. When more than six units are completed, these will count toward the *Molecular Biology and Genetics Co-op Course List II* program requirement.

**MOLECULAR BIOLOGY AND GENETICS CO-OP COURSE LIST I**

- MOLBIOL 3A03 - Current Topics in Molecular Biology and Genetics
- MOLBIOL 3CC3 - Genomics and Systems Biology
- MOLBIOL 3D03 - Experimental Approaches in Cell Biology
- MOLBIOL 3I03 A/B S - Independent Research Project
- MOLBIOL 3M03 - Fundamental Concepts of Development
- MOLBIOL 3Y03 - Plant Responses to the Environment
- MOLBIOL 4BB3 - Plant Metabolism and Molecular Biology
- MOLBIOL 4DD3 - Molecular Evolution
- MOLBIOL 4H03 - Molecular Biology of Cancer

- MOLBIOL 4K03 - Research Advances in Biology of Aging
- MOLBIOL 4P03 - Medical Microbiology
- MOLBIOL 4RR3 - Human Genetics

**MOLECULAR BIOLOGY AND GENETICS CO-OP COURSE LIST II**

- BIOCHEM 2B03 - Nucleic Acid Structure and Function
- BIOCHEM 2BB3 - Protein Structure and Enzyme Function
- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- BIOCHEM 3G03 - Proteins and Nucleic Acids
- BIOCHEM 4E03 - Gene Regulation in Stem Cells and Development
- BIOLOGY 2A03 - Integrative Physiology of Animals
- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2F03 - Fundamental and Applied Ecology
- BIOLOGY 2L03 - Experimental Design in Biology
- BIOLOGY 2L06 A/B
- BIOLOGY 3FF3 - Evolution
- BIOLOGY 3PG3 - Population Genetics
- BIOLOGY 4ED3 - Evolutionary Developmental Biology
- BIOLOGY 4EE3 - Human Diversity and Human Nature
- BIOLOGY 4PP3 - Environmental Microbiology and Biotechnology
- BIOPHYS 2A03 - Biophysics of the Cell and Living Organisms
- BIOPHYS 3G03 - Modelling Life
- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry
- CHEMBIO 2P03 - Physical Chemistry Tools for Chemical Biology
- CHEMENG 3BK3 - Bio-Reaction Engineering
- CHEMENG 3BM3 - Bioseparations Engineering
- HTHSCI 3I03 - Introductory Immunology
- HTHSCI 3K03 - Introductory Virology
- HTHSCI 4I13 - Advanced Concepts in Immunology

**REQUIREMENTS**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

30 units

Completed prior to admission to the program

**LEVEL II: 30 UNITS**

30 units

Completion of Level II Honours Molecular Biology and Genetics program, including:

**9 units**

- BIOLOGY 2B03 - Cell Biology
- BIOLOGY 2EE3 - Introduction to Microbiology and Biotechnology
- MOLBIOL 2C03 - Genetics

**6 units**

from

- BIOLOGY 2A03 - Integrative Physiology of Animals
- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2F03 - Fundamental and Applied Ecology

(See *Program Note 9* above.)

**6 units**

- CHEM 20A3 - Organic Chemistry I
- CHEM 20B3 - Organic Chemistry II

**3 units**

- STATS 2B03 - Statistical Methods for Science

(See *Program Note 6* above.)

**1 course**

- SCIENCE 2C00 - Skills for Career Success in Science

**LEVEL III**

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:

**9 units**

- BIOLOGY 3S03 - An Introduction to Bioinformatics



- MOLBIOL 3003 - Microbial Genetics
  - MOLBIOL 3V03 - Techniques in Molecular Genetics
- 3 units**  
from
- the *Molecular Biology and Genetics Co-op Course Lists I and II* (See *Program Notes 8 and 9* above.)
- 3 units**
- Electives
- 2 courses**
- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
  - SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

#### LEVEL IV

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:

**6 units**

- MOLBIOL 3B03 - Advanced Cell Biology
- MOLBIOL 3I13 - Molecular Genetics of Eukaryotes

**3 units**  
from

- the *Molecular Biology and Genetics Co-op Course Lists I and II* (See *Program Note 8* above.)

**12 units**

- MOLBIOL 4G12 A/B S - Senior Thesis

(See *Program Note 7* above.)

**9 units**

- Electives

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 4WT0 - Science Co-op Work Term

#### LEVEL V

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

**1 course**

- SCIENCE 5WT0 - Science Co-op Work Term

Winter Term: 15 units:

**9 units**  
from

- the *Molecular Biology and Genetics Co-op Course Lists I and II* (See *Program Note 8* above.)

**6 units**

- Electives

#### CO-OP PROGRAM CHART

	FALL TERM (September to December)	WINTER TERM (January to April)	SPRING/SUMMER TERM (May to August)

<b>Level III</b>	15 units from Academic Level III + SCIENCE 2C00 (if not completed) and SCIENCE 3C00	Work Term SCIENCE 3WT0	Work Term SCIENCE 3WT0
<b>Level IV</b>	15 units from Academic Level III including MOLBIOL 4G12 A/B S	15 units from Academic Level IV including MOLBIOL 4G12 A/B S	Work Term SCIENCE 4WT0
<b>Level V</b>	Work Term SCIENCE 5WT0	15 units from Academic Level IV	

## Minor(s):

### MINOR IN BIOLOGY

#### NOTES

- ISCI 1A24 A/B is a substitution for BIOLOGY 1A03 and 1M03.
- ISCI 2A18 A/B is a substitution for 3 units of Level II Biology toward the Minor in Biology.
- In order to obtain a Minor in Biology at least 12 units (above Level I) must be elective to degree.

#### REQUIREMENTS

*24 units total*

#### 6 UNITS

- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity

#### 18 UNITS

from

- Levels II, III, IV Biology or Molecular Biology courses including at least six units from Levels III, IV Biology or Molecular Biology

## Department of Chemistry and Chemical Biology

<http://www.chemistry.mcmaster.ca/>

**Faculty as of January 15, 2020**

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**Gary J. Schrobilgen**/B.Sc. (Loras College, Iowa), M.Sc. (Brock), Ph.D. (McMaster), F.R.S.C., A.C.S.F.

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ASSISTANT PROFESSORS

**Anthony Chibba**/B.Sc., Ph.D. (Toronto)

**Sharonna Greenberg**/B.Sc., Ph.D. (Toronto)

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ADJUNCT ASSISTANT PROFESSORS

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ASSOCIATE MEMBERS

**Dawn M.E. Bowdish**/(Pathology and Molecular Medicine) B.Sc. (Guelph), Ph.D. (British Columbia)

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**Anthony F. Rullo**/(Pathology) B.Sc. (McMaster), M.Sc. (Guelph), Ph.D. (Toronto)

**Greg Slater**/(Earth, Environment & Society) B.Sc., M.Sc., Ph.D. (Toronto)

#### NOTES APPLICABLE TO ALL HONOURS PROGRAMS IN THE DEPARTMENT OF CHEMISTRY AND CHEMICAL BIOLOGY

- The Honours programs consist of a specified set of basic requirements and a wide choice of electives, allowing for interdisciplinary studies or the opportunity to complete a Minor. Honours Chemistry, Honours Chemical Biology and Honours Sustainable Chemistry are also available as five-year co-op programs, with entry beginning at Level III.
- In some cases there are Level II and III prerequisites for Level III and IV courses. The prerequisites should be considered when choosing your Level II and III courses.
- Students are encouraged to seek academic advising from the Departmental Undergraduate Advisor (email: advisor@chemistry.mcmaster.ca).
- Certain Level IV courses are offered in alternate years. Students are advised to consider course offerings carefully in planning their course selection for Levels III and IV.
- The Honours Chemistry, Honours Chemistry Co-op, Honours Chemical Biology and Honours Chemical Biology Co-op programs fulfill the academic requirements of the Canadian Society for Chemistry.
- CHEM 3RP3 and CHEMBIO 3RP3 provide the opportunity for students to integrate a one term work/research experience into an elective course. CHEM 3EP3 A/B S and CHEMBIO 3EP3 A/B S allow students to participate in an experiential placement. Further details may be obtained from the Undergraduate Advisor, in the Department of Chemistry and Chemical Biology (email: advisor@chemistry.mcmaster.ca).
- CHEM 4G12 A/B and CHEMBIO 4G12 A/B offer a senior thesis research experience. CHEM 4RP6 A/B S and CHEMBIO 4RP6 A/B S offer a more limited research experience, without a presentation or formal thesis.

**NOTES APPLICABLE TO ALL HONOURS CHEMISTRY PROGRAMS**

- McMaster's Honours Chemistry program is structured such that part of the laboratory experience in the conventional sub-disciplines of organic, inorganic, physical, and analytical chemistry is obtained through two integrated laboratory courses that are distinct from the lecture courses - CHEM 2LB3 in Level II and CHEM 3LA3 in Level III. This program provides in excess of 55 hours of "Organic Chemistry" laboratory experience. The Level III course focuses on more advanced skills.
- For those considering postgraduate studies in Chemistry, it should be noted that 18 units of Level IV Chemistry or related subjects are required for consideration for admission at McMaster and most graduate schools in Canada. CHEM 4G12 A/B is strongly recommended.
- BIOCHEM 2EE3 or any Biochemistry course that has a Biology course as the prerequisite are an acceptable alternative to BIOCHEM 3G03. CHEM 4IB3 or a Level III or IV Chemical Biology course are also acceptable substitutes providing these units are taken as elective to the Honours Chemistry program requirements.
- CHEM 2PC3 or 3PC3 are recommended for all Chemistry students, but not required for students who complete MATH 1B03 (or 1ZC3) in either Level I or II and who complete one of MATH 1AA3, 1LT3, 1XX3 (or 1ZB3) in Level I.
- CHEM 4G12 A/B cannot be taken concurrently with CHEM 3LA3 or CHEM 3RP3 given the time commitment required for the Senior Undergraduate Thesis.

**B.SC. THREE-LEVEL DEGREE**

A three-level program with a Chemistry orientation is available through the B.Sc. in Chemical and Physical Sciences.

## Bachelor of Applied Science

### HONOURS SUSTAINABLE CHEMISTRY (B.A.SC.)

*(The availability of this program is subject to completion of McMaster University's Quality Assurance approval process.)*

**ADMISSION NOTE**

Students intending to complete CHEM 3PA3 are required to complete one of PHYSICS 1A03 or 1C03 in Level I. Completion of PHYSICS 1AA3 or 1CC3 is recommended.

**ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 5.0 including:

**6 UNITS**

from the following courses, where an average of at least 6.0 (between the courses) is required

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II
- CHEM 1E03 - General Chemistry for Engineering I

**3 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1M03 - Calculus for Business, Humanities and the Social Sciences
- MATH 1X03 - Calculus for Math and Stats I
- MATH 1ZA3 - Engineering Mathematics I

**6 UNITS**

from

- the *Science I Course List* (See *Admission Note* above.)

**PROGRAM NOTES**

- In some cases there are Level II and III prerequisites for Level III and IV courses. The prerequisites should be considered when choosing your Level II and III courses.
- Students are encouraged to seek academic advising from the Departmental Undergraduate Advisor (email: advisor@chemistry.mcmaster.ca).
- Certain Level IV courses are offered in alternate years. Students are advised to consider course offerings carefully in planning their course selection for Levels III and IV.

**COURSE LIST 1**

- CHEM 2A03 - Quantitative Chemical Analysis
- CHEM 2I13 - Introductory Inorganic Chemistry: Structure and Bonding
- CHEM 2LB3 - Tools for Chemical Discovery
- CHEM 2OD3 - Synthesis and Function of Organic Molecules
- CHEM 2OG3 - Structure and Reactivity of Organic Molecules
- CHEM 2P03 - Applications of Physical Chemistry
- CHEM 2Q03 - Inquiry for Chemistry
- CHEM 3AA3 - Instrumental Analysis
- CHEM 3EP3 A/B S - Advanced Chemistry Placement
- CHEM 3I03 - Industrial Chemistry
- CHEM 3I13 - Introduction to Transition Metal Chemistry
- CHEM 3LA3 - Strategies for Chemical Discovery
- CHEM 3OA3 - Organic Synthesis
- CHEM 3PA3 - Quantum Mechanics and Spectroscopy
- CHEM 3PC3 - Mathematical Tools for Chemical Problems
- CHEM 3RC3 - Radioisotopes in Medicine
- CHEM 3RP3 - Research Practicum in Chemistry
- CHEM 4AA3 - Recent Advances in Analytical Chemistry
- CHEM 4D03 - Organic Structure and Synthesis
- CHEM 4G12 A/B - Senior Thesis
- CHEM 4IA3 - Physical Methods of Inorganic Structure Determination
- CHEM 4IB3 - Bio-Inorganic Chemistry
- CHEM 4IC3 - Solid State Inorganic Materials: Structures, Properties, Characterization and Applications
- CHEM 4I13 - Transition Metal Organometallic Chemistry and Catalysis
- CHEM 4OA3 - Natural Products
- CHEM 4OB3 - Polymers and Organic Materials
- CHEM 4PB3 - Computational Models for Electronic Structure and Chemical Bonding
- CHEM 4RP6 A/B S - Research Project in Chemistry
- CHEM 4W03 - Natural and Synthetic Materials
- CHEMBIO 3BM3 - Implanted Biomaterials
- CHEMBIO 3OA3 - Organic Mechanistic Tools for Chemical Biology
- CHEMBIO 3OB3 - Structural Elucidation of Natural Products and Small Molecules
- CHEMBIO 3P03 - Biomolecular Interactions and Kinetics
- CHEMBIO 4A03 - Bio-Analytical Chemistry and Assay Development
- CHEMBIO 4OA3 - Natural Products
- CHEMBIO 4OB3 - Medicinal Chemistry: Drug Design and Development
- CHEMBIO 4Q03 - Peer Tutoring in Chemical Biology or Chemistry

**COURSE LIST 2**

- BIOLOGY 3ET3 - Ecotoxicology
- EARTHSC 2GG3 - Natural Disasters
- EARTHSC 3CC3 - Earth's Changing Climate
- EARTHSC 4CC3 - Stable Isotopes in Earth and Environmental Systems
- ENVIRSC 2B03 - Soils and the Environment
- ENVIRSC 2C03 - Surface Climate Processes and Environmental Interactions
- ENVIRSC 2Q03 - Introduction to Environmental Geochemistry

- ENVIRSC 2WW3 - Water and the Environment
- ENVIRSC 3O03 - Contaminant Fate and Transport
- ENVIRSC 4EA3 - Environmental Assessment
- ENVIRSC 4N03 - Global Biogeochemical Cycles
- ENVSOCTY 2EI3 - Environment & Society: Challenges and Solutions
- ENVSOCTY 3EC3 - Environmental Catastrophes
- ENVSOCTY 3EE3 - Energy and Society
- ENVSOCTY 3ER3 - Sustainability and the Economy
- ENVSOCTY 4HH3 - Environment and Health
- HTHSCI 4MS3 - The Social Lives of Molecules
- LIFESCI 2X03 - Environmental Change and Human Health
- POLSCI 3GC3 - Global Climate Change
- STATS 2B03 - Statistical Methods for Science
- SUSTAIN 2S03 - Evaluating Problems & Sustainable Solutions
- SUSTAIN 3S03 - Implementing Sustainable Change

### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

(See Admission above.)

#### LEVEL II: 30 UNITS

3 units

- CHEM 2SC3 - Sustainable Chemistry - Green Chemistry

12 units

from

- CHEM 2A03 - Quantitative Chemical Analysis
- CHEM 2I13 - Introductory Inorganic Chemistry: Structure and Bonding
- CHEM 2LB3 - Tools for Chemical Discovery
- CHEM 2OD3 - Synthesis and Function of Organic Molecules
- CHEM 2OG3 - Structure and Reactivity of Organic Molecules
- CHEM 2P03 - Applications of Physical Chemistry
- CHEM 2Q03 - Inquiry for Chemistry

6 units

from

- *Course List 2*

9 units

- Electives

#### LEVEL III: 30 UNITS

3 units

from

- CHEM 3SC3 - Sustainable Chemistry - Natural Resources and Energy
- CHEM 4SC3 - Sustainable Chemistry - Analysis and Regulation

12 units

from

- *Course List 1*

6 units

from

- *Course List 2*

9 units

- Electives

#### LEVEL IV: 30 UNITS

3 units

from

- CHEM 3SC3 - Sustainable Chemistry - Natural Resources and Energy
- CHEM 4SC3 - Sustainable Chemistry - Analysis and Regulation

12 units

from

- *Course List 1*

6 units

from

- *Course List 2*

9 units

- Electives

## HONOURS SUSTAINABLE CHEMISTRY CO-OP (B.A.S.C.)

Program is first available in September 2021.

(The availability of this program is subject to completion of McMaster University's Quality Assurance approval process.)

### ADMISSION (EFFECTIVE SEPTEMBER 2021)

**Enrolment in this program is limited.** Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline, and completion of Level II Honours Sustainable Chemistry with a Grade Point Average of at least 5.0 including:

#### 3 UNITS

- CHEM 2SC3 - Sustainable Chemistry - Green Chemistry

#### 12 UNITS

from

- CHEM 2A03 - Quantitative Chemical Analysis
- CHEM 2I13 - Introductory Inorganic Chemistry: Structure and Bonding
- CHEM 2LB3 - Tools for Chemical Discovery
- CHEM 2OD3 - Synthesis and Function of Organic Molecules
- CHEM 2OG3 - Structure and Reactivity of Organic Molecules
- CHEM 2P03 - Applications of Physical Chemistry
- CHEM 2Q03 - Inquiry for Chemistry

#### 6 UNITS

from

- *Course List 2*

#### NOTE:

Information about the program and the selection procedure may be obtained from Science Career and Cooperative Education.

#### PROGRAM NOTES

- This is a five-level (year) co-op program which includes two eight-month work terms that must be spent in appropriate chemistry-related placements.
- Students must be registered full-time and take a full academic workload as prescribed by Level and by Term.
- Students are required to complete SCIENCE 2C00 and SCIENCE 3C00 before the first work placement and are strongly recommended to complete SCIENCE 2C00 in Level II.
- There are Level II and III prerequisites for many Level III and IV courses. The prerequisites should be considered when choosing your Level II and III courses.
- Students considering postgraduate studies in Chemistry should note that 18 units of Level IV Chemistry or related subjects are required for consideration for admission at McMaster and most graduate schools in Canada.
- CHEM 4G09 A/B, 4G12 A/B or 4RP6 A/B S cannot be taken concurrently with CHEM 3LA3 or 3RP3.

#### COURSE LIST 1

- CHEM 2A03 - Quantitative Chemical Analysis
- CHEM 2I13 - Introductory Inorganic Chemistry: Structure and Bonding
- CHEM 2LB3 - Tools for Chemical Discovery
- CHEM 2OD3 - Synthesis and Function of Organic Molecules
- CHEM 2OG3 - Structure and Reactivity of Organic Molecules
- CHEM 2P03 - Applications of Physical Chemistry
- CHEM 2Q03 - Inquiry for Chemistry
- CHEM 3AA3 - Instrumental Analysis
- CHEM 3EP3 A/B S - Advanced Chemistry Placement
- CHEM 3I03 - Industrial Chemistry
- CHEM 3I13 - Introduction to Transition Metal Chemistry
- CHEM 3LA3 - Strategies for Chemical Discovery



- CHEM 30A3 - Organic Synthesis
- CHEM 3PA3 - Quantum Mechanics and Spectroscopy
- CHEM 3PC3 - Mathematical Tools for Chemical Problems
- CHEM 3RC3 - Radioisotopes in Medicine
- CHEM 3RP3 - Research Practicum in Chemistry
- CHEM 4AA3 - Recent Advances in Analytical Chemistry
- CHEM 4D03 - Organic Structure and Synthesis
- CHEM 4G12 A/B - Senior Thesis
- CHEM 4IA3 - Physical Methods of Inorganic Structure Determination
- CHEM 4IB3 - Bio-Inorganic Chemistry
- CHEM 4IC3 - Solid State Inorganic Materials: Structures, Properties, Characterization and Applications
- CHEM 4II3 - Transition Metal Organometallic Chemistry and Catalysis
- CHEM 4OA3 - Natural Products
- CHEM 4OB3 - Polymers and Organic Materials
- CHEM 4PB3 - Computational Models for Electronic Structure and Chemical Bonding
- CHEM 4RP6 A/B S - Research Project in Chemistry
- CHEM 4W03 - Natural and Synthetic Materials
- CHEMBIO 3BM3 - Implanted Biomaterials
- CHEMBIO 3OA3 - Organic Mechanistic Tools for Chemical Biology
- CHEMBIO 3OB3 - Structural Elucidation of Natural Products and Small Molecules
- CHEMBIO 3P03 - Biomolecular Interactions and Kinetics
- CHEMBIO 4A03 - Bio-Analytical Chemistry and Assay Development
- CHEMBIO 4OA3 - Natural Products
- CHEMBIO 4OB3 - Medicinal Chemistry: Drug Design and Development
- CHEMBIO 4Q03 - Peer Tutoring in Chemical Biology or Chemistry

#### COURSE LIST 2

- BIOLOGY 3ET3 - Ecotoxicology
- EARTHSC 2GG3 - Natural Disasters
- EARTHSC 3CC3 - Earth's Changing Climate
- EARTHSC 4CC3 - Stable Isotopes in Earth and Environmental Systems
- ENVIRSC 2B03 - Soils and the Environment
- ENVIRSC 2C03 - Surface Climate Processes and Environmental Interactions
- ENVIRSC 2Q03 - Introduction to Environmental Geochemistry
- ENVIRSC 2WW3 - Water and the Environment
- ENVIRSC 3003 - Contaminant Fate and Transport
- ENVIRSC 4EA3 - Environmental Assessment
- ENVIRSC 4N03 - Global Biogeochemical Cycles
- ENVSOCY 2EI3 - Environment & Society: Challenges and Solutions
- ENVSOCY 3EC3 - Environmental Catastrophes
- ENVSOCY 3EE3 - Energy and Society
- ENVSOCY 3ER3 - Sustainability and the Economy
- ENVSOCY 4HH3 - Environment and Health
- HTHSCI 4MS3 - The Social Lives of Molecules
- LIFESCI 2X03 - Environmental Change and Human Health
- POLSCI 3GC3 - Global Climate Change
- STATS 2B03 - Statistical Methods for Science
- SUSTAIN 2S03 - Evaluating Problems & Sustainable Solutions
- SUSTAIN 3S03 - Implementing Sustainable Change

#### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

Completed prior to admission to the program

#### LEVEL II: 30 UNITS

30 units

- Completion of any Level II Honours Sustainable Chemistry program

1 course

- SCIENCE 2C00 - Skills for Career Success in Science

#### LEVEL III

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:

6 units

from

- *Course List 1*

3 units

from

- *Course List 2*

6 units

- Electives

2 courses

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

1 course

- SCIENCE 3WTO - Science Co-op Work Term

Spring/Summer Term:

Work Term

1 course

- SCIENCE 3WTO - Science Co-op Work Term

#### LEVEL IV

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:

3 units

from

- CHEM 3SC3 - Sustainable Chemistry - Natural Resources and Energy
- CHEM 4SC3 - Sustainable Chemistry - Analysis and Regulation

12 units

from

- *Course List 1*

6 units

from

- *Course List 2*

9 units

- Electives

Spring/Summer Term:

Work Term

1 course

- SCIENCE 4WTO - Science Co-op Work Term

#### LEVEL V

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

1 course

- SCIENCE 5WTO - Science Co-op Work Term

Winter Term: 15 units:

3 units

from

- CHEM 3SC3 - Sustainable Chemistry - Natural Resources and Energy
- CHEM 4SC3 - Sustainable Chemistry - Analysis and Regulation

6 units

from

- *Course List 1*

3 units

from

- *Course List 2*

3 units

- Electives

**CO-OP PROGRAM CHART**

	<b>FALL TERM (September to December)</b>	<b>WINTER TERM (January to April)</b>	<b>SPRING/SUMMER TERM (May to August)</b>
<b>Level III</b>	15 units from Academic Level III + SCIENCE 2C00 (if not completed) and SCIENCE 3C00	Work Term SCIENCE 3WT0	Work Term SCIENCE 3WT0
<b>Level IV</b>	15 units from Academic Level III	15 units from Academic Level IV	Work Term SCIENCE 4WT0
<b>Level V</b>	Work Term SCIENCE 5WT0	15 units from Academic Level IV	

## Bachelor of Science (Honours)

### HONOURS CHEMICAL BIOLOGY (B.SC.)

**ADMISSION**

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

**3 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

**6 UNITS**

from the following courses, with a grade of at least C+ in each

- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity

**6 UNITS**

from the following courses, with an average of at least 6.0

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II

**3 UNITS**

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

**6 UNITS**

from

- the Science I Course List

**PROGRAM NOTES**

- Students are encouraged to seek academic advising from the Departmental Undergraduate Advisor (email [advisor@chemistry.mcmaster.ca](mailto:advisor@chemistry.mcmaster.ca)).

- In some cases there are Level II and III prerequisites for Level III and IV courses. The prerequisites should be considered when choosing your Level II and III courses.
- Certain Level III and IV courses are offered in alternate years. Students are advised to consider course offerings carefully in planning their course selection for Levels III and IV.
- Students are strongly advised not to take CHEMBIO 3L03 concurrent with CHEMBIO 4G03, 4G12 A/B or 4GG9 A/B.
- Students seeking admission to graduate school are strongly advised to complete CHEMBIO 3AA3 (or CHEM 3AA3) and 6 units from CHEMBIO 4A03, 4OA3, 4OB3. Completion of CHEMBIO 4G12 A/B or 4GG9 A/B is also strongly recommended.
- One of CHEMBIO 3EP3 A/B S, or 3RP3 may be completed to satisfy units toward the Level III Chemical Biology or Chemistry requirement.
- BIOCHEM 3G03 must be completed in Level II. The combination of both BIOCHEM 2B03 and 2BB3 may substitute for BIOCHEM 3G03 and, when completed, will reduce the elective requirement by three units.

**REQUIREMENTS**

*120 units total (Levels I to IV), of which no more than 48 units may be Level I*

**LEVEL I: 30 UNITS**30 units(See *Admission* above.)**LEVEL II: 30 UNITS**12 units

from

- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry
- CHEMBIO 2AA3
- CHEMBIO 2L03 - Pharmaceutical Chemistry Laboratory I: Biomolecular Interactions
- CHEMBIO 2P03 - Physical Chemistry Tools for Chemical Biology
- CHEMBIO 2Q03 - Inquiry for Chemical Biology

6 units

from

- CHEMBIO 20A3
- CHEMBIO 20B3
- CHEMBIO 20D3 - Organic Chemistry II
- CHEMBIO 20G3 - Organic Chemistry I

3 units

- BIOCHEM 3G03 - Proteins and Nucleic Acids

(See *Program Note 7* above.)3 units

- BIOLOGY 2B03 - Cell Biology

6 units

- Electives

**LEVELS III AND IV: 60 UNITS**6 units

- CHEMBIO 30A3 - Organic Mechanistic Tools for Chemical Biology
- CHEMBIO 3P03 - Biomolecular Interactions and Kinetics

3 units

from

- CHEMBIO 30B3 - Structural Elucidation of Natural Products and Small Molecules
- CHEMBIO 4IB3 - Bio-Inorganic Chemistry

(See *Program Note 3* above.)6 units

from

- CHEMBIO 3AA3 - Analytical Tools for Chemical Biology
- CHEM 3AA3 - Instrumental Analysis
- CHEM 30A3 - Organic Synthesis

(See *Program Notes 2 and 3* above.)3 units

- CHEMBIO 3L03 - Chemical Biology Laboratory II

(See *Program Note 4* above.)

3 units

- BIOCHEM 3D03 - Metabolism and Regulation

3 units

from

- Levels II, III Biology courses

6 units

from

- CHEMBIO 4A03 - Bio-Analytical Chemistry and Assay Development
- CHEMBIO 4OA3 - Natural Products
- CHEMBIO 4OB3 - Medicinal Chemistry: Drug Design and Development
- CHEM 4D03 - Organic Structure and Synthesis
- CHEM 4OB3 - Polymers and Organic Materials
- CHEM 4W03 - Natural and Synthetic Materials

(See *Program Notes 3* and *5* above.)

3-12 units

from Levels III, IV Chemical Biology, Chemistry courses,

which may include one of

- CHEMBIO 4G03
- CHEMBIO 4G12 A/B - Senior Thesis in Chemical Biology
- CHEMBIO 4GG9 A/B
- CHEMBIO 4RP6 A/B S - Research Project in Chemical Biology

(See *Program Notes 4, 5* and *6* above.)

18-27 units

- Electives

## HONOURS CHEMICAL BIOLOGY CO-OP (B.SC.)

### ADMISSION

**Enrolment in this program is limited.** Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline, and completion of Level II Honours Chemical Biology with a Grade Point Average of at least 5.0. (It is anticipated that a Grade Point Average of at least 9.5 will be required.)

Information about the program and the selection procedure may be obtained from Science Career and Cooperative Education.

### PROGRAM NOTES

- This is a five-level (year) co-op program which includes two eight-month work terms that must be spent in chemical biology-related placements.
- Students must be registered full-time and take a full academic workload as prescribed by Level and by Term.
- Students are required to complete SCIENCE 2C00 and SCIENCE 3C00 before the first work placement and are strongly recommended to complete SCIENCE 2C00 in Level II.
- There are Level II and III prerequisites for many Level III and IV courses. The prerequisites should be considered when choosing your Level II and III courses.
- 6 units from CHEMBIO 4A03, 4OA3, 4OB3, CHEM 4D03, 4OB3, 4W03 must be completed by the end of Level V.
- Certain Level III and IV courses are offered in alternate years. Students are advised to consider course offerings carefully in planning their course selection for Levels III and IV.
- Students are strongly advised not to take CHEMBIO 3L03 concurrent with CHEMBIO 4G03, 4G12 A/B, 4GG9 A/B or 4RP6 A/B S.
- Students seeking admission to graduate school are strongly advised to complete CHEMBIO 3AA3 (or CHEM 3AA3) and 6 units from CHEMBIO 4A03, 4OA3, 4OB3. CHEMBIO 4G12 A/B, 4GG9 A/B or 4RP6 A/B S is also strongly recommended and must be completed in Level IV.

### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

### LEVEL I: 30 UNITS

Completed prior to admission to the program

### LEVEL II: 30 UNITS

30 units

- Completion of Level II Honours Chemical Biology program

1 course

- SCIENCE 2C00 - Skills for Career Success in Science

### LEVEL III

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:

6 units

- CHEMBIO 3OA3 - Organic Mechanistic Tools for Chemical Biology
- CHEMBIO 3P03 - Biomolecular Interactions and Kinetics

3 units

- CHEM 3OA3 - Organic Synthesis

3 units

from

- Levels II, III Biology courses

3 units

- Electives

2 courses

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

1 course

- SCIENCE 3WTO - Science Co-op Work Term

Spring/Summer Term:

Work Term

1 course

- SCIENCE 3WTO - Science Co-op Work Term

### LEVEL IV

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:

3 units

from

- CHEMBIO 3OB3 - Structural Elucidation of Natural Products and Small Molecules
- CHEMBIO 4IB3 - Bio-Inorganic Chemistry

3 units

from

- CHEMBIO 3AA3 - Analytical Tools for Chemical Biology
- CHEM 3AA3 - Instrumental Analysis

6-12 units

from

- Levels III, IV Chemical Biology or Chemistry courses,

which must include one of

- CHEMBIO 3L03 - Chemical Biology Laboratory II
- CHEMBIO 4G03
- CHEMBIO 4G12 A/B - Senior Thesis in Chemical Biology
- CHEMBIO 4RP6 A/B S - Research Project in Chemical Biology

(See *Program Notes 7* and *8* above.)

3 units

- BIOCHEM 3D03 - Metabolism and Regulation

3-6 units

from

- CHEMBIO 4A03 - Bio-Analytical Chemistry and Assay Development
- CHEMBIO 4OA3 - Natural Products

- CHEMBIO 40B3 - Medicinal Chemistry: Drug Design and Development
- CHEM 4D03 - Organic Structure and Synthesis
- CHEM 40B3 - Polymers and Organic Materials
- CHEM 4W03 - Natural and Synthetic Materials

(See *Program Note 5* above.)

### 3-12 units

- Electives (See *Program Note 8* above.)

Spring/Summer Term:

Work Term

### 1 course

- SCIENCE 4WT0 - Science Co-op Work Term

### LEVEL V

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

### 1 course

- SCIENCE 5WT0 - Science Co-op Work Term

Winter Term: 15 units:

### 0-3 units

from the following courses, if only three units completed in Level IV

- CHEMBIO 4A03 - Bio-Analytical Chemistry and Assay Development
- CHEMBIO 40A3 - Natural Products
- CHEMBIO 40B3 - Medicinal Chemistry: Drug Design and Development
- CHEM 4D03 - Organic Structure and Synthesis
- CHEM 40B3 - Polymers and Organic Materials
- CHEM 4W03 - Natural and Synthetic Materials

(See *Program Note 5* above.)

### 12-15 units

- Electives (See *Program Note 8* above.)

### CO-OP PROGRAM CHART

	<b>FALL TERM (September to December)</b>	<b>WINTER TERM (January to April)</b>	<b>SPRING/SUMMER TERM (May to August)</b>
<b>Level III</b>	15 units from Academic Level III SCIENCE 2C00 (if not completed) and SCIENCE 3C00	Work Term SCIENCE 3WT0	Work Term SCIENCE 3WT0
<b>Level IV</b>	15 units from Academic Levels III & IV	15 units from Academic Levels III & IV	Work Term SCIENCE 4WT0
<b>Level V</b>	Work Term SCIENCE 5WT0	15 units from Academic Levels III & IV	

## HONOURS CHEMISTRY (B.SC.)

### ADMISSION NOTES

- PHYSICS 1AA3 or 1CC3 must be completed by the end of Level II and is very strongly recommended in Level I.
- Students with credit in MATH 1X03 or 1ZA3 may use either as a substitution for MATH 1A03 or 1LS3.
- Students are strongly recommended to complete one of MATH 1AA3, 1LT3, 1XX3 (or 1ZB3) in Level I and MATH 1B03 (or 1ZC3) in either Level I or II.

### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 5.0 including:

### 6 UNITS

from the following courses, where an average of at least 6.0 (between the courses) is required

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II

### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

(See *Admission Note 2* above.)

### 3 UNITS

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

### 12 UNITS

from

- the Science I Course List (See *Admissions Notes 1* and *3* above.)

### PROGRAM NOTES

- In some cases there are Level II and III prerequisites for Level III and IV courses. The prerequisites should be considered when choosing your Level II and III courses.
- BIOCHEM 2EE3 or any Biochemistry course that has a Biology course as the prerequisite are an acceptable alternative to BIOCHEM 3G03. CHEM 4IB3 or a Level III or IV Chemical Biology course are also acceptable substitutes providing these units are taken as elective to the Honours Chemistry program requirements.
- CHEM 2PC3 or 3PC3 are recommended for all Chemistry students, but not required for students who complete MATH 1B03 (or 1ZC3) in either Level I or II, and who complete one of MATH 1AA3, 1LT3, 1XX3 (or 1ZB3) in Level I.
- One of PHYSICS 1AA3 or 1CC3 must be completed by the end of Level II and is very strongly recommended in Level I.
- CHEM 4G09 A/B, 4G12 A/B or 4RP6 A/B S cannot be taken concurrently with CHEM 3LA3 or 3RP3.
- One of CHEM 3EP3 A/B S, 3RP3 may be completed to satisfy units toward the Level III Chemical Biology or Chemistry requirement.

### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

#### LEVEL II: 30 UNITS

3 units

from

- CHEM 2A03 - Quantitative Chemical Analysis
- CHEM 2AA3

18 units

- CHEM 2II3 - Introductory Inorganic Chemistry: Structure and Bonding
- CHEM 2LB3 - Tools for Chemical Discovery
- CHEM 2OD3 - Synthesis and Function of Organic Molecules
- CHEM 2OG3 - Structure and Reactivity of Organic Molecules (or CHEM 2OC3)
- CHEM 2P03 - Applications of Physical Chemistry
- CHEM 2Q03 - Inquiry for Chemistry

0-3 units

from the following courses, if not completed in Level I

- PHYSICS 1AA3 - Introduction To Modern Physics
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences



(See *Program Note 4* above.)

6-9 units

- Electives (See *Program Notes 3 and 4* above.)

**LEVEL III: 30 UNITS**

12 units

- CHEM 3AA3 - Instrumental Analysis
- CHEM 3II3 - Introduction to Transition Metal Chemistry
- CHEM 3LA3 - Strategies for Chemical Discovery
- CHEM 3PA3 - Quantum Mechanics and Spectroscopy

0-3 units

from

- CHEM 3PC3 - Mathematical Tools for Chemical Problems

(See *Program Note 3* above.)

6 units

from

- Levels III, IV Chemical Biology or Chemistry courses (See *Program Note 6* above.)

3 units

- BIOCHEM 3G03 - Proteins and Nucleic Acids

(See *Program Note 2* above.)

6-9 units

- Electives

**LEVEL IV: 30 UNITS**

9-12 units

from

- Level IV Chemistry courses (See *Program Note 5* above.)

3 units

from

- Levels III, IV Chemical Biology or Chemistry courses (See *Program Note 6* above.)

3 units

from

- Level IV Chemical Biology or Chemistry courses

12-15 units

- Electives

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2019**

*120 units total (Levels I to IV), of which no more than 48 units may be Level I*

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)

**LEVEL II: 30 UNITS**

3 units

from

- CHEM 2A03 - Quantitative Chemical Analysis
- CHEM 2AA3

21 units

- CHEM 2II3 - Introductory Inorganic Chemistry: Structure and Bonding
- CHEM 2LA3
- CHEM 2LB3 - Tools for Chemical Discovery
- CHEM 2OC3
- CHEM 2OD3 - Synthesis and Function of Organic Molecules
- CHEM 2P03 - Applications of Physical Chemistry (or CHEM 2PD3)

0-3 units

from the following courses, if not completed in Level I

- PHYSICS 1AA3 - Introduction To Modern Physics
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences

(See *Program Note 4* above.)

3-6 units

- Electives (See *Program Notes 3 and 4* above.)

**LEVEL III: 30 UNITS**

12 units

- CHEM 3AA3 - Instrumental Analysis
- CHEM 3II3 - Introduction to Transition Metal Chemistry
- CHEM 3LA3 - Strategies for Chemical Discovery
- CHEM 3PA3 - Quantum Mechanics and Spectroscopy

6 units

from

- Levels III, IV Chemical Biology or Chemistry courses (See *Program Note 6* above.)

3 units

- BIOCHEM 3G03 - Proteins and Nucleic Acids

(See *Program Note 2* above.)

9 units

- Electives

**LEVEL IV: 30 UNITS**

9 units

from

- Level IV Chemistry courses (See *Program Note 5* above.)

3 units

from

- Levels III, IV Chemical Biology or Chemistry courses (See *Program Note 6* above.)

3 units

from

- Level IV Chemical Biology or Chemistry courses

15 units

- Electives

**HONOURS CHEMISTRY CO-OP (B.SC.)**

**ADMISSION**

**Enrolment in this program is limited.** Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline, and completion of Level II Honours Chemistry with a Grade Point Average of at least 5.0 including:

**21 UNITS**

- CHEM 2A03 - Quantitative Chemical Analysis
- CHEM 2II3 - Introductory Inorganic Chemistry: Structure and Bonding
- CHEM 2LB3 - Tools for Chemical Discovery
- CHEM 2OD3 - Synthesis and Function of Organic Molecules
- CHEM 2OG3 - Structure and Reactivity of Organic Molecules
- CHEM 2P03 - Applications of Physical Chemistry (or 2PD3)
- CHEM 2Q03 - Inquiry for Chemistry

**3 UNITS**

from

- PHYSICS 1AA3 - Introduction To Modern Physics
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences

**NOTE:**

Information about the program and the selection procedure may be obtained from Science Career and Cooperative Education.

**PROGRAM NOTES**

- This is a five-level (year) co-op program which includes two eight-month work terms that must be spent in chemistry-related placements.
- Students must be registered full-time and take a full academic workload as prescribed by Level and by Term.
- Students are required to complete SCIENCE 2C00 and SCIENCE 3C00 before the first work placement and are strongly recommended to complete SCIENCE 2C00 in Level II.
- There are Level II and III prerequisites for many Level III and IV courses. The prerequisites should be considered when choosing your Level II and

III courses.

- Students considering postgraduate studies in Chemistry should note that 18 units of Level IV Chemistry or related subjects are required for consideration for admission at McMaster and most graduate schools in Canada.
- BIOCHEM 2EE3 or any Biochemistry course that has a Biology course as a prerequisite are an acceptable alternative to BIOCHEM 3G03. CHEM 4IB3 or a Level III or IV Chemical Biology course are also acceptable substitutes providing these units are taken as elective to the Honours Chemistry program requirements.
- CHEM 4G09 A/B, 4G12 A/B or 4RP6 A/B S cannot be taken concurrently with CHEM 3LA3 or 3RP3.
- CHEM 2PC3 or 3PC3 are recommended for all Chemistry students, but not required for students who complete MATH 1B03 (or 1ZC3) in either Level I or II, and who complete one of MATH 1AA3, 1LT3, 1XX3 (or 1ZB3) in Level I.

### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

Completed prior to admission to the program

#### LEVEL II: 30 UNITS

30 units

- Completion of any Level II Honours Chemistry program

1 course

- SCIENCE 2C00 - Skills for Career Success in Science

#### LEVEL III

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:

3 units

from

- CHEM 3PC3 - Mathematical Tools for Chemical Problems

(See Program Note 8 above.)

6 units

- CHEM 3II3 - Introduction to Transition Metal Chemistry
- CHEM 3LA3 - Strategies for Chemical Discovery

6 units

- Electives

2 courses

- SCIENCE 2C00 - Skills for Career Success in Science
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

1 course

- SCIENCE 3WT0 - Science Co-op Work Term

Spring/Summer Term:

Work Term

1 course

- SCIENCE 3WT0 - Science Co-op Work Term

#### LEVEL IV

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:

6 units

- CHEM 3AA3 - Instrumental Analysis
- CHEM 3PA3 - Quantum Mechanics and Spectroscopy

9-12 units

from Levels III, IV Chemistry courses,

which may include one of

- CHEM 4G12 A/B - Senior Thesis
- CHEM 4RP6 A/B S - Research Project in Chemistry

(See Note 4 and Program Note 7 above.)

3 units

from

- Levels III, IV Chemical Biology or Chemistry courses

9-12 units

- Electives

Spring/Summer Term:

Work Term

1 course

- SCIENCE 4WT0 - Science Co-op Work Term

#### LEVEL V

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

1 course

- SCIENCE 5WT0 - Science Co-op Work Term

Winter Term: 15 units:

3 units

from

- Levels III, IV Chemistry courses

3 units

from

- Level IV Chemical Biology or Chemistry courses

3 units

- BIOCHEM 3G03 - Proteins and Nucleic Acids

(See Program Note 6 above.)

6 units

- Electives

### REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2020

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

Completed prior to admission to the program

#### LEVEL II: 30 UNITS

30 units

- Completion of any Level II Honours Chemistry program

1 course

- SCIENCE 2C00 - Skills for Career Success in Science

#### LEVEL III

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:

9 units

- CHEM 3II3 - Introduction to Transition Metal Chemistry
- CHEM 3LA3 - Strategies for Chemical Discovery
- CHEM 3PA3 - Quantum Mechanics and Spectroscopy

6 units

- Electives

2 courses

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

1 course

- SCIENCE 3WT0 - Science Co-op Work Term

Spring/Summer Term:

Work Term

1 course

- SCIENCE 3WT0 - Science Co-op Work Term

**LEVEL IV**

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:

3 units

- CHEM 3AA3 - Instrumental Analysis

9-12 units

from Levels III, IV Chemistry courses,

which may include one of

- CHEM 4G09 A/B
- CHEM 4G12 A/B - Senior Thesis
- CHEM 4RP6 A/B S - Research Project in Chemistry

(See *Note 4 and Program Note 7* above.)

3 units

from

- Levels III, IV Chemical Biology or Chemistry courses

12-15 units

- Electives

Spring/Summer Term:

Work Term

1 course

- SCIENCE 4WT0 - Science Co-op Work Term

**LEVEL V**

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

1 course

- SCIENCE 5WT0 - Science Co-op Work Term

Winter Term: 15 units:

3 units

from

- Levels III, IV Chemistry courses

3 units

from

- Level IV Chemical Biology or Chemistry courses

3 units

- BIOCHEM 3G03 - Proteins and Nucleic Acids

(See *Program Note 6* above.)

6 units

- Electives

**CO-OP PROGRAM CHART**

	<b>FALL TERM (September to December)</b>	<b>WINTER TERM (January to April)</b>	<b>SPRING/SUMMER TERM (May to August)</b>
<b>Level III</b>	15 units from Academic Level III + SCIENCE 2C00 (if not completed) and SCIENCE 3C00	Work Term SCIENCE 3WT0	Work Term SCIENCE 3WT0
<b>Level IV</b>	15 units from Academic Level III	15 units from Academic Level IV	Work Term SCIENCE 4WT0
<b>Level V</b>	Work Term SCIENCE 5WT0	15 units from Academic Level IV	

**Minor(s):****MINOR IN CHEMICAL BIOLOGY****NOTES**

- Students who wish to pursue a Minor in Chemical Biology are encouraged to select courses in consultation with the Undergraduate Advisor in the Department of Chemistry and Chemical Biology (email: advisor@chemistry.mcmaster.ca).
- ISCI 1A24 A/B is a substitution for CHEM 1A03 (or 1E03) and 1AA3 and also for BIOLOGY 1A03 and 1M03.
- ISCI 2A18 A/B may be used as a substitution for 3 units of Level II Chemical Biology and 3 units of equivalent credit for BIOCHEM 3G03 toward the Minor in Chemical Biology.
- In order to declare a Minor in Chemical Biology, at least 12 units (above Level I) must be elective to degree.
- CHEMBIO 2L03, 2Q03 and 3L03 are only open to students registered in Honours Chemical Biology.
- Level II Biology courses require one or both of BIOLOGY 1A03, 1M03 as prerequisites.
- Honours Chemistry students who have taken BIOCHEM 2EE3 or 3G03 towards their degree requirements may use the other course towards a Minor in Chemical Biology.
- Completion of Level II Honours Chemistry may be used as a substitution for 6 units of Level II Chemical Biology toward the Minor in Chemical Biology.

**REQUIREMENTS**

24 units total

**3 UNITS**

from

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1E03 - General Chemistry for Engineering I

**3 UNITS**

- CHEM 1AA3 - Introductory Chemistry II

**6-12 UNITS**

from Levels II, III, IV Chemical Biology courses, or equivalents from the following list:

- CHEM 2A03 - Quantitative Chemical Analysis
- CHEM 2AA3
- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I
- CHEM 2OB3 - Organic Chemistry II
- CHEM 2OC3
- CHEM 2OD3 - Synthesis and Function of Organic Molecules
- CHEM 2OG3 - Structure and Reactivity of Organic Molecules
- CHEM 2P03 - Applications of Physical Chemistry

**0-6 UNITS**

from

- Levels II, III Biology courses
- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- BIOCHEM 3G03 - Proteins and Nucleic Acids

(See *Notes 6 and 7* above.)

**6 UNITS**

from

- Levels III, IV Chemical Biology courses

## MINOR IN CHEMISTRY

### NOTES

- Students who wish to pursue a Minor in Chemistry are encouraged to select courses in consultation with the Undergraduate Advisor in the Department of Chemistry and Chemical Biology (email: advisor@chemistry.mcmaster.ca).
- ISCI 1A24 A/B is a substitution for CHEM 1A03 (or 1E03) and 1AA3.
- ISCI 2A18 A/B may be used as a substitution for 3 units of Level II Chemistry toward the Minor in Chemistry, except for students in Honours Integrated Science with a concentration in Chemical Biology.
- In order to declare a Minor in Chemistry, at least 12 units (above Level I) must be elective to degree.

### REQUIREMENTS

24 units total

#### 3 UNITS

from

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1E03 - General Chemistry for Engineering I

#### 3 UNITS

- CHEM 1AA3 - Introductory Chemistry II

#### 12 UNITS

from Levels II, III, IV Chemistry courses, or equivalents from the following list:

- CHEMBIO 2A03 - Introduction to Bio-Analytical Chemistry
- CHEMBIO 2OA3
- CHEMBIO 2OB3
- CHEMBIO 2OD3 - Organic Chemistry II
- CHEMBIO 2OG3 - Organic Chemistry I
- CHEMBIO 2P03 - Physical Chemistry Tools for Chemical Biology

#### 6 UNITS

from

- Levels III, IV Chemistry courses
- CHEMBIO 3OA3 - Organic Mechanistic Tools for Chemical Biology

## School of Earth, Environment & Society (Faculty of Science)

<http://www.science.mcmaster.ca/geo/>

Faculty as of January 15, 2020

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## Bachelor of Science (Honours)

### HONOURS EARTH AND ENVIRONMENTAL SCIENCES (B.SC.)

#### ADMISSION NOTES

- Students who did not complete Grade 12 Chemistry U must complete CHEM 1R03 in Level I. Given this course is considered elective, an additional three units from the *Science I Course List* must be completed. CHEM 1A03 must be completed by the end of Level II.
- One of PHYSICS 1A03 or 1C03 must be completed prior to graduation. Completion by the end of Level II is recommended. Students who did not complete Grade 12 Physics U must register in PHYSICS 1A03.

#### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 5.0 including:

#### 6 UNITS

from the following courses with an average of at least 6.0

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03

#### 3 UNITS

from

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1R03 - General Chemistry

(See *Admission Note 1* above.)

#### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

#### 12 UNITS

from

- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity
- CHEM 1AA3 - Introductory Chemistry II
- MATH 1AA3 - Calculus For Science II
- MATH 1B03 - Linear Algebra I
- MATH 1LT3 - Calculus for the Life Sciences II
- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1AA3 - Introduction To Modern Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences
- SCIENCE 1A03 - Investigating Science: Opportunities & Experiences

(See *Admission Notes* above.)

#### PROGRAM NOTES

- Earth and Environmental Sciences at McMaster encompass five major themes: Aqueous Environmental Geochemistry, Earth Sciences, Environmental Hydrology and Climate, Environmental Policy, GIS and Spatial Analysis. It should be noted that each thematic area has its own sequence of courses and prerequisites (See the *Course Listings* section of this Calendar). Students may elect to take some or all of the upper level courses from different areas. In addition, there is a set of courses encompassing research design, field work, internships, and the senior thesis or review paper.

#### AQUEOUS ENVIRONMENTAL GEOCHEMISTRY

EARTHSC 3CC3, 4CC3, 4N03, ENVIRSC 2Q03, 3O03

#### EARTH SCIENCES

EARTHSC 2E03, 2FE3, 2K03, 2T03, 3E03, 3K03, 3Z03, 4G03, 4J03, 4P03, 4T03, 4VV3, ENVSOCTY 3SR3

#### ENVIRONMENTAL HYDROLOGY AND CLIMATE

EARTHSC 3CC3, 3W03, 4CC3, 4WB3, ENVIRSC 2B03, 2C03, 2W03, 3B03, 3U03, 4BB3, 4C03, 4W03

#### ENVIRONMENTAL POLICY

ENVIRSC 4EA3, ENVSOCTY 2EI3, 2EK3, 3EC3, 3EE3, 3EG3, 4ET3, 4HH3

#### GEOGRAPHIC INFORMATION SYSTEMS (GIS) AND SPATIAL ANALYSIS

ENVSOCTY 2GI3, 3GI3, 3GV3, 3SR3, 4GA3, 4GS3, 4GT3

- Students aiming to meet the academic requirements for professional registration of Geoscientists (PGeo) in Ontario can find additional information on these requirements on the website: <https://www.science.mcmaster.ca/geo/undergraduate/undergrad-welcome.html>. Students are encouraged to consult with the academic program advisor in the School of Earth, Environment & Society to ensure proper selection of courses for professional registration. The Honours programs offered by the School of Earth, Environment & Society may not fulfill professional registration requirements.
- All students are strongly encouraged to meet with the academic program advisor in the School of Earth, Environment & Society to discuss program requirements and course selections.
- There are Level III prerequisites for many Level IV courses. The prerequisites should be considered when selecting your courses.
- The field components of EARTHSC 2FE3 and 3FE3, are normally taken outside of the normal term. Details are announced in December (EARTHSC 2FE3) or March (EARTHSC 3FE3).
- A Minor in Earth Sciences, Environment & Society, Environmental Sciences or Geography and Earth Sciences is not permitted in the Honours Earth and Environmental Sciences program. However, Minors in Environmental Studies, Geographic Information Systems and Geography are permitted.
- In order to meet the Compulsory Foundation Science and Geoscience requirements for the Professional Geoscientist Certification, completion of the following courses is required: CHEM 1A03, EARTHSC 2E03, 2K03, 3FE3, 3Z03, MATH 1A03 or 1LS3, and PHYSICS 1A03 or 1C03. Additional requirements are posted on the website [https://www.science.mcmaster.ca/geo/images/documents/APGO\\_Environmental\\_Geoscience\\_Stream.pdf](https://www.science.mcmaster.ca/geo/images/documents/APGO_Environmental_Geoscience_Stream.pdf).
- Students who entered the program prior to September 2015, may use ENVIRSC 1B03 as three units toward Course List 1.
- ENVSOCTY 3MB3 (or GEOG 3MB3, EARTHSC 3MB3 or ENVIRSC 3MB3) or STATS 2B03 must be completed by the end of Level III. Students who entered the program prior to September 2018, may use one of MATH 1AA3, 1B03 or 1LT3 to satisfy the Statistics requirement.

#### COURSE LIST 1

- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology or
- BIOLOGY 2F03 - Fundamental and Applied Ecology
- CHEM 2A03 - Quantitative Chemical Analysis
- CHEM 2AA3
- CHEM 2E03 - Introductory Organic Chemistry
- EARTHSC 2C03
- EARTHSC 2EI3
- EARTHSC 2FE3 - Introduction to Field Methods in Earth Sciences
- EARTHSC 2GI3
- ENVIRSC 2C03 - Surface Climate Processes and Environmental Interactions
- ENVSOCTY 2EI3 - Environment & Society: Challenges and Solutions
- ENVSOCTY 2GI3 - Geographic Information Systems
- GEOG 2EI3
- GEOG 2GI3
- STATS 2B03 - Statistical Methods for Science

#### COURSE LIST 2

- BIOLOGY 2F03 - Fundamental and Applied Ecology
- BIOLOGY 3DD3 - Communities and Ecosystems

- BIOLOGY 3SS3 - Population Ecology
- CHEM 2A03 - Quantitative Chemical Analysis
- CHEM 2AA3
- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I
- CHEM 2OB3 - Organic Chemistry II
- CHEM 2OC3
- CHEM 2OD3 - Synthesis and Function of Organic Molecules
- CHEM 2OG3 - Structure and Reactivity of Organic Molecules
- EARTHSC 2C03
- EARTHSC 2GI3
- EARTHSC 3B03
- EARTHSC 3CC3 - Earth's Changing Climate
- EARTHSC 3E03 - Clastic Sedimentary Environments
- EARTHSC 3GI3
- EARTHSC 3GV3
- EARTHSC 3K03 - Petrology
- EARTHSC 3MB3
- EARTHSC 3O03
- EARTHSC 3SR3
- EARTHSC 3U03
- EARTHSC 3W03 - Physical Hydrogeology
- EARTHSC 3Z03 - Structural Geology
- EARTHSC 4BB3
- EARTHSC 4C03
- EARTHSC 4CC3 - Stable Isotopes in Earth and Environmental Systems
- EARTHSC 4EA3
- EARTHSC 4FF3 - Topics of Field Research
- EARTHSC 4G03 - Glacial Sediments and Environments
- EARTHSC 4GA3
- EARTHSC 4J03 - Basin Analysis
- EARTHSC 4MI3
- EARTHSC 4MT6 A/B - Senior Thesis
- EARTHSC 4P03 - Coral Reef Environments
- EARTHSC 4T03 - Plate Tectonics and Ore Deposits
- EARTHSC 4VV3
- EARTHSC 4W03
- EARTHSC 4WB3 - Contaminant Hydrogeology
- ENVIRSC 2C03 - Surface Climate Processes and Environmental Interactions
- ENVIRSC 3B03 - Ecosystems and Global Change
- ENVIRSC 3O03 - Contaminant Fate and Transport
- ENVIRSC 3U03 - Environmental Systems Modelling
- ENVIRSC 4BB3 - Field Techniques in Hydrology
- ENVIRSC 4C03 - Advanced Physical Climatology
- ENVIRSC 4EA3 - Environmental Assessment
- ENVIRSC 4MI3 - Independent Study in Earth and Environmental Sciences
- ENVIRSC 4N03 - Global Biogeochemical Cycles
- ENVIRSC 4W03 - Hydrologic Modelling
- ENVSOCTY 2GI3 - Geographic Information Systems
- ENVSOCTY 3GI3 - Advanced Raster GIS
- ENVSOCTY 3GV3 - Advanced Vector GIS
- ENVSOCTY 3MB3 - Data Analysis
- ENVSOCTY 3SR3 - Remote Sensing
- ENVSOCTY 4GA3 - Applied Spatial Statistics
- ENVSOCTY 4GS3 - GIS Programming
- ENVSOCTY 4GT3 - Special Topics in GIS
- GEOG 2GI3
- GEOG 3GI3
- GEOG 3GV3
- GEOG 3MB3

- GEOG 3SR3
- GEOG 4GA3
- GEOG 4GS3
- GEOG 4GT3

**REQUIREMENTS**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)

**LEVEL II: 30 UNITS**

15 units

from

- EARTHSC 2B03
- EARTHSC 2E03 - Earth History
- EARTHSC 2K03 - Optical Crystallography and Mineralogy
- EARTHSC 2T03 - Geology of Canada
- ENVIRSC 2B03 - Soils and the Environment
- EARTHSC 2Q03
- ENVIRSC 2W03 - Physical Hydrology

3 units

from

- EARTHSC 2L03
- EARTHSC 2Q03
- ENVIRSC 2Q03 - Introduction to Environmental Geochemistry

3 units

from

- *Course List 1*

0-3 units

from the following courses, if only 3 units was completed in Level I

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03

0-3 units

- CHEM 1A03 - Introductory Chemistry I (if not completed in Level I)

(See *Admission Note 1* above.)

3-9 units

- Electives (See *Program Note 5* above.)

**LEVEL III: 30 UNITS**

9 units

- EARTHSC 3FE3 - Field Camp
- EARTHSC 3RD3 - Research Design and Dissemination in Earth and Environmental Sciences
- EARTHSC 3Z03 - Structural Geology

9 units

from

- *Course List 2*

0-3 units

from

- EARTHSC 3MB3
- ENVIRSC 3MB3
- ENVSOCTY 3MB3 - Data Analysis
- GEOG 3MB3
- STATS 2B03 - Statistical Methods for Science

(See *Program Note 9* above.)

9-12 units

- Electives

**LEVEL IV: 30 UNITS**

18 units

from *Course List 2*,

which must include one of

- EARTHSC 4MT6 A/B - Senior Thesis
- ENVIRSC 4EA3 - Environmental Assessment
- ENVIRSC 4MI3 - Independent Study in Earth and Environmental Sciences

**0-3 units**

from the following courses, if not already completed

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

**9-12 units**

- Electives

## HONOURS EARTH AND ENVIRONMENTAL SCIENCES CO-OP (B.SC.)

**ADMISSION**

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline and completion of Level II Honours Earth and Environmental Sciences with a Grade Point Average of at least 5.0 and completion of the following courses:

**6 UNITS**

from

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03

**3 UNITS**

- CHEM 1A03 - Introductory Chemistry I

**15 UNITS**

from

- EARTHSC 2B03
- EARTHSC 2E03 - Earth History
- EARTHSC 2K03 - Optical Crystallography and Mineralogy
- EARTHSC 2T03 - Geology of Canada
- EARTHSC 2W03
- ENVIRSC 2B03 - Soils and the Environment
- ENVIRSC 2W03 - Physical Hydrology

**3 UNITS**

from

- EARTHSC 2L03
- EARTHSC 2Q03
- ENVIRSC 2Q03 - Introduction to Environmental Geochemistry

**3 UNITS**

from

- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2F03 - Fundamental and Applied Ecology
- CHEM 2A03 - Quantitative Chemical Analysis
- CHEM 2AA3
- CHEM 2E03 - Introductory Organic Chemistry
- EARTHSC 2C03
- EARTHSC 2E13
- EARTHSC 2FE3 - Introduction to Field Methods in Earth Sciences
- EARTHSC 2GI3
- ENVIRSC 2C03 - Surface Climate Processes and Environmental Interactions
- ENVSOCTY 2E13 - Environment & Society: Challenges and Solutions
- ENVSOCTY 2GI3 - Geographic Information Systems
- GEOG 2E13
- GEOG 2GI3
- STATS 2B03 - Statistical Methods for Science

**NOTE**

Information about this program and the selection procedure can be obtained from Science Career and Cooperative Education and the Program Director.

**PROGRAM NOTES**

- Earth and Environmental Sciences at McMaster encompass five major themes: Aqueous Environmental Geochemistry, Earth Sciences, Environmental Hydrology and Climate, Environmental Policy, GIS and Spatial Analysis. It should be noted that each thematic area has its own sequence of courses and prerequisites (See the *Course Listings* section of this Calendar). Students may elect to take some or all of the upper level courses from different areas. In addition, there is a set of courses encompassing research design, field work, internships, and the senior thesis or review paper.

AQUEOUS ENVIRONMENTAL GEOCHEMISTRY

EARTHSC 3CC3, 4CC3, 4N03, ENVIRSC 2Q03, 3O03

EARTH SCIENCES

EARTHSC 2E03, 2FE3, 2K03, 2T03, 3E03, 3K03, 3Z03, 4G03, 4J03, 4P03, 4T03, 4VV3, ENVSOCTY 3SR3

ENVIRONMENTAL HYDROLOGY AND CLIMATE

EARTHSC 3CC3, 3W03, 4CC3, 4WB3, ENVIRSC 2B03, 2C03, 2W03, 3B03, 3U03, 4BB3, 4C03, 4W03

ENVIRONMENTAL POLICY

ENVIRSC 4EA3, ENVSOCTY 2E13, 2EK3, 3EC3, 3EE3, 3EG3, 4ET3, 4HH3

GEOGRAPHIC INFORMATION SYSTEMS (GIS) AND SPATIAL ANALYSIS

ENVSOCTY 2GI3, 3GI3, 3GV3, 3SR3, 4GA3, 4GS3, 4GT3

- Students aiming to meet the academic requirements for professional registration of Geoscientists (PGeo.) in Ontario can find additional information on these requirements on the website: <https://www.science.mcmaster.ca/geo/undergraduate/undergrad-welcome.html>. Students are encouraged to consult with the academic program advisor in the School of Earth, Environment & Society to ensure proper course selection for professional registration. The Honours programs offered by the School of Earth, Environment & Society may not fulfill professional registration requirements.
- There are Level II prerequisites for many Level III courses; these should be considered when choosing Level II courses. As an aid to choosing a coherent set of courses in a single discipline, students should consult the list of thematic areas applicable to all Honours Earth and Environmental Sciences programs.
- Students should seek academic program advising from the School of Earth, Environment & Society to ensure that their choices are appropriate.
- The field component of EARTHSC 2FE3 and 3FE3 are normally taken outside of the normal term. Details are announced in December (EARTHSC 2FE3) or March (EARTHSC 3FE3).
- Students who did not complete Grade 12 Physics U must complete PHYSICS 1A03. One of PHYSICS 1A03 or 1C03 must be completed prior to graduation.
- This is a five- level (year) co-op program which includes two eight-month work terms which must be spent in earth and environmental sciences related placements.
- Students must be registered full-time and take a full academic workload, as prescribed by Level and Term.
- Students are required to complete SCIENCE 2C00 and SCIENCE 3C00 before the first work placement and are strongly recommended to complete SCIENCE 2C00 in Level II.
- ENVSOCTY 3MB3 (or EARTHSC 3MB3, ENVIRSC 3MB3 or GEOG 3MB3) or STATS 2B03 must be completed by the end of Level IV. Students who entered the program prior to September 2018, may use one of MATH 1AA3, 1B03 or 1LT3 to satisfy the Statistics requirement.
- Co-op students interested in pursuing GIS-related work placements

and/or a Minor in Geographic Information Systems must complete ENVSOCTY 2GI3 in Fall Term of Level II and one of ENVSOCTY 3GI3 or 3GV3 in Winter Term of Level II. Students are encouraged to consult with an academic advisor to ensure proper course selection.

### **EARTH AND ENVIRONMENTAL SCIENCES CO-OP COURSE LIST**

- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2F03 - Fundamental and Applied Ecology
- BIOLOGY 3DD3 - Communities and Ecosystems
- BIOLOGY 3SS3 - Population Ecology
- CHEM 2A03 - Quantitative Chemical Analysis
- CHEM 2AA3
- CHEM 2E03 - Introductory Organic Chemistry
- CHEM 2OA3 - Organic Chemistry I
- CHEM 2OB3 - Organic Chemistry II
- CHEM 2OC3
- CHEM 2OD3 - Synthesis and Function of Organic Molecules
- CHEM 2OG3 - Structure and Reactivity of Organic Molecules
- EARTHSC 2C03
- EARTHSC 2GI3
- EARTHSC 3B03
- EARTHSC 3CC3 - Earth's Changing Climate
- EARTHSC 3E03 - Clastic Sedimentary Environments
- EARTHSCI 3GI3
- EARTHSC 3GV3
- EARTHSC 3K03 - Petrology
- EARTHSC 3MB3
- EARTHSC 3O03
- EARTHSC 3SR3
- EARTHSC 3U03
- EARTHSC 3W03 - Physical Hydrogeology
- EARTHSC 3Z03 - Structural Geology
- EARTHSC 4BB3
- EARTHSC 4C03
- EARTHSC 4CC3 - Stable Isotopes in Earth and Environmental Systems
- EARTHSC 4EA3
- EARTHSC 4G03 - Glacial Sediments and Environments
- EARTHSC 4GA3
- EARTHSC 4J03 - Basin Analysis
- EARTHSC 4MI3
- EARTHSC 4MT6 A/B - Senior Thesis
- EARTHSC 4N03
- EARTHSC 4P03 - Coral Reef Environments
- EARTHSC 4T03 - Plate Tectonics and Ore Deposits
- EARTHSC 4VV3
- EARTHSC 4W03
- EARTHSC 4WB3 - Contaminant Hydrogeology
- ENVIRSC 2C03 - Surface Climate Processes and Environmental Interactions
- ENVIRSC 3B03 - Ecosystems and Global Change
- ENVIRSC 3O03 - Contaminant Fate and Transport
- ENVIRSC 3U03 - Environmental Systems Modelling
- ENVIRSC 4BB3 - Field Techniques in Hydrology
- ENVIRSC 4C03 - Advanced Physical Climatology
- ENVIRSC 4EA3 - Environmental Assessment
- ENVIRSC 4MI3 - Independent Study in Earth and Environmental Sciences
- ENVIRSC 4N03 - Global Biogeochemical Cycles
- ENVIRSC 4W03 - Hydrologic Modelling
- ENVSOCTY 2GI3 - Geographic Information Systems
- ENVSOCTY 3GI3 - Advanced Raster GIS
- ENVSOCTY 3GV3 - Advanced Vector GIS
- ENVSOCTY 3MB3 - Data Analysis

- ENVSOCTY 3SR3 - Remote Sensing
- ENVSOCTY 4GA3 - Applied Spatial Statistics
- ENVSOCTY 4GS3 - GIS Programming
- ENVSOCTY 4GT3 - Special Topics in GIS
- ENVSOCTY 4MS3 - Independent Study
- GEOG 2GI3
- GEOG 3GI3
- GEOG 3GV3
- GEOG 3MB3
- GEOG 3SR3
- GEOG 4GA3
- GEOG 4GS3
- GEOG 4GT3
- GEOG 4MS3

### **REQUIREMENTS**

*120 units total (Levels I to V), of which no more than 48 units may be Level I*

#### **LEVEL I: 30 UNITS**

- Completed prior to admission to the program

#### **LEVEL II: 30 UNITS**

30 units

- Completion of Level II Honours Earth and Environmental Sciences (See *Admission* above.)

1 course

- SCIENCE 2C00 - Skills for Career Success in Science

#### **LEVEL III**

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:

**9 units**

- EARTHSC 3FE3 - Field Camp
- EARTHSC 3RD3 - Research Design and Dissemination in Earth and Environmental Sciences
- EARTHSC 3Z03 - Structural Geology

**3 units**

from

- the *Earth and Environmental Sciences Co-op Course List*

**3 units**

- Electives

**2 courses**

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

#### **LEVEL IV**

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:

**18 units**

from the *Earth and Environmental Sciences Co-op Course List*,

**which must include one of**

- EARTHSC 4MI3
- EARTHSC 4MT6 A/B - Senior Thesis
- ENVIRSC 4EA3 - Environmental Assessment



- ENVIRSC 4MI3 - Independent Study in Earth and Environmental Sciences
- GEOG 4MS3

**0-3 units**

from

- EARTHSC 3MB3
- ENVIRSC 3MB3
- ENVSOCTY 3MB3 - Data Analysis
- GEOG 3MB3
- STATS 2B03 - Statistical Methods for Science

(See *Program Note 10* above.)**0-3 units**

from the following courses, if not already completed

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

**12-15 units**

- Electives

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 4WT0 - Science Co-op Work Term

**LEVEL V**

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

**1 course**

- SCIENCE 5WT0 - Science Co-op Work Term

Winter Term: 15 units:**6 units**from the *Earth and Environmental Sciences Co-op Course List*,

which must include one of

- EARTHSC 4MI3
- EARTHSC 4MT6 A/B - Senior Thesis
- ENVIRSC 4EA3 - Environmental Assessment
- ENVIRSC 4MI3 - Independent Study in Earth and Environmental Sciences

(if none of EARTHSC 4MI3, 4MT6 A/B, ENVIRSC 4EA3 or 4MI3 were completed in Level IV)

**9 units**

- Electives

**CO-OP PROGRAM CHART**

	<b>FALL TERM (September to December)</b>	<b>WINTER TERM (January to April)</b>	<b>SPRING/ SUMMER TERM (May to August)</b>
<b>Level III</b>	15 units from Academic Level III and SCIENCE 2C00 (if not completed) and SCIENCE 3C00	Work Term SCIENCE 3WT0	Work Term SCIENCE 3WT0
<b>Level IV</b>	30 units from Academic Levels III and IV		Work Term SCIENCE 4WT0
<b>Level V</b>	Work Term SCIENCE 5WT0	15 units from Academic Level IV	

**HONOURS ENVIRONMENTAL SCIENCES (B.SC.)****ADMISSION NOTE**

Two of EARTHSC 1G03, ENVIRSC 1C03, 1G03 must be completed by the end of Level II.

**ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 5.0 including:

**3 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1M03 - Calculus for Business, Humanities and the Social Sciences

**6 UNITS**

from

**3 units**

- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity

**AND****3 units**

from the following courses, with a grade of at least C+

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03

(See *Admission Note* above.)**OR****6 units**

from the following courses, with an average of at least 6.0

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVSOCTY 1HA3 - Society, Culture and Environment
- ENVSOCTY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3

**9 UNITS**

from

- the *Science I Course List*

**ADMISSION (EFFECTIVE SEPTEMBER 2021)**

Completion of any Level I program with a Grade Point Average of at least 5.0 including:

**3 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1M03 - Calculus for Business, Humanities and the Social Sciences

**6 UNITS**

from the following courses, with an average of at least 6.0

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVSOCTY 1HA3 - Society, Culture and Environment
- ENVSOCTY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3

**9 UNITS**

from

- the *Science I Course List*

**PROGRAM NOTES**

- Environmental Sciences at McMaster encompass a number of major themes, including Aqueous Environmental Geochemistry, Earth Sciences, Environmental Hydrology and Climate, Environmental Policy, GIS and Spatial Analysis, Health and Population, Economic Development and Urban Studies. Each thematic area has its own sequence of courses and prerequisites (See the *Course Listings* section of this Calendar). All students are encouraged to meet with the academic program advisor in the School of Earth, Environment & Society to discuss course selection

and program requirements.

- This program is not intended to satisfy the academic requirements for professional registration of Geoscientists (PGeo) in Ontario. Students interested in PGeo professional registration are encouraged to view the requirements for the Honours Earth and Environmental Sciences (B.Sc.) program.
- The Honours Environmental Sciences program requires students to take one research design course (EARTHSC 3RD3 or ENVSOCTY 3MA3) and one field methods course (ENVIRSC 3ME3 or ENVSOCTY 3MF3). All students are encouraged to meet with the academic program advisor in the School of Earth, Environment & Society to decide which of these courses best fits their area of academic interest.
- The field components of ENVIRSC 3ME3 and ENVSOCTY 3MF3 are normally taken outside of the normal term. Details are announced in March.

### REQUIREMENTS

*120 units total (Levels I to IV), of which no more than 48 units may be Level I*

#### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

#### LEVELS II-IV: 90 UNITS

6 units

- ENVSOCTY 2EI3 - Environment & Society: Challenges and Solutions
- ENVSOCTY 2GI3 - Geographic Information Systems

3 units

from

- ENVSOCTY 3MB3 - Data Analysis
- STATS 2B03 - Statistical Methods for Science

3 units

from

- EARTHSC 3RD3 - Research Design and Dissemination in Earth and Environmental Sciences
- ENVSOCTY 3MA3 - Research Methods

(See *Program Note 3* above.)

3 units

from

- ENVIRSC 3ME3 - Environmental Field Camp
- ENVSOCTY 3MF3 - Urban Field Camp

(See *Program Notes 3* and *4* above.)

45 units

from

- Levels II, III, IV Earth Sciences, Environmental Sciences, Environment and Society courses, which must include 18 units from Levels III, IV

3-6 units

from

- EARTHSC 4MT6 A/B - Senior Thesis
- ENVIRSC 4EA3 - Environmental Assessment
- ENVIRSC 4MI3 - Independent Study in Earth and Environmental Sciences
- ENVIRSC 4MT6 A/B - Senior Thesis
- ENVSOCTY 4EA3 - Environmental Assessment
- ENVSOCTY 4ET3 - Environmental Policy, Ethics and Risk
- ENVSOCTY 4MS3 - Independent Study
- ENVSOCTY 4MT6 A/B - Senior Thesis

24-27 units

- Electives

### ENVIRONMENTAL SCIENCES COURSE LIST (FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2020)

- ASTRON 2E03 - Planetary Astronomy
- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2F03 - Fundamental and Applied Ecology
- BIOLOGY 3DD3 - Communities and Ecosystems

- BIOLOGY 3R03 - Field Biology I
- BIOLOGY 3SS3 - Population Ecology
- BIOLOGY 4A03 - Advanced Topics in Ecology
- BIOLOGY 4J03 - Field Biology II
- EARTHSC 2E03 - Earth History
- EARTHSC 2FE3 - Introduction to Field Methods in Earth Sciences
- EARTHSC 2T03 - Geology of Canada
- EARTHSC 3CC3 - Earth's Changing Climate
- EARTHSC 3E03 - Clastic Sedimentary Environments
- EARTHSC 3W03 - Physical Hydrogeology
- EARTHSC 4CC3 - Stable Isotopes in Earth and Environmental Systems
- EARTHSC 4FF3 - Topics of Field Research
- EARTHSC 4G03 - Glacial Sediments and Environments
- EARTHSC 4MI3
- EARTHSC 4P03 - Coral Reef Environments
- EARTHSCI 4VV3
- EARTHSC 4WB3 - Contaminant Hydrogeology
- ENVIRSC 2B03 - Soils and the Environment
- ENVIRSC 2C03 - Surface Climate Processes and Environmental Interactions
- ENVIRSC 2E03
- ENVIRSC 2Ei3
- ENVIRSC 2GI3
- ENVIRSC 2L03
- ENVIRSC 2Q03 - Introduction to Environmental Geochemistry
- ENVIRSC 2W03 - Physical Hydrology
- ENVIRSC 3B03 - Ecosystems and Global Change
- ENVIRSC 3CC3
- ENVIRSC 3E03
- ENVIRSC 3EE3
- ENVIRSC 3GI3
- ENVIRSC 3GV3
- ENVIRSC 3MB3
- ENVIRSC 3O03 - Contaminant Fate and Transport
- ENVIRSC 3SR3
- ENVIRSC 3U03 - Environmental Systems Modelling
- ENVIRSC 3W03
- ENVIRSC 4BB3 - Field Techniques in Hydrology
- ENVIRSC 4C03 - Advanced Physical Climatology
- ENVIRSC 4CC3
- ENVIRSC 4FF3
- ENVIRSC 4G03
- ENVIRSC 4GA3
- ENVIRSC 4HH3
- ENVIRSC 4MI3 - Independent Study in Earth and Environmental Sciences
- ENVIRSC 4MT6 A/B - Senior Thesis
- ENVIRSC 4N03 - Global Biogeochemical Cycles
- ENVIRSC 4W03 - Hydrologic Modelling
- ENVIRSC 4WB3
- ENVSOCTY 2EI3 - Environment & Society: Challenges and Solutions
- ENVSOCTY 2EK3 - Traditional Indigenous Ecological Knowledge
- ENVSOCTY 2GI3 - Geographic Information Systems
- ENVSOCTY 3EC3 - Environmental Catastrophes
- ENVSOCTY 3EE3 - Energy and Society
- ENVSOCTY 3ER3 - Sustainability and the Economy
- ENVSOCTY 3GI3 - Advanced Raster GIS
- ENVSOCTY 3GV3 - Advanced Vector GIS
- ENVSOCTY 3MB3 - Data Analysis
- ENVSOCTY 3SR3 - Remote Sensing
- ENVSOCTY 4GA3 - Applied Spatial Statistics
- ENVSOCTY 4GS3 - GIS Programming

- ENVSOCY 4GT3 - Special Topics in GIS
- ENVSOCY 4HH3 - Environment and Health
- GEOG 2E13
- GEOG 2EK3
- GEOG 2GI3
- GEOG 3EC3
- GEOG 3EE3
- GEOG 3ER3
- GEOG 3GI3
- GEOG 3GV3
- GEOG 3MB3
- GEOG 3SR3
- GEOG 4GA3
- GEOG 4GS3
- GEOG 4GT3
- GEOG 4HH3
- STATS 2B03 - Statistical Methods for Science

### REQUIREMENTS FOR STUDENTS WHO ENTERED IN SEPTEMBER 2019

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

#### LEVELS II-IV: 90 UNITS

12 units

from

- EARTHSC 2E03 - Earth History
- EARTHSC 2T03 - Geology of Canada
- ENVIRSC 2B03 - Soils and the Environment
- ENVIRSC 2C03 - Surface Climate Processes and Environmental Interactions
- ENVIRSC 2E03
- ENVIRSC 2E13
- ENVIRSC 2GI3
- ENVIRSC 2L03
- ENVIRSC 2Q03 - Introduction to Environmental Geochemistry
- ENVIRSC 2W03 - Physical Hydrology
- ENVSOCY 2E13 - Environment & Society: Challenges and Solutions
- ENVSOCY 2GI3 - Geographic Information Systems
- GEOG 2E13
- GEOG 2GI3

3 units

from

- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2F03 - Fundamental and Applied Ecology
- BIOLOGY 3DD3 - Communities and Ecosystems

3 units

from

- ENVIRSC 3MB3
- ENVSOCY 3MB3 - Data Analysis
- GEOG 3MB3
- STATS 2B03 - Statistical Methods for Science

12 units

from

- EARTHSC 3CC3 - Earth's Changing Climate
- EARTHSC 3E03 - Clastic Sedimentary Environments
- EARTHSC 3W03 - Physical Hydrogeology
- ENVIRSC 3B03 - Ecosystems and Global Change
- ENVIRSC 3CC3
- ENVIRSC 3E03
- ENVIRSC 3EE3
- ENVIRSC 3O03 - Contaminant Fate and Transport

- ENVIRSC 3SR3
- ENVIRSC 3U03 - Environmental Systems Modelling
- ENVIRSC 3W03
- ENVSOCY 3EC3 - Environmental Catastrophes
- ENVSOCY 3EE3 - Energy and Society
- ENVSOCY 3ER3 - Sustainability and the Economy
- ENVSOCY 3SR3 - Remote Sensing
- GEOG 3EC3
- GEOG 3EE3
- GEOG 3ER3
- GEOG 3SR3

3 units

- ENVIRSC 3ME3 - Environmental Field Camp

27 units

from

- the *Environmental Sciences Course List* which must include 18 units from Levels III, IV

3 units

- ENVIRSC 4EA3 - Environmental Assessment

0-3 units

from

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03

(See *Admission Note* above.)

24-27 units

- Electives

### REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2019

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

#### LEVELS II-IV: 90 UNITS

12 units

from

- EARTHSC 2E03 - Earth History
- EARTHSC 2T03 - Geology of Canada
- ENVIRSC 2B03 - Soils and the Environment
- ENVIRSC 2C03 - Surface Climate Processes and Environmental Interactions
- ENVIRSC 2E03
- ENVIRSC 2E13
- ENVIRSC 2GI3
- ENVIRSC 2L03
- ENVIRSC 2Q03 - Introduction to Environmental Geochemistry
- ENVIRSC 2W03 - Physical Hydrology
- ENVSOCY 2E13 - Environment & Society: Challenges and Solutions
- ENVSOCY 2GI3 - Geographic Information Systems
- GEOG 2E13
- GEOG 2GI3

3 units

from

- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2F03 - Fundamental and Applied Ecology
- BIOLOGY 3DD3 - Communities and Ecosystems

3 units

from

- ENVIRSC 3MB3
- ENVSOCY 3MB3 - Data Analysis
- GEOG 3MB3

- STATS 2B03 - Statistical Methods for Science

12 units

from

- EARTHSC 3CC3 - Earth's Changing Climate
- EARTHSC 3E03 - Clastic Sedimentary Environments
- EARTHSC 3W03 - Physical Hydrogeology
- ENVIRSC 3B03 - Ecosystems and Global Change
- ENVIRSC 3CC3
- ENVIRSC 3E03
- ENVIRSC 3EE3
- ENVIRSC 3O03 - Contaminant Fate and Transport
- ENVIRSC 3SR3
- ENVIRSC 3U03 - Environmental Systems Modelling
- ENVIRSC 3W03
- ENVSOCY 3EC3 - Environmental Catastrophes
- ENVSOCY 3EE3 - Energy and Society
- ENVSOCY 3ER3 - Sustainability and the Economy
- ENVSOCY 3SR3 - Remote Sensing
- GEOG 3EC3
- GEOG 3EE3
- GEOG 3ER3
- GEOG 3SR3

27 units

from

- the *Environmental Sciences Course List* which must include 18 units from Levels III, IV

3 units

- ENVIRSC 4EA3 - Environmental Assessment

0-3 units

from

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03

(See *Admission Note* above.)27-30 units

- Electives

**HONOURS ENVIRONMENTAL SCIENCES CO-OP (B.SC.)****ADMISSION**

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline and completion of Level II Honours Environmental Sciences with a Grade Point Average of at least 5.0 and completion of the following courses:

**6 UNITS**

from

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03

**12 UNITS**

from

- EARTHSC 2E03 - Earth History
- EARTHSC 2T03 - Geology of Canada
- ENVIRSC 2B03 - Soils and the Environment
- ENVIRSC 2C03 - Surface Climate Processes and Environmental Interactions
- ENVIRSC 2E03
- ENVIRSC 2EI3
- ENVIRSC 2GI3

- ENVIRSC 2L03
- ENVIRSC 2Q03 - Introduction to Environmental Geochemistry
- ENVIRSC 2W03 - Physical Hydrology
- GEOG 2EI3
- GEOG 2EK3
- GEOG 2GI3

**3 UNITS**

from

- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2F03 - Fundamental and Applied Ecology
- BIOLOGY 3DD3 - Communities and Ecosystems

**NOTE**

Information about this program and the selection procedure can be obtained from Science Career and Cooperative Education and the Program Director.

**ADMISSION (EFFECTIVE SEPTEMBER 2021)**

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline and completion of Level II Honours Environmental Sciences with a Grade Point Average of at least 5.0 and completion of the following courses:

**6 UNITS**

from

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVSOCY 1HA3 - Society, Culture and Environment
- ENVSOCY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3

**6 UNITS**

- ENVSOCY 2EI3 - Environment & Society: Challenges and Solutions
- ENVSOCY 2GI3 - Geographic Information Systems

**15 UNITS**

from

- Level II Earth Sciences, Environmental Sciences, Environment & Society courses

**NOTE**

Information about this program and the selection procedure can be obtained from Science Career and Cooperative Education and the Program Director.

**PROGRAM NOTES**

- Environmental Sciences at McMaster encompass a number of major themes, including Aqueous Environmental Geochemistry, Earth Sciences, Environmental Hydrology and Climate, Environmental Policy, GIS and Spatial Analysis, Health and Population, Economic Development and Urban Studies. Each thematic area has its own sequence of courses and prerequisites (See the *Course Listings* section of this Calendar). All students are encouraged to meet with the academic program advisor in the School of Earth, Environment & Society to discuss course selection and program requirements.
- This program is not intended to satisfy the academic requirements for professional registration of Geoscientists (PGeo) in Ontario. Students interested in PGeo professional registration are encouraged to view the requirements for the Honours Earth and Environmental Sciences (B.Sc.) program.
- The Honours Environmental Sciences program requires all students to take one research design course (EARTHSC 3RD3 or ENVSOCY 3MA3) and one field methods course (ENVIRSC 3ME3 or ENVSOCY 3MF3). All students are encouraged to meet with the School of Earth, Environment & Society's academic program advisor to decide which of these courses best fits their area of academic interest.
- The field components of ENVIRSC 3ME3 and ENVSOCY 3MF3 are



normally taken outside of the normal term. Details are announced in March.

- This is a five-level (year) co-op program that includes two eight-month work terms which must be spent in environmental sciences related placements.
- Students must be registered full-time and take a full academic workload, as prescribed by Level and Term.
- Students are required to complete SCIENCE 2C00 and 3C00 before the first work placement and are strongly recommended to complete SCIENCE 2C00 in Level II.
- Co-op students interested in pursuing GIS-related work placements and/or a Minor in Geographic Information Systems must complete ENVSOCTY 2GI3 in Fall Term of Level II and one of ENVSOCTY 3GI3 or 3GV3 in Winter Term of Level II. Students should consult with the academic program advisor in the School of Earth, Environment & Society to ensure proper course selection.
- Students who enter the program prior to September 2021, must complete a total of 27 units from the *Environmental Sciences Course List* during Levels III, IV and V, of which must include 18 units from Levels III, IV.

### ENVIRONMENTAL SCIENCES COURSE LIST (FOR STUDENTS WHO ENTER PRIOR TO SEPTEMBER 2021)

- ASTRON 2E03 - Planetary Astronomy
- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2F03 - Fundamental and Applied Ecology
- BIOLOGY 3DD3 - Communities and Ecosystems
- BIOLOGY 3R03 - Field Biology I
- BIOLOGY 3SS3 - Population Ecology
- BIOLOGY 4A03 - Advanced Topics in Ecology
- BIOLOGY 4J03 - Field Biology II
- EARTHSC 2E03 - Earth History
- EARTHSC 2FE3 - Introduction to Field Methods in Earth Sciences
- EARTHSC 2T03 - Geology of Canada
- EARTHSC 3CC3 - Earth's Changing Climate
- EARTHSC 3E03 - Clastic Sedimentary Environments
- EARTHSC 3W03 - Physical Hydrogeology
- EARTHSC 4CC3 - Stable Isotopes in Earth and Environmental Systems
- EARTHSC 4FF3 - Topics of Field Research
- EARTHSC 4G03 - Glacial Sediments and Environments
- EARTHSC 4MI3
- EARTHSC 4P03 - Coral Reef Environments
- EARTHSC 4VV3
- EARTHSC 4WB3 - Contaminant Hydrogeology
- ENVIRSC 2B03 - Soils and the Environment
- ENVIRSC 2C03 - Surface Climate Processes and Environmental Interactions
- ENVIRSC 2E03
- ENVIRSC 2EI3
- ENVIRSC 2GI3
- ENVIRSC 2L03
- ENVIRSC 2Q03 - Introduction to Environmental Geochemistry
- ENVIRSC 2W03 - Physical Hydrology
- ENVIRSC 3B03 - Ecosystems and Global Change
- ENVIRSC 3CC3
- ENVIRSC 3E03
- ENVIRSC 3EE3
- ENVIRSC 3GI3
- ENVIRSC 3GV3
- ENVIRSC 3MB3
- ENVIRSC 3ME3 - Environmental Field Camp
- ENVIRSC 3O03 - Contaminant Fate and Transport

- ENVIRSC 3SR3
- ENVIRSC 3U03 - Environmental Systems Modelling
- ENVIRSC 3W03
- ENVIRSC 4BB3 - Field Techniques in Hydrology
- ENVIRSC 4C03 - Advanced Physical Climatology
- ENVIRSC 4CC3
- ENVIRSC 4FF3
- ENVIRSC 4G03
- ENVIRSC 4GA3
- ENVIRSC 4HH3
- ENVIRSC 4MI3 - Independent Study in Earth and Environmental Sciences
- ENVIRSC 4MT6 A/B - Senior Thesis
- ENVIRSC 4N03 - Global Biogeochemical Cycles
- ENVIRSC 4W03 - Hydrologic Modelling
- ENVIRSC 4WB3
- ENVSOCTY 2EI3 - Environment & Society: Challenges and Solutions
- ENVSOCTY 2EK3 - Traditional Indigenous Ecological Knowledge
- ENVSOCTY 2GI3 - Geographic Information Systems
- ENVSOCTY 3EC3 - Environmental Catastrophes
- ENVSOCTY 3EE3 - Energy and Society
- ENVSOCTY 3ER3 - Sustainability and the Economy
- ENVSOCTY 3GI3 - Advanced Raster GIS
- ENVSOCTY 3GV3 - Advanced Vector GIS
- ENVSOCTY 3MB3 - Data Analysis
- ENVSOCTY 3SR3 - Remote Sensing
- ENVSOCTY 4GA3 - Applied Spatial Statistics
- ENVSOCTY 4GS3 - GIS Programming
- ENVSOCTY 4GT3 - Special Topics in GIS
- ENVSOCTY 4HH3 - Environment and Health
- GEOG 2EI3
- GEOG 2EK3
- GEOG 2GI3
- GEOG 3EC3
- GEOG 3EE3
- GEOG 3ER3
- GEOG 3GI3
- GEOG 3GV3
- GEOG 3MB3
- GEOG 3SR3
- GEOG 4GA3
- GEOG 4GS3
- GEOG 4GT3
- GEOG 4HH3
- STATS 2B03 - Statistical Methods for Science

### REQUIREMENTS FOR STUDENTS WHO ENTERED IN SEPTEMBER 2020 OR SEPTEMBER 2019

*120 units total (Levels I to V), of which no more than 48 units may be Level I*

#### LEVEL I: 30 UNITS

- Completed prior to admission to the program

#### LEVEL II: 30 UNITS

##### 30 units

- Completion of Level II Honours Environmental Sciences (See *Admission* above.)

##### 1 course

- SCIENCE 2C00 - Skills for Career Success in Science

#### LEVEL III

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

##### Fall Term: 15 units:

##### **3 units**

- ENVIRSC 3ME3 - Environmental Field Camp

**3 units**

from

- ENVIRSC 3MB3
- ENVSOCTY 3MB3 - Data Analysis
- GEOG 3MB3
- STATS 2B03 - Statistical Methods for Science

**6 units**

from

- EARTHSC 3CC3 - Earth's Changing Climate
- EARTHSC 3E03 - Clastic Sedimentary Environments
- EARTHSC 3W03 - Physical Hydrogeology
- ENVIRSC 3B03 - Ecosystems and Global Change
- ENVIRSC 3CC3
- ENVIRSC 3E03
- ENVIRSC 3EE3
- ENVIRSC 3O03 - Contaminant Fate and Transport
- ENVIRSC 3SR3
- ENVIRSC 3U03 - Environmental Systems Modelling
- ENVIRSC 3W03
- ENVSOCTY 3EC3 - Environmental Catastrophes
- ENVSOCTY 3EE3 - Energy and Society
- ENVSOCTY 3ER3 - Sustainability and the Economy
- ENVSOCTY 3SR3 - Remote Sensing
- GEOG 3EC3
- GEOG 3EE3
- GEOG 3ER3
- GEOG 3SR3

**3 units**

- Electives

**2 courses**

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

**LEVEL IV**

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:**6 units**

from

- EARTHSC 3CC3 - Earth's Changing Climate
- EARTHSC 3E03 - Clastic Sedimentary Environments
- EARTHSC 3W03 - Physical Hydrogeology
- ENVIRSC 3B03 - Ecosystems and Global Change
- ENVIRSC 3CC3
- ENVIRSC 3E03
- ENVIRSC 3EE3
- ENVIRSC 3O03 - Contaminant Fate and Transport
- ENVIRSC 3SR3
- ENVIRSC 3U03 - Environmental Systems Modelling
- ENVIRSC 3W03
- ENVSOCTY 3EC3 - Environmental Catastrophes
- ENVSOCTY 3EE3 - Energy and Society
- ENVSOCTY 3ER3 - Sustainability and the Economy

- ENVSOCTY 3SR3 - Remote Sensing
- GEOG 3EC3
- GEOG 3EE3
- GEOG 3ER3
- GEOG 3SR3

**15 units**

from

- the *Environmental Sciences Course List* (See Program Note 9 above.)

**3 units**

- ENVIRSC 4EA3 - Environmental Assessment

**6 units**

- Electives

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 4WT0 - Science Co-op Work Term

**LEVEL V**

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

**1 course**

- SCIENCE 5WT0 - Science Co-op Work Term

Winter Term: 15 units:**12 units**

from

- the *Environmental Sciences Course List* (See Program Note 9 above.)

**3 units**

- Electives

**REQUIREMENTS (EFFECTIVE SEPTEMBER 2021)***120 units total (Levels I to V), of which no more than 48 units may be Level I***LEVEL I: 30 UNITS**

- Completed prior to admission to the program

**LEVEL II: 30 UNITS**30 units

- Completion of Level II Honours Environmental Sciences (See *Admission* above.)

1 course

- SCIENCE 2C00 - Skills for Career Success in Science

**LEVEL III**

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:**3 units**

from

- ENVIRSC 3ME3 - Environmental Field Camp
- ENVSOCTY 3MF3 - Urban Field Camp

**3 units**

from

- ENVSOCTY 3MB3 - Data Analysis
- STATS 2B03 - Statistical Methods for Science

**3 units**

from

- EARTHSC 3RD3 - Research Design and Dissemination in Earth and Environmental Sciences
- ENVSOCTY 3MA3 - Research Methods

**3 units**

from

- Level III Earth Sciences, Environmental Sciences, Environment & Society courses

**3 units**

- Electives

**2 courses**

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

**LEVEL IV**

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:**18 units**

from

- Levels III, IV Earth Sciences, Environmental Sciences, Environment & Society courses

**3-6 units**

from

- EARTHSC 4MT6 A/B - Senior Thesis
- ENVIRSC 4EA3 - Environmental Assessment
- ENVIRSC 4MI3 - Independent Study in Earth and Environmental Sciences
- ENVIRSC 4MT6 A/B - Senior Thesis
- ENVSOCTY 4EA3 - Environmental Assessment
- ENVSOCTY 4ET3 - Environmental Policy, Ethics and Risk
- ENVSOCTY 4MS3 - Independent Study
- ENVSOCTY 4MT6 A/B - Senior Thesis

**6-9 units**

- Electives

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 4WT0 - Science Co-op Work Term

**LEVEL V**

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

**1 course**

- SCIENCE 5WT0 - Science Co-op Work Term

Winter Term: 15 units:**9 units**

from

- Levels II, III, IV Earth Sciences, Environmental Sciences, Environment & Society courses

**6 units**

- Electives

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2019**

120 units total (Levels I to V), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

- Completed prior to admission to the program

**LEVEL II: 30 UNITS**30 units

- Completion of Level II Honours Environmental Sciences (See *Admission* above.)

1 course

- SCIENCE 2C00 - Skills for Career Success in Science

**LEVEL III**

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:**3 units**

from

- ENVIRSC 3MB3
- ENVSOCTY 3MB3 - Data Analysis
- GEOG 3MB3
- STATS 2B03 - Statistical Methods for Science

**6 units**

from

- EARTHSC 3CC3 - Earth's Changing Climate
- EARTHSC 3E03 - Clastic Sedimentary Environments
- EARTHSC 3W03 - Physical Hydrogeology
- ENVIRSC 3B03 - Ecosystems and Global Change
- ENVIRSC 3CC3
- ENVIRSC 3E03
- ENVIRSC 3EE3
- ENVIRSC 3O03 - Contaminant Fate and Transport
- ENVIRSC 3SR3
- ENVIRSC 3U03 - Environmental Systems Modelling
- ENVIRSC 3W03
- ENVSOCTY 3EC3 - Environmental Catastrophes
- ENVSOCTY 3EE3 - Energy and Society
- ENVSOCTY 3ER3 - Sustainability and the Economy
- ENVSOCTY 3SR3 - Remote Sensing
- GEOG 3EC3
- GEOG 3EE3
- GEOG 3ER3
- GEOG 3SR3

**6 units**

- Electives

**2 courses**

- SCIENCE 2C00 - Skills for Career Success in Science
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

**LEVEL IV**

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:**6 units**

from

- EARTHSC 3CC3 - Earth's Changing Climate
- EARTHSC 3E03 - Clastic Sedimentary Environments
- EARTHSC 3W03 - Physical Hydrogeology
- ENVIRSC 3B03 - Ecosystems and Global Change
- ENVIRSC 3CC3
- ENVIRSC 3E03
- ENVIRSC 3EE3
- ENVIRSC 3O03 - Contaminant Fate and Transport
- ENVIRSC 3SR3
- ENVIRSC 3U03 - Environmental Systems Modelling
- ENVIRSC 3W03

- ENVSOCY 3EC3 - Environmental Catastrophes
- ENVSOCY 3EE3 - Energy and Society
- ENVSOCY 3ER3 - Sustainability and the Economy
- ENVSOCY 3SR3 - Remote Sensing
- GEOG 3EC3
- GEOG 3EE3
- GEOG 3ER3
- GEOG 3SR3

15 units

from

- the *Environmental Sciences Course List* (See Program Note 9 above.)

3 units

- ENVIRSC 4EA3 - Environmental Assessment

6 units

- Electives

Spring/Summer Term:

Work Term

1 course

- SCIENCE 4WT0 - Science Co-op Work Term

#### LEVEL V

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

1 course

- SCIENCE 5WT0 - Science Co-op Work Term

Winter Term: 15 units:

12 units

from

- the *Environmental Sciences Course List* (See Program Note 9 above.)

3 units

- Electives

#### CO-OP PROGRAM CHART

	<b>FALL TERM (September to December)</b>	<b>WINTER TERM (January to April)</b>	<b>SPRING/ SUMMER TERM (May to August)</b>
<b>Level III</b>	15 units from Academic Level III and SCIENCE 2C00 (if not completed) and SCIENCE 3C00	Work Term SCIENCE 3WT0	Work Term SCIENCE 3WT0
<b>Level IV</b>	30 units from Academic Levels III and IV		Work Term SCIENCE 4WT0
<b>Level V</b>	Work Term SCIENCE 5WT0	15 units from Academic Level IV	

### HONOURS GEOGRAPHY AND ENVIRONMENTAL SCIENCES (B.SC.)

**The Honours Geography and Environmental Sciences program has been cancelled. Students who had intended to register in this program should consider the Honours Environmental Sciences (B.Sc.) program or contact an Academic Advisor in the Office of the Associate Dean of Science (Academic) to discuss other options.**

#### PROGRAM NOTES

- Earth and Environmental Sciences at McMaster encompass five major themes: Aqueous Environmental Geochemistry, Earth Sciences, Environmental Hydrology and Climate, Environmental Policy, GIS and Spatial Analysis. It should be noted that each thematic area has its own sequence of courses and prerequisites (See the *Course Listings* section of this Calendar). Students may elect to take some or all of the upper level courses from different areas. In addition, there is a set of courses encompassing research design, field work, internships, and the senior thesis or review paper.

#### AQUEOUS ENVIRONMENTAL GEOCHEMISTRY

EARTHSC 2L03, 3CC3, 4CC3, ENVIRSC 2Q03, 3O03, 4N03

#### EARTH SCIENCES

EARTHSC 2E03, 2FE3, 2K03, 2T03, 3E03, 3K03, 3Z03, 4G03, 4J03, 4P03, 4T03, 4VV3, ENVSOCY 3SR3

#### ENVIRONMENTAL HYDROLOGY AND CLIMATE

EARTHSC 3CC3, 3W03, 4CC3, 4WB3, ENVIRSC 2B03, 2C03, 2W03, 3B03, 3U03, 4BB3, 4C03, 4W03

#### ENVIRONMENTAL POLICY

ENVSOCY 2E13, 2EK3, 3EC3, 3EE3, 3EG3, 4EA3, 4ET3, 4HH3

#### GEOGRAPHIC INFORMATION SYSTEMS (GIS) AND SPATIAL ANALYSIS

ENVSOCY 2G13, 3G13, 3GV3, 3SR3, 4GA3, 4GS3, 4GT3

- Students aiming to meet the academic requirements for professional registration of Geoscientists (PGeo) in Ontario can find additional information on these requirements on the website: <https://www.science.mcmaster.ca/geo/undergraduate/undergrad-welcome.html>. Students are encouraged to consult with the academic program advisor in the School of Earth, Environment & Society to ensure proper selection of courses for professional registration. The Honours programs offered by the School of Earth, Environment & Society may not fulfill professional registration requirements.
- Two of EARTHSC 1G03, ENVIRSC 1C03, 1G03 must be completed by the end of Level II.
- Two of ENVSOCY 1HA3, 1HB3, GEOG 1HA3, 1HB3 must be completed by the end of Level II.
- All students are strongly encouraged to meet with the academic program advisor in the School of Earth, Environment & Society to discuss program requirements and course selections, particularly prior to the start of Level III.
- There are Level III prerequisites for many Level IV courses. The prerequisites should be considered when selecting your courses.
- The field components of EARTHSC 2FE3, ENVIRSC 3ME3 and ENVSOCY 3MF3, are normally taken outside of the normal term. Details are announced in December (EARTHSC 2FE3) or March (ENVIRSC 3ME3, ENVSOCY 3MF3). All students are strongly encouraged to meet with the academic program advisor in the School of Earth, Environment & Society to discuss which course is most appropriate, based on the field of interest.
- Students are strongly encouraged to check prerequisites for upper-level Earth Sciences or Environment & Society courses. Chemistry, Mathematics and Physics prerequisites exist in upper-level Earth Sciences courses. The prerequisites should be considered when selecting your courses.
- All students are strongly encouraged to meet with the academic program advisor in the School of Earth, Environment & Society to discuss which course is most appropriate between EARTHSC 3RD3 and ENVSOCY 3MA3, based on their area of interest.
- Students are not required but may combine courses in Earth Sciences, Environmental Sciences and Environment & Society into major themes matching their interests, including:

#### HUMAN HEALTH AND THE ENVIRONMENT



- EARTHSC 4WB3, ENVIRSC 2L03, 3003, ENVSOCY 2HI3, 3HP3, 4EA3, 4HH3

#### TRANSPORTATION AND THE ENVIRONMENT

- ENVSOCY 3GV3, 3LT3, 4GA3, 4LP3

#### URBAN SYSTEMS AND SUSTAINABILITY

- ENVSOCY 2EI3, 2UI3, 3EE3, 3ER3, 3UP3, 3UR3, 4US3

#### **REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2020**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

##### **LEVEL I: 30 UNITS**

30 units

##### **LEVEL II: 30 UNITS**

6 units

- ENVSOCY 2EI3 - Environment & Society: Challenges and Solutions
- ENVSOCY 2GI3 - Geographic Information Systems
- GEOG 2EI3
- GEOG 2GI3

6 units

from

- EARTHSC 2E03 - Earth History
- ENVIRSC 2B03 - Soils and the Environment
- ENVIRSC 2C03 - Surface Climate Processes and Environmental Interactions
- ENVIRSC 2E03
- ENVIRSC 2W03 - Physical Hydrology

3 units

from

- ENVSOCY 2HI3 - Health and Place
- ENVSOCY 2LE3 - Economic Geography: Innovation, Inequality and Identity
- ENVSOCY 2UI3 - The Urban Experience
- GEOG 2HI3
- GEOG 2LE3
- GEOG 2UI3

0-3 units

from

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03

(See *Program Note 3* above.)

0-3 units

from

- ENVSOCY 1HA3 - Society, Culture and Environment
- ENVSOCY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3

(See *Program Note 4* above.)

9-15 units

- Electives

##### **LEVEL III: 30 UNITS**

3 units

from

- ENVSOCY 3MB3 - Data Analysis
- GEOG 3MB3

3 units

from

- EARTHSC 3RD3 - Research Design and Dissemination in Earth and Environmental Sciences
- ENVSOCY 3MA3 - Research Methods
- GEOG 3MA3

(See *Program Note 9* above.)

3 units

from

- ENVIRSC 3ME3 - Environmental Field Camp
- ENVSOCY 3MF3 - Urban Field Camp
- GEOG 3ME3
- GEOG 3MF3

(See *Program Note 7* above.)

6 units

- Level III Earth Sciences or Environmental Science courses

6 units

- Level III Environment & Society or Geography courses

9 units

- Electives

##### **LEVEL IV: 30 UNITS**

6 units

- Level IV Earth Sciences or Environmental Science courses

6 units

- Level IV Environment & Society or Geography courses

3-6 units

from

- ENVIRSC 4MI3 - Independent Study in Earth and Environmental Sciences
- ENVSOCY 4ET3 - Environmental Policy, Ethics and Risk
- ENVSOCY 4MS3 - Independent Study
- ENVSOCY 4MT6 A/B - Senior Thesis
- GEOG 4ET3
- GEOG 4MS3
- GEOG 4MT6 A/B

12-15 units

- Electives

## **HONOURS GEOGRAPHY AND ENVIRONMENTAL SCIENCES CO-OP (B.SC.)**

**The Honours Geography and Environmental Sciences Co-op program is being phased out. Last entry into Level III is September 2020. Students who had intended to register in this program after September 2020, should consider the Honours Environmental Sciences Co-op (B.Sc.) program or contact an Academic Advisor in the Office of the Associate Dean of Science (Academic) to discuss other options.**

### **ADMISSION**

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline and completion of Level II Honours Geography and Environmental Sciences with a Grade Point Average of at least 5.0 and completion of the following courses:

### **6 UNITS**

from

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03

### **6 UNITS**

- GEOG 1HA3
- GEOG 1HB3

### **6 UNITS**

- GEOG 2EI3
- GEOG 2GI3

### **6 UNITS**

from

- EARTHSC 2E03 - Earth History
- ENVIRSC 2B03 - Soils and the Environment

- ENVIRSC 2C03 - Surface Climate Processes and Environmental Interactions
- ENVIRSC 2E03
- ENVIRSC 2W03 - Physical Hydrology

**3 UNITS**

from

- ENVSOCTY 2HI3 - Health and Place
- ENVSOCTY 2LE3 - Economic Geography: Innovation, Inequality and Identity
- ENVSOCTY 2UI3 - The Urban Experience
- GEOG 2HI3
- GEOG 2LE3
- GEOG 2UI3

**NOTE**

Information about this program and the selection procedure can be obtained from Science Career and Cooperative Education and the Program Director.

**PROGRAM NOTES**

- Earth and Environmental Sciences at McMaster encompass five major themes: Aqueous Environmental Geochemistry, Earth Sciences, Environmental Hydrology and Climate, Environmental Policy, GIS and Spatial Analysis. It should be noted that each thematic area has its own sequence of courses and prerequisites (See the *Course Listings* section of this Calendar). Students may elect to take some or all of the upper level courses from different areas. In addition, there is a set of courses encompassing research design, field work, internships, and the senior thesis or review paper.

AQUEOUS ENVIRONMENTAL GEOCHEMISTRY

EARTHSC 2L03, 3CC3, 4CC3, ENVIRSC 2Q03, 3O03, 4N03

EARTH SCIENCES

EARTHSC 2E03, 2FE3, 2K03, 2T03, 3E03, 3K03, 3Z03, 4G03, 4J03, 4P03, 4T03, 4VV3, ENVSOCTY 3SR3

ENVIRONMENTAL HYDROLOGY AND CLIMATE

EARTHSC 3CC3, 3W03, 4CC3, 4WB3, ENVIRSC 2B03, 2C03, 2W03, 3B03, 3U03, 4BB3, 4C03, 4W03

ENVIRONMENTAL POLICY

ENVSOCTY 2EI3, 2EK3, 3EC3, 3EE3, 3EG3, 4EA3, 4ET3, 4HH3

GEOGRAPHIC INFORMATION SYSTEMS (GIS) AND SPATIAL ANALYSIS

ENVSOCTY 2GI3, 3GI3, 3GV3, 3SR3, 4GA3, 4GS3, 4GT3

- Students aiming to meet the academic requirements for professional registration of Geoscientists (PGeo) in Ontario can find additional information on these requirements on the website: <https://www.science.mcmaster.ca/geo/undergraduate/undergrad-welcome.html>. Students are encouraged to consult with the academic program advisor in the School of Earth, Environment & Society to ensure proper selection of courses for professional registration. The Honours programs offered by the School of Earth, Environment & Society may not fulfill professional registration requirements.
- This is a five-level (year) co-op program which includes two eight-month work terms which must be spent in geography and environmental sciences related placements.
- Students must be registered full-time and take a full academic workload, as prescribed by Level and Term.
- Students are required to complete SCIENCE 2C00 and SCIENCE 3C00 before the first work placement and are strongly recommended to complete SCIENCE 2C00 in Level II.
- Students are strongly encouraged to check prerequisites for upper-level Earth Sciences or Environment & Society courses. Chemistry, Mathematics and Physics prerequisites exist in upper-level Earth Sciences courses. The prerequisites should be considered when selecting your courses.
- All students are strongly encouraged to meet with an academic program

advisor in the School of Earth, Environment & Society to discuss program requirements and course selections, particularly prior to the start of Level III.

- All students are strongly encouraged to meet with an academic program advisor in the School of Earth, Environment & Society to discuss which course is most appropriate between EARTHSC 3RD3 and ENVSOCTY 3MA3, based on their area of interest.
- The field components of EARTHSC 2FE3, ENVIRSC 3ME3 and ENVSOCTY 3MF3 are normally taken outside of the normal term. Details are announced in December (EARTHSC 2FE3) or March (ENVIRSC 3ME3, ENVSOCTY 3MF3). All students are strongly encouraged to meet with an academic program advisor in the School of Earth, Environment & Society to discuss which course is most appropriate, based on the field of interest. All components of field placements must be completed prior to the start of a co-op work term.
- One of ENVIRSC 4MI3, ENVSOCTY 4ET3, 4MS3 must be completed in Level V, if none of ENVIRSC 4MI3, ENVSOCTY 4ET3, 4MS3, 4MT6 A/B were completed in Level IV.
- Students are not required but may combine courses in Earth Sciences, Environmental Sciences and Environment & Society into major themes matching their interests, including:

HUMAN HEALTH AND THE ENVIRONMENT

EARTHSC 4WB3, ENVIRSC 2L03, 3O03, ENVSOCTY 2HI3, 3HP3, 4EA3, 4HH3

TRANSPORTATION AND THE ENVIRONMENT

ENVSOCTY 3GV3, 3LT3, 4GA3, 4LP3

URBAN SYSTEMS AND SUSTAINABILITY

ENVSOCTY 2EI3, 2UI3, 3EE3, 3ER3, 3UP3, 3UR3, 4US3

- Co-op students interested in pursuing GIS-related work placements and/or a Minor in Geographic Information Systems must complete ENVSOCTY 2GI3 in Fall Term of Level II and one of ENVSOCTY 3GI3 or 3GV3 in Winter Term of Level II. Students are encouraged to consult with an academic advisor to ensure proper course selection.

**REQUIREMENTS**

120 units total (Levels I to V), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

- Completed prior to admission to the program

**LEVEL II: 30 UNITS**30 units

- Completion of Level II Honours Geography and Environmental Sciences (See *Admission* above.)

1 course

- SCIENCE 2C00 - Skills for Career Success in Science

**LEVEL III**

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:**3 units**

from

- ENVIRSC 3ME3 - Environmental Field Camp
- ENVSOCTY 3MF3 - Urban Field Camp
- GEOG 3ME3
- GEOG 3MF3

(See *Program Note 9* above.)

**6 units**

- Level III Earth Sciences or Environmental Science courses

**3 units**

- Level III Environment & Society or Geography courses

**3 units**

- Electives

**2 courses**

- SCIENCE 2C00 - Skills for Career Success in Science (if not already

completed)

- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

**1 course**

- SCIENCE 3WTO - Science Co-op Work Term

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 3WTO - Science Co-op Work Term

**LEVEL IV**

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term

(Spring/Summer Term)

Fall and Winter Terms: 30 units:

**3 units**

- ENVSOCY 3MB3 - Data Analysis
- GEOG 3MB3

**3 units**

from

- EARTHSC 3RD3 - Research Design and Dissemination in Earth and Environmental Sciences
- ENVSOCY 3MA3 - Research Methods
- GEOG 3MA3

(See *Program Note 8* above.)

**3 units**

- Level III Environment & Society or Geography courses

**3 units**

- Level IV Earth Sciences or Environmental Science courses

**3 units**

- Level IV Environment & Society or Geography courses

**3-6 units**

from

- EARTHSC 4MI3
- ENVIRSC 4MI3 - Independent Study in Earth and Environmental Sciences
- ENVSOCY 4ET3 - Environmental Policy, Ethics and Risk
- ENVSOCY 4MS3 - Independent Study
- ENVSOCY 4MT6 A/B - Senior Thesis
- GEOG 4ET3
- GEOG 4MS3
- GEOG 4MT6 A/B

(See *Program Note 10* above.)

**9-12 units**

- Electives

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 4WTO - Science Co-op Work Term

**LEVEL V**

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

**1 course**

- SCIENCE 5WTO - Science Co-op Work Term

Winter Term: 15 units:

**3 units**

- Level IV Earth Sciences or Environmental Science courses

**6 units**

- Level IV Environment & Society or Geography courses

**0-3 units**

from

- ENVIRSC 4MI3 - Independent Study in Earth and Environmental Sciences

- ENVSOCY 4ET3 - Environmental Policy, Ethics and Risk
- ENVSOCY 4MS3 - Independent Study
- GEOG 4ET3
- GEOG 4MS3

(See *Program Note 10* above.)

**3-6 units**

- Electives

**CO-OP PROGRAM CHART**

	<b>FALL TERM (September to December)</b>	<b>WINTER TERM (January to April)</b>	<b>SPRING/ SUMMER TERM (May to August)</b>
<b>Level III</b>	15 units from Academic Level III and SCIENCE 2C00 (if not completed) and SCIENCE 3C00	Work Term SCIENCE 3WTO	Work Term SCIENCE 3WTO
<b>Level IV</b>	30 units from Academic Levels III and IV		Work Term SCIENCE 4WTO
<b>Level V</b>	Work Term SCIENCE 5WTO	15 units from Academic Level IV	

## Bachelor of Science

### ENVIRONMENTAL SCIENCES (B.SC.)

#### ADMISSION NOTE

Two of EARTHSC 1G03, ENVIRSC 1C03, 1G03 must be completed by the end of Level II.

#### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 3.5 including:

#### 3 UNITS

from the following courses, with a grade of at least C-

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03

#### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

#### 18 UNITS

from

- the Science I Course List (See *Admission Note* above.)

#### PROGRAM NOTES

- Earth and Environmental Sciences at McMaster encompass five major themes: Aqueous Environmental Geochemistry, Earth Sciences, Environmental Hydrology and Climate, Environmental Policy, GIS and Spatial Analysis. It should be noted that each thematic area has its own sequence of courses and prerequisites (See the *Course Listings* section of this Calendar). Students may elect to take some or all of the upper level courses from different areas. In addition, there is a set of courses encompassing research design, field work, internships, and the senior

thesis or review paper.

#### AQUEOUS ENVIRONMENTAL GEOCHEMISTRY

EARTHSC 2L03, 3CC3, 4CC3, ENVIRSC 2Q03, 3O03, 4N03

#### EARTH SCIENCES

EARTHSC 2E03, 2FE3, 2K03, 2T03, 3E03, 3K03, 3Z03, 4G03, 4J03, 4P03, 4T03, 4VV3, ENVSOCTY 3SR3

#### ENVIRONMENTAL HYDROLOGY AND CLIMATE

EARTHSC 3CC3, 3W03, 4CC3, 4WB3, ENVIRSC 2B03, 2C03, 2W03, 3B03, 3U03, 4BB3, 4C03, 4W03

#### ENVIRONMENTAL POLICY

ENVIRSC 4EA3, ENVSOCTY 2E13, 2EK3, 3EC3, 3EE3, 3EG3, 4ET3, 4HH3

#### GEOGRAPHIC INFORMATION SYSTEMS (GIS) AND SPATIAL ANALYSIS

ENVSOCTY 2G13, 3G13, 3GV3, 3SR3, 4GA3, 4GS3, 4GT3

- Students aiming to meet the academic requirements for professional registration of Geoscientists (PGeo) in Ontario can find additional information on these requirements on the website: <https://www.science.mcmaster.ca/geo/undergraduate/undergrad-welcome.html>. Students are encouraged to consult with the academic program advisor in the School of Earth, Environment & Society to ensure proper selection of courses for professional registration. The Honours programs offered by the School of Earth, Environment & Society may not fulfill professional registration requirements.
- There are Level II prerequisites for many Level III courses; these should be considered when choosing Level II courses. As an aid to choosing a coherent set of courses in a single discipline, students should consult the list of thematic areas applicable to all Honours Earth and Environmental Sciences programs.
- Students should seek academic program advising from the School of Earth, Environment & Society to ensure that their choices are appropriate.
- No more than 9 units from EARTHSC 2GG3, 2WW3, ENVIRSC 2WW3, GEOG 2RC3, 2RU3, 2RW3, 3RW3, ENVSOCTY 2RC3, 2RU3, 2RW3, 3RW3 may count towards a student's program; additional units taken from this group of courses will count towards elective units.

#### **REQUIREMENTS**

90 units total (Levels I to III), of which no more than 42 units may be Level I

##### **LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)

##### **LEVELS II-III: 60 UNITS**

24 units

Levels II, III, IV courses from

- Earth Sciences, Environmental Science, Environment & Society or Geography courses, of which at least 12 units must be Levels III, IV (See *Program Note 5* above.)

9 units

from

- Faculty of Science courses

0-3 units

from the following courses, if only 3 units was completed in Level I

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03

(See *Admission Note* above.)

24-27 units

- Electives

## Minor(s):

### MINOR IN EARTH SCIENCES

#### NOTES

- ISCI 1A24 A/B is a substitution for EARTHSC 1G03, ENVIRSC 1C03, 1G03.
- ISCI 2A18 A/B may be used as a substitution for 3 units of Level II Earth Sciences toward the Minor in Earth Sciences.
- In order to declare a Minor in Earth Sciences, at least 12 units (above Level I) must be elective to degree.

#### REQUIREMENTS

24 units total

##### 3 UNITS

from

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1G03

(See *Note 1* above.)

##### 3 UNITS

- ENVIRSC 1C03 - Climate, Water And Environment

(See *Note 1* above.)

##### 18 UNITS

from the following list, which must include at least six units from Levels III, IV Earth Sciences

- ASTRON 2E03 - Planetary Astronomy
- EARTHSC 2E03 - Earth History
- EARTHSC 2G13
- EARTHSC 2K03 - Optical Crystallography and Mineralogy
- EARTHSC 2T03 - Geology of Canada
- EARTHSC 3E03 - Clastic Sedimentary Environments
- EARTHSC 3G13
- EARTHSC 3K03 - Petrology
- EARTHSC 3W03 - Physical Hydrogeology
- EARTHSC 3Z03 - Structural Geology
- EARTHSC 4FF3 - Topics of Field Research
- EARTHSC 4G03 - Glacial Sediments and Environments
- EARTHSC 4J03 - Basin Analysis
- EARTHSC 4P03 - Coral Reef Environments
- EARTHSC 4T03 - Plate Tectonics and Ore Deposits
- EARTHSCI 4VV3
- ENVSOCTY 2G13 - Geographic Information Systems
- ENVSOCTY 3G13 - Advanced Raster GIS
- GEOG 2G13
- GEOG 3G13

### MINOR IN ENVIRONMENT AND SOCIETY

#### NOTES

- The Minor in Environment and Society is not open to students registered in any program in the School of Earth, Environment & Society.
- In order to declare a Minor in Environment and Society, at least 12 units (above Level I) must be elective to degree.
- Students interested in taking courses in Environmental Science and/or Earth Sciences subfields are encouraged to complete EARTHSC 1G03 and/or ENVIRSC 1C03.
- Students are strongly encouraged to check the prerequisites of upper-level Earth Sciences, Environmental Science and Environment & Society courses and to speak with an Undergraduate Advisor in the School of Earth, Environment & Society regarding course selection.

#### REQUIREMENTS

24 units total



**3 UNITS**

from

- ENVSOCY 1HA3 - Society, Culture and Environment
- ENVSOCY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3

**3 UNITS**

from

- ENVSOCY 2EI3 - Environment & Society: Challenges and Solutions
- GEOG 2EI3

**18 UNITS**

from

- Levels II, III, IV Earth Sciences, Environmental Science, Environment & Society, Geography courses, including at least six units from Levels III or IV (See *Notes 3* and *4* above.)

**MINOR IN ENVIRONMENTAL SCIENCES****NOTES**

- A Minor in Environmental Sciences is not permitted for students registered in any program in the School of Earth, Environment & Society.
- ISCI 1A24 A/B is a substitution for EARTHSC 1G03, ENVIRSC 1C03.
- ISCI 2A18 A/B may be used as a substitution for 3 units of Level II Earth Sciences toward the Minor in Environmental Sciences.
- In order to declare a Minor in Environmental Sciences, at least 12 units (above Level I) must be elective to degree.

**REQUIREMENTS**

24 units total

**3 UNITS**

from

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03

(See *Note 2* above.)**21 UNITS**

from

- Earth Sciences, Environmental Science, Environment & Society and Geography courses, including at least six units from Levels III or IV and no more than 3 units from Level I (See *Note 4* above.)

**MINOR IN ENVIRONMENTAL STUDIES**

The Minor in Environmental Studies is being phased out. Graduation with this Minor will be last available to students graduating in 2023. Students who intended to complete this Minor should refer to the Minor in Environment & Society.

**NOTES**

- In order to declare a Minor in Environmental Studies, at least 12 units (above Level I) must be elective to degree.
- At least six units from the *Course List* must be outside of the School of Earth, Environment & Society.
- ISCI 1A24 A/B is a substitute for EARTHSC 1G03, ENVIRSC 1C03, 1G03.
- Students are strongly encouraged to check the prerequisites of upper-level courses and to speak with an Undergraduate Advisor in the School of Earth, Environment & Society regarding course selection.

**COURSE LIST**

- ANTHROP 2AN3 - The Anthropology of Food and Nutrition
- ANTHROP 2C03 - Archaeology of Environmental Crisis and Response
- ANTHROP 2F03 - Listening across Difference: An Introduction to Cultural Anthropology
- ANTHROP 2U03 - Plagues and People
- ANTHROP 3C03 - Health and Environment: Anthropological Approaches

- ANTHROP 3Z03
- ANTHROP 4AE3
- BIOLOGY 2D03 - Plant Biodiversity and Biotechnology
- BIOLOGY 2F03 - Fundamental and Applied Ecology
- BIOLOGY 3SS3 - Population Ecology
- ECON 2J03 - Environmental Economics
- ECON 3W03 - Natural Resources
- EARTHSC 2GG3 - Natural Disasters
- EARTHSC 2WW3
- EARTHSC 3CC3 - Earth's Changing Climate
- ENVIRSC 2WW3 - Water and the Environment
- ENVIRSC 3CC3
- ENVSOCY 2EI3 - Environment & Society: Challenges and Solutions
- ENVSOCY 2EK3 - Traditional Indigenous Ecological Knowledge
- ENVSOCY 3EC3 - Environmental Catastrophes
- ENVSOCY 3EE3 - Energy and Society
- ENVSOCY 3EG3 - Global Climate Change
- ENVSOCY 4EA3 - Environmental Assessment
- ENVSOCY 4HH3 - Environment and Health
- GEOG 2EI3
- GEOG 2EK3
- GEOG 3EC3
- GEOG 3EE3
- GEOG 3EG3
- GEOG 3ER3
- GEOG 3HH3
- GEOG 4EA3
- GEOG 4HH3
- HLTHAGE 4M03 - Environment and Health
- HISTORY 4K03 - Environment and Environmentalism in Modern North America
- INDIGST 2D03 - Traditional Indigenous Ecological Knowledge
- LABRST 4F03 - Work and the Environment
- LIFESCI 3D03
- PHILOS 2G03 - Social and Political Issues
- PHILOS 2N03 - Business Ethics
- PHILOS 3L03 - Environmental Philosophy
- RELIGST 2W03

**REQUIREMENTS**

24 units total

**3 UNITS**

from

- ENVSOCY 1HA3 - Society, Culture and Environment
- ENVSOCY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3

**3 UNITS**

from

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03

(See *Note 3* above.)**3 UNITS**

- ENVSOCY 2EI3 - Environment & Society: Challenges and Solutions
- GEOG 2EI3

**3 UNITS**

from

- ENVSOCY 3EC3 - Environmental Catastrophes
- ENVSOCY 3EE3 - Energy and Society
- ENVSOCY 3ER3 - Sustainability and the Economy
- ENVSOCY 4EA3 - Environmental Assessment

- GEOG 3EC3
- GEOG 3EE3
- GEOG 3ER3
- GEOG 4EA3

**12 UNITS**

from

- *Course List* including at least six units from Levels III or IV (See *Note 2* above.)

**MINOR IN GEOGRAPHIC INFORMATION SYSTEMS (GIS)****NOTES**

- In order to declare a Minor in Geographic Information Systems (GIS), at least 12 units (above Level I) must be elective to degree.
- ISCI 1A24 A/B is a substitute for EARTHSC 1G03, ENVIRSC 1C03, 1G03.
- Students are strongly encouraged to check the prerequisites of upper-level courses and to speak with an Undergraduate Advisor in the School of Earth, Environment & Society regarding course selection.
- Co-op students interested in pursuing GIS-related work placements and/or a Minor in Geographic Information Systems must complete ENVSOCTY 2GI3 (or GEOG 2GI3) in Fall Term of Level II and one of ENVSOCTY 3GI3 or 3GV3 (or one of GEOG 3GI3, 3GV3) in Winter Term of Level II. Students are encouraged to consult with an academic advisor to ensure proper course selection.

**REQUIREMENTS**

24 units total

**6 UNITS**

from

- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity
- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03
- ENVSOCTY 1HA3 - Society, Culture and Environment
- ENVSOCTY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3

(See *Note 2* above.)**3 UNITS**

from

- EARTHSC 3MB3
- ENVIRSC 3MB3
- ENVSOCTY 3MB3 - Data Analysis
- GEOG 3MB3
- STATS 2B03 - Statistical Methods for Science
- STATS 3Y03 - Probability and Statistics for Engineering

**9 UNITS**

from

- EARTHSC 2GI3
- EARTHSC 3GI3
- EARTHSC 3GV3
- ENVIRSC 2GI3
- ENVIRSC 3GI3
- ENVIRSC 3GV3
- ENVSOCTY 2GI3 - Geographic Information Systems
- ENVSOCTY 3GI3 - Advanced Raster GIS
- ENVSOCTY 3GV3 - Advanced Vector GIS
- GEOG 2GI3
- GEOG 3GI3
- GEOG 3GV3

**6 UNITS**

from

- EARTHSC 3SR3
- EARTHSC 4GA3
- ENVIRSC 3SR3
- ENVIRSC 4GA3
- ENVSOCTY 3SR3 - Remote Sensing
- ENVSOCTY 4GA3 - Applied Spatial Statistics
- ENVSOCTY 4GS3 - GIS Programming
- ENVSOCTY 4GT3 - Special Topics in GIS
- GEOG 3SR3
- GEOG 4GA3
- GEOG 4GS3
- GEOG 4GT3

**MINOR IN GEOGRAPHY**

The Minor in Geography is being phased out. Graduation with this Minor will be last available to students graduating in 2023. Students who intended to complete this Minor should refer to the Minor in Environment & Society.

**NOTES**

- In order to declare a Minor in Geography, at least 12 units (above Level I) must be elective to degree.
- ISCI 1A24 A/B is a substitute for EARTHSC 1G03, ENVIRSC 1C03.
- No more than 6 units from GEOG 2OC3, 2RC3, 2RU3, 2RW3, 3RW3, ENVSOCTY 2OC3, 2RC3, 2RU3, 2RW3, 3RW3 may be used toward the minor.
- Students are strongly encouraged to check the prerequisites of upper-level Environment & Society courses and to speak with an Undergraduate Advisor in the School of Earth, Environment & Society regarding course selection.

**REQUIREMENTS**

24 units total

**6 UNITS**

- ENVSOCTY 1HA3 - Society, Culture and Environment
- ENVSOCTY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3

**18 UNITS**

from

- Levels II, III, IV Environment & Society or Geography courses, including at least six units of Levels III or IV (See *Note 3* above.)

**MINOR IN GEOGRAPHY AND EARTH SCIENCES**

The Minor in Geography and Earth Sciences is being phased out. Graduation with this Minor will be last available to students graduating in 2023. Students who intended to complete this Minor should refer to either the Minor in Earth Sciences or the Minor in Environment & Society.

**NOTES**

- In order to declare a Minor in Geography and Earth Sciences, at least 12 units (above Level I) must be elective to degree.
- ISCI 1A24 A/B is a substitute for EARTHSC 1G03, ENVIRSC 1C03, 1G03.
- ISCI 2A18 A/B may be used as a substitute for 3 units of Level II Earth Sciences toward the Minor in Geography and Earth Sciences.
- No more than 6 units from EARTHSC 2GG3, 2WW3, 3DD3, ENVIRSC 2WW3, GEOG 2OC3, 2RC3, 2RU3, 2RW3, 3RW3, ENVSOCTY 2OC3, 2RC3, 2RU3, 2RW3, 3RW3 may be counted toward the minor.
- Students are strongly encouraged to check the prerequisites of upper-level Earth Sciences and Environment & Society courses and to speak with an Undergraduate Advisor in the School of Earth, Environment & Society regarding course selection.

**REQUIREMENTS**

24 units total

**6 UNITS**

from

- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03
- ENVSOCY 1HA3 - Society, Culture and Environment
- ENVSOCY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3

**18 UNITS**

from

- Levels II, III, IV Earth Sciences, Environment & Society or Geography courses, including at least six units of Levels III or IV (See *Notes 3* and *4* above.)

## School of Interdisciplinary Science (SIS)

<https://www.science.mcmaster.ca/sis/>

**Faculty as of January 15, 2020**

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## Integrated Science Program

<https://science.mcmaster.ca/sis/undergraduate/isci/isci-home.html>

### NOTES APPLICABLE TO ALL HONOURS INTEGRATED SCIENCE PROGRAMS

- Beginning at Level II, Honours Integrated Science students may complete a concentration in one of the following areas:
- Biochemistry
- Biology
- Chemical Biology
- Chemistry
- Earth and Environmental Sciences
- Geography and Environmental Sciences
- Mathematics and Statistics
- Medical & Biological Physics
- Physics
- Psychology, Neuroscience & Behaviour
- In addition to the content covered within the ISCI courses, completion of a concentration normally requires a minimum of 24 units in the other subject.
- Specific program requirements for the above concentrations are available on the web site (<https://science.mcmaster.ca/sis/undergraduate/isci/isci-home.html>).
- ISCI students, completing a concentration, are eligible to obtain a maximum of one minor, provided that the subject area is not integral to the requirements of the concentration. ISCI students not completing a concentration may be eligible for up to two minors provided that, for each minor, at least 12 units (above Level I) are elective to the degree. All students should consult the Academic Program Advisor.

## Life Sciences

<https://science.mcmaster.ca/sis/undergraduate/life-sciences.html>

Notes Applicable to all Honours Life Sciences Students

- Honours Life Sciences students may not be eligible to complete a Minor in Biochemistry, Biology, Environmental Sciences or Psychology unless at least 12 of the required 18 units (above Level I) for the Minor are considered elective to the degree. Students wishing further information should consult with the Office of the Associate Dean of Science (Academic).
- Honours Life Sciences, as a second degree, may not be possible if the student's first undergraduate degree is in Biochemistry, Biology, Environmental Sciences, or Psychology, Neurosciences & Behaviour. Students wishing further information should consult with the Office of the Associate Dean of Science (Academic).

## Mohawk College of Applied Arts and Technology

ASSOCIATE DEAN, MEDICAL RADIATION SCIENCES AND ALLIED HEALTH

**Laura Thomas**

COORDINATOR, RADIATION THERAPY SPECIALIZATION

**Lyn Paddon**

COORDINATOR, RADIOGRAPHY SPECIALIZATION

**Alana Trainor**

COORDINATOR, ULTRASONOGRAPHY SPECIALIZATION

**Darrin Cournoyea**

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**Caryn Schaefer**/MRT (R), CBI

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**Laura Thomas**/MMedUltrasound, RDMS, CRGS

**Alana Trainor**/ M.R.T. (R), (MR), RTR, RTMRr

## Medical Radiation Sciences

<https://science.mcmaster.ca/sis/undergraduate/medical-radiation-sciences.html>

**This program is offered jointly in partnership with Mohawk College of Applied Arts and Technology and McMaster University. Students pursue two qualifications simultaneously, and graduates receive the Ontario College Advanced Diploma in Medical Radiation Sciences from Mohawk College and the McMaster Bachelor of Medical Radiation Sciences degree.**

Students enrolled in the Medical Radiation Sciences programs, in addition to meeting the *General Academic Regulations* of the University, shall be subject to the following program regulations. Since the academic regulations are continually reviewed, the University reserves the right to change the regulations.

Registration in the Medical Radiation Sciences program implies acceptance on the part of the student of the objectives of the program and the methods by which progress toward the achievement of those objectives is evaluated.

### REGULATIONS FOR LICENSE TO PRACTICE

A degree in medical radiation sciences does not in itself confer the right to practice in radiography, radiation therapy or sonography in Canada. Graduation from the Medical Radiation Sciences program does not guarantee registration with the regulatory bodies of the respective professions or employment within Canada. All graduates who wish to engage in clinical practice in ultrasonography, radiography or radiation therapy are subject to any qualifying examinations and other requirements by the certifying and/or regulatory bodies for each of these professions. Regulatory requirements are subject to change. Students intending to practice outside Ontario are urged to consult the licensing body of that province regarding registration. Licensing requirements vary somewhat among the provinces.

The current Ontario requirements for registration are:

- In order to work as a medical radiation technologist and/or diagnostic medical sonographer in Ontario, you must be registered with the College of Medical Radiation Technologists of Ontario (CMRTO) Council. Detailed information regarding the registration requirements for the College may be found in the Regulations section.
- Applicants must complete an approved training program in medical radiation technology in one of the specialties listed at <https://www.cmrto.org/what-we-do/registration/students-applicants/requirements-for-registration-for-all-applicants/>. Applicants trained in Ontario must successfully complete the examination set by the Canadian Association of Medical Radiation Technologists (CAMRT), for radiography and radiation therapy or Sonography Canada for ultrasonography. These are the examinations approved by the CMRTO.

### FUNCTIONAL DEMANDS

The Medical Radiation Science health professions are physically and emotionally demanding because they routinely involve interaction with patients. Since applicants will work in these professions, it is important that they become familiar with any functional demands before entering the program to ensure that they can perform at an acceptable standard for employment. A student's choice of specialization is not guaranteed in the program; applicants must be prepared to enter any specialization. The functional demands associated with the health professions represented by the specializations are listed below. The list is not exhaustive, but is meant to provide an indication of the minimum demands. By registering in the program, applicants acknowledge that they are able to meet all of the demands.

#### All professionals must demonstrate:

- Empathy when interacting with patients of all ages
- Manual dexterity and eye-hand coordination to manipulate equipment controls
- Physical strength to position patients and manipulate heavy equipment through a wide range of motions
- Acute hearing to respond to low voices and ambient alarms and buzzers
- Critical thinking to be able to prioritize and respond to emergency situations

#### The Radiographer must possess:

- Acute vision to view images and distinguish fine features in contrast and detail

#### The Ultrasonographer must possess:

- Acute vision to view images and distinguish fine features in contrast and detail including nuances in colour Doppler ultrasound images
- Acute hearing to assess auditory Doppler ultrasound signals
- The ability to apply 3-D spatial relationships

#### The Radiation Therapist must possess:

- Acute vision to view equipment readouts at a distance in darkened rooms
- The ability to apply 3-D spatial relationships

## Program Specific Academic Regulations

### ENGLISH LANGUAGE PROFICIENCY

While the minimum English language requirements may gain admission to the Medical Radiation Sciences I program, students will find a need for a high level of verbal proficiency. Students lacking these skills may be required to participate in additional ESL training. Lack of English proficiency may impact a student's ability to complete performance requirements in skills and clinical courses and, therefore, jeopardize the ability to attain a passing grade in these required courses.

### QUALIFYING FOR LEVEL II PROGRAMS

Enrolment in each of the Level II program specializations is limited. All Medical Radiation Sciences I students who meet the admission requirements by the end of the previous Fall/Winter session will be guaranteed entry to a Level II program specialization. Level I students who, at the end of the review period, require the completion of additional academic work in order to meet the Level II admission requirements are not guaranteed admission to a Level II program specialization. Such students may be considered for admission after meeting the admission requirements, if space is available. Level I students whose Level I Fall/Winter Average (on at least 24 units) is less than 5.0 and/or whose Grade Point Average is less than 5.0 can no longer continue in the Medical Radiation Sciences program without approval from the Reviewing Committee.

### CONTINUATION IN THE PROGRAM

A student may not proceed to the next level until he/she has completed all required courses for the current level, and has attained a Grade Point Average of at least 5.0.

In Level I, students are reviewed at the end of Winter term. Beginning at Level II, students are reviewed at the end of each term to determine eligibility to



continue.

To continue in the Medical Radiation Sciences program, a student must maintain a minimum Grade Point Average of 5.0 and successfully complete all Medical Radiation Sciences courses. Failure to do so may prevent progression to the next term and/or level.

A student whose Grade Point Average is at least 4.5 may, at the discretion of the Reviewing Committee, proceed in the program but will be placed on Program Probation for one reviewing period of two consecutive terms. A student may be placed on Program Probation only once during the program. A student may not continue in the program if any of the following criteria is met. The student:

- Fails to obtain a Grade Point Average of at least 5.0 at the completion of the Program Probation;
- Obtains a Grade Point Average of less than 5.0 and has not been granted Program Probation;
- Fails any course that is required for completion of the level in which the student is registered;
- Fails the second attempt at any required course following re-entry to the program;
- Fails any skills or clinical course following re-entry to the program;
- Fails to complete the program requirements for graduation within the maximum allowable time (five years from the time of registration in Level II of the student's current specialization).

A Level I student who may not continue in the program and whose Grade Point Average is between 3.5 and 4.4 may apply to transfer to a program for which he/she qualifies. A Level I student who may not continue in the program and whose Grade Point Average is between 3.0 and 3.4 may apply to transfer into Science on Academic Probation.

An upper level student who may not continue in the program may apply to transfer to a program for which he/she qualifies.

#### **DEFERRED EXAMINATIONS/INCOMPLETE COURSE WORK**

See the heading Deferred Examinations under Examinations in the *General Academic Regulations* section of the Calendar for application procedures for Deferred Exams.

Students who have not completed all prerequisites for a clinical practicum will not be permitted to commence the clinical practicum. Such students will be reviewed by the Reviewing Committee to determine if the minimum prerequisite knowledge and skills have been attained to begin the clinical practicum. Failure to begin clinical practicum at the scheduled time could result in an extension of the time required to complete the program.

#### **WORKLOAD**

Students are required to be registered in a full load of courses as prescribed by Level and Term for their program.

Students in Medical Radiation Sciences I must complete at least 24 units during the Fall/Winter session. Transfer credit and credit earned during the Spring/Summer session may not be used to reduce this minimum load requirement.

#### **REPEATED COURSES**

Any failed course must be repeated if it is a required course for the program, or must be repeated or replaced if it is not explicitly required.

#### **LEVEL OF REGISTRATION**

Students must register for all outstanding work of one level before attempting work for a higher level. Courses must be taken in the sequence specified by the program requirements.

#### **SKILLS AND CLINICAL COURSES**

All professional skills and clinical courses are graded on a pass/fail basis. The performance activities associated with each course are detailed in the course outline and manual, and must be successfully achieved for attainment of a passing grade in the course.

Clinical Practicum 1 (CP1), completed during the Spring/Summer Term after Level II is a minimum of 11 weeks. Clinical Practicum 2 (CP2) and Clinical

Practicum 3 (CP3) are a minimum of 14 weeks in length. Students who are not meeting the conditions of their Learning Contract will be required to withdraw from the course, prior to the final assessment. A student must meet all the domains of practice, achieve all of the required Skills Assessments and Competencies and attendance requirements by the end of CP1, CP2 and CP3, in order to receive a passing grade. When deemed necessary by the Clinical Coordinator, to accommodate students who need to make up for missed time, require remediation or need to complete assigned competencies up to two weeks may be added to CP1 (to a maximum of 13 weeks), CP2 or CP3 (to a maximum of 16 weeks). Students who do not successfully complete CP1, CP2, CP3 may seek permission to re-enter in a subsequent session. Eligibility to complete the placement course in a subsequent session will be determined by the Review Committee.

Attendance is mandatory in all professional skills laboratory courses and clinical practica. Students are required to attend each clinical practicum on a full-time basis (i.e. 37.5 hours/week as scheduled by the clinical agency). Excessive absenteeism may jeopardize a student's ability to meet course performance requirements and result in a Fail grade for the course.

The Medical Radiation Sciences program monitors and documents students' experience and performance in skills and clinical courses to provide evidence of the students' ability to meet program requirements and to meet the minimum practice requirements to be eligible for registration to practice.

#### **STUDENT CONDUCT IN THE PROGRAM**

The University reserves the right to cancel the academic privileges of a student at any time should the student's scholastic record or conduct warrant so doing. The Medical Radiation Sciences program reserves the right to remove a student from a skills-based course, clinical placement or laboratory setting at any point during the term if the student exhibits unsafe clinical practice or behaviour that places the patient or others at risk or is deemed a serious breach of professional behaviour. Such removal may result in the student receiving a grade of F in the course and may result in dismissal from the program.

#### **INTERNAL RE-ENTRY TO THE PROGRAM**

A student who becomes ineligible to continue in the program may apply for re-entry. Applications for Re-entry may be obtained through the School of Interdisciplinary Science. Request for re-entry may be made up to a maximum of two calendar years following the year in which the student becomes ineligible to continue. **Re-entry is neither automatic nor guaranteed.**

#### **GRADUATION**

A student is eligible for graduation when all of the following criteria are met. The student must:

- Complete all required courses, including electives, with a Grade Point Average of at least 4.5;
- Complete all skills and clinical courses with a Pass grade;
- Complete all required courses in Levels II - IV within five years of registration in Level II.

#### **LEAVE OF ABSENCE FROM THE PROGRAM**

Students wishing to suspend their studies from the program must apply for a Leave of Absence (LOA). Approval is not guaranteed.

Students should note that the program requirements, including all required courses in Levels II - IV, must be completed within five years of first registration in Level II, and that the leave may jeopardize the student's ability to meet this requirement.

Application for a leave of absence must be made in writing normally within two months prior to the intended start of the leave. Forms are available through the School of Interdisciplinary Science.

Any student who returns from a leave of absence into a clinical practicum term will be required to complete an additional non-credit course (for which a fee is involved) to ensure the student's professional knowledge and skills meet the minimum requirements for entrance to that clinical practicum. This course must be completed in the term immediately preceding the clinical practicum.

Re-entry is not guaranteed for students who suspend their studies from the program without an approved Leave of Absence. Such students must contact the Director of the School of Interdisciplinary Science to determine eligibility and appropriate procedures for re-entry. Students re-admitted to the program must adhere to the rules, regulations and program requirements of the Undergraduate Calendar in the year of re-entry into the program. Former Medical Radiation Sciences students who obtain permission for re-entry to a Specialization will not be guaranteed protected status in the allotment process, regardless of their previous placement history.

#### NOTES

- The overall program comprises ten terms within four calendar years. Three full terms are spent in clinical placement.
- Students apply for their Level II program selections during Winter Term of Level I. At the end of Level I, eligible Medical Radiation Sciences students are streamed into one of three specializations: Radiography, Radiation Therapy, and Ultrasonography. Each have limited enrolment. Selection of students into Level II specializations is on the basis of academic achievement (for Level I students, the Fall/Winter Average, on at least 24 units of study). Depending on a student's relative academic ranking in the list of those applying to enter a specialization, he/she may or may not be placed in the specialization of his/her choosing.
- **Transfer within Medical Radiation Sciences:** Any Medical Radiation Sciences student currently registered in one program specialization who wishes to transfer into another specialization must submit the transfer request in writing to the program by the end of April. As admission into Level II programs is a competitive process normally based on the Level I Fall/Winter Average, such transfer requests will be considered only after all eligible Level I students have been allocated into their specializations, and only if there is space remaining. Transfers are made into Level II only, and would result in an increase in the length of time required for the student to complete the program. Transfers may not be made into Level II from any other program. **Transfers are neither automatic nor guaranteed.**
- Placements will be with agencies that have contracted in advance with Mohawk College to provide specific experiences and resources during the normal clinical semester schedule; therefore, placements are not available at any other agencies or during other times. The College, in accordance with established policy, will determine allocation of students to these clinical facilities. The final assignment of learning settings is constrained by the availability of site resources. Students may be required to attend clinical practica in a setting that is not of their choosing. The College cannot accommodate any student requests for special consideration. Students must prepare financially and personally to relocate and/or commute to their assigned clinical placements. Students are responsible for arranging their own travel to and from assigned placements and are responsible for covering any costs incurred.
- All students will be required to attend full-time clinical practica at a minimum of two different clinical agencies that may be located across Ontario.
- **Basic Cardiac Life Support Training:** All Level II students are required to have obtained a current certificate in Basic Cardiac Life Support - HCP (Health Care Provider) and First Aid Training prior to commencing Term 2 of Level II. Current certificates are also required for Clinical Practica 2 and 3 in Level IV.
- All students will be required to act as simulated patients for their peers in skills course labs and during skills practice sessions.
- **Immunization and Health Screening:** The Ontario Public Hospitals Act requires that all persons working or on educational placement in a hospital setting meets criteria regarding surveillance for infectious diseases. All Level II students will be required to provide evidence of

compliance with completion of mandatory immunization requirements as well as completing pre-clinical disease screening. Updated screening may be required for Level IV clinical practica.

- Mask fit testing and a satisfactory Police Records Check are required prior to the commencement of each clinical placement.
- All costs associated with pre-clinical requirements are the responsibility of the student.
- All students are required to submit pre-clinical requirements by dates specified by the program. Failure to meet required deadlines may result in delay or loss of the clinical placement.
- Levels II through IV run consecutively from September of Level II to completion of the program at the end of April in Level IV. The pattern of semesters of clinical practicum and academic courses is shown in the chart below.

## Bachelor of Science (Honours)

### HONOURS INTEGRATED SCIENCE (B.SC.)

#### ADMISSION

Completion of Honours Integrated Science I with a Grade Point Average of at least 5.0 including ISCI 1A24 A/B.

#### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

(See Admission above.)

#### LEVEL II: 30 UNITS

18 units

- ISCI 2A18 A/B - Integrated Science II

12 units

- Electives

#### LEVEL III: 30 UNITS

12 units

- ISCI 3A12 A/B - Integrated Science III

18 units

- Electives

#### LEVEL IV: 30 UNITS

12 units

- ISCI 4A12 A/B - Integrated Science IV

18 units

- Electives

### HONOURS LIFE SCIENCES (B.SC.)

#### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 5.0 including:

#### 3 UNITS

- BIOLOGY 1A03 - Cellular and Molecular Biology

#### 3 UNITS

- CHEM 1A03 - Introductory Chemistry I

#### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

#### 3 UNITS

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

**3 UNITS**

from

- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity
- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03
- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour

**9 UNITS**

from

- the Science I Course List

**PROGRAM NOTES**

- Registration in an Honours Life Sciences program does not guarantee access to all courses. Some courses have program restrictions. Students should check prerequisites carefully.
- LIFESCI 2G03 does not substitute for BIOLOGY 2C03 or MOLBIOL 2C03 for prerequisite purposes.
- Students interested in completing a thesis or independent study course should consider completing LIFESCI 3RP3 in Level III.
- Students interested in graduate school may wish to consider completion of a thesis or independent study course (See LIFESCI 4A03, 4B09 A/B S, 4C12 A/B S, 4D15 A/B S).
- Level IV Research Seminar topics may change from year to year. Research Seminar topics and descriptions are available on the program web site (<https://www.science.mcmaster.ca/sis/undergraduate/life-sciences.html>). Honours Life Sciences students must complete at least 3 units of *Knowledge Transfer/Seminar Experience (Course List E)*.
- Students entering Level IV Honours Life Sciences (not including the Origins of Disease Specialization or the Sensory Motor Systems Specialization) must complete and submit a ballot, rank ordering their preference for enrolment in Level IV seminar offerings by the **end of March**. Students will be informed of their ballot result by the end of May. Failure to submit a ballot by the stated deadline may compromise enrolment in preferred seminar. The Life Sciences program pre-registration ballot will include all Level IV Life Sciences research seminar courses.
- LIFESCI 4CM3 is required for students completing the Honours Life Sciences - Origins of Disease Specialization and is not included in the pre-registration ballot.
- LIFESCI 4XX3 is required for students completing the Honours Life Sciences - Sensory Motor Systems Specialization and is not included in the pre-registration ballot.
- Course planning is extremely important. Students must review and consider the requisites on Level II, III and IV courses when enrolling in the previous Levels.
- Students who entered the program prior to September 2020, will have the choice to use LIFESCI 3N03 toward *Course List A* or *Course List C*.

**COURSE LIST A - COMMUNICATION SKILLS**

- ENVSOCY 3TG3 - Geographies of Globalization
- ENVSOCY 3UW3 - Cities of the Developing World
- HISTORY 3CH3 - Catastrophic History: Natural & Technological Disasters
- HLTHAGE 3D03 - Perspectives on Disability, Chronic Illness and Aging
- HLTHAGE 3E03 - Ethical Issues in Health and Aging
- HLTHAGE 3N03 - Aging and Mental Health
- LIFESCI 3AA3 - Human Pathophysiology
- LIFESCI 3BB3 - Neurobiology of Disease
- LIFESCI 3E03 - Reproductive Endocrinology
- LIFESCI 3G03 - Introduction to Epidemiology
- LIFESCI 3M03 - Cellular Dynamics
- LIFESCI 3N03 - Human Nutritional Toxicology
- LIFESCI 3P03 - Science Communication in Life Sciences

- LIFESCI 3Q03 - Global Human Health and Disease
- LIFESCI 3RC3 - Radioisotopes in Medicine
- LIFESCI 3Z03 - Life Sciences Inquiry

**COURSE LIST B - LABORATORY SKILLS**

- BIOLOGY 3B03 - Plant Physiology
- BIOLOGY 3JJ3 - Field Methods In Ecology
- BIOLOGY 3U03 - Animal Physiology - Homeostasis
- BIOLOGY 3VV3 - Laboratory Methods in Molecular Biology
- BIOPHYS 2S03 - Explorations in Medical and Biological Physics
- LIFESCI 3L03 - Laboratory Methods in Life Sciences
- LIFESCI 3LL3 - Living Systems Laboratory Practicum
- MOLBIOL 3D03 - Experimental Approaches in Cell Biology
- MOLBIOL 3M03 - Fundamental Concepts of Development

**COURSE LIST C - EXPERIENTIAL LEARNING**

- CMTYENGA 2MC3 - Design and Creation of Engaged Learning for Community Youth
- CMTYENGA 2MD3 - Community-based Learning with McMaster Children and Youth University
- CMTYENGA 4A06 - Semester at CityLAB: Design and Dialogue Inquiry
- CMTYENGA 4A09 - Semester at CityLAB: Applied Project Experience
- EXPLORE 3IS3 - Interdisciplinary Science Field Camp
- HUMAN 3CM3 - Leadership: Cross-Cultural Mentoring Lab
- HUMAN 3LM3 - Foundations of Leadership
- LIFESCI 3EP3 - Life Sciences Applied Placement
- LIFESCI 3RP3 - Life Sciences Research Practicum
- LIFESCI 3XX3 - Peer Mentoring in Science Communication
- LIFESCI 3YY3 - Peer Mentoring in Laboratory Skill Development
- LIFESCI 4A03 - Independent Study
- LIFESCI 4B06 A/B S
- LIFESCI 4B09 A/B S - Independent Project
- LIFESCI 4C09 A/B S
- LIFESCI 4C12 A/B S - Independent Thesis
- LIFESCI 4CC3
- LIFESCI 4D15 A/B S - Independent Thesis
- LIFESCI 4EP6 A/B S - Life Sciences Advanced Placement
- PSYCH 2NF3 - Clinical Neuropsychology
- SCIENCE 2A03 - Peer Mentoring in Science
- SCIENCE 3IS3
- SCIENCE 3M03 - Applied Curriculum Design in Science
- SUSTAIN 3S03 - Implementing Sustainable Change

**COURSE LIST D - LIFE SCIENCES COURSE LIST**

Astronomy	ASTRON 2B03
Biochemistry	Levels II, III, IV*
Biology	Levels II, III, IV*
Biophysics	BIOPHYS 2A03, 2S03, 3D03, 3G03
Chemistry	CHEM 2BC3, 2E03, 2OA3, 2OB3, 2P03, 3RC3
Chemical Biology	CHEMBIO 2A03, 2P03, 3BM3, 3OA3, 4OA3, 4OB3
Environmental Science	ENVIRSC 2Ei3, 2Gi3, 3B03, 3EE3, 3Gi3, 3GV3, 3SR3, 4HH3
Environment & Society	ENVSOCY 2Ei3, 2Gi3, 2Hi3, 2Ui3, 3EC3, 3EE3, 3ER3, 3Gi3, 3GV3, 3HP3, 3SR3, 3UP3, 4HH3
Explore	EXPLORE 3IS3
Geography	GEOG 2Ei3, 2Gi3, 2Hi3, 2Ui3, 3EC3, 3EE3, 3ER3, 3Gi3, 3GV3, 3HP3, 3SR3, 3UP3, 4HH3
Health Sciences	HTHSCI 2G03, 3DD3, 3DD6 A/B, 3I03, 3K03, 4DM3, 4Ii3, 4O03
Kinesiology	KINESIOL 2Y03, 2YY3

Life Sciences	Levels II, III, IV*
Mathematics	MATH 2UU3, 3MB3
Medical Physics	MEDPHYS 4B03, 4F03, 4U03
Medical Radiation Sciences	MEDRADSC 3X03
Molecular Biology	Levels III, IV*
Neuroscience	NEUROSCI 3J03, 3SN3
Physics	PHYSICS 2G03
Psychology	PSYCH Levels II, III, IV*
Science	Levels II, III*
Science Communication	SCICOMM 2A03, 2M03
	<i>* All Levels II, III, IV courses for which the prerequisites have been met are acceptable.</i>

### COURSE LIST E - KNOWLEDGE TRANSFER/SEMINAR EXPERIENCE

- LIFESCI 4CM3 - Foundations of Disease States Inquiry Lab
- LIFESCI 4E03 - Science & Storytelling
- LIFESCI 4F03 - Emerging Paradigms in Environmental Change and Health
- LIFESCI 4H03 - Regeneration: What Can We Learn From Animal Models?
- LIFESCI 4I03 - Research Seminar
- LIFESCI 4J03 - Science Communication in the Media
- LIFESCI 4L03 - Research Seminar
- LIFESCI 4M03 - Research Seminar
- LIFESCI 4N03 - Research Seminar
- LIFESCI 4O03 - Research Seminar
- LIFESCI 4P03 - Research Seminar
- LIFESCI 4Q03 - Research Seminar
- LIFESCI 4U03 - Mechanisms of Disease
- LIFESCI 4V03 - Extracellular Vesicles in Health and Disease
- LIFESCI 4W03 - Advanced Topics in Nutrition
- LIFESCI 4X03 - The Biopsychology of Sex
- LIFESCI 4XX3 - The Synapse
- LIFESCI 4Y03 - Applied Biomechanics

### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

(See Admission above.)

#### LEVELS II-IV: 90 UNITS

9 units

- LIFESCI 2A03 - Research Methods in Life Sciences
- LIFESCI 2AA3 - Introduction to Topics in Life Sciences
- LIFESCI 2L03 - Living Systems Laboratory

3 units

- STATS 2B03 - Statistical Methods for Science

3 units

from

- BIOLOGY 2C03 - Genetics
- LIFESCI 2G03 - Genes, Genomes and Society

3 units

from

- BIOLOGY 2B03 - Cell Biology
- LIFESCI 2CC3 - Fundamentals of Neuroscience
- LIFESCI 2D03 - Behavioural Processes

- LIFESCI 2N03 - Human Nutrition for Life Sciences
- LIFESCI 2X03 - Environmental Change and Human Health

6 units

from

- Course List A - Communication Skills (See Program Note 10 above.)

3 units

from

- Course List B - Laboratory Skills

3-15 units

from

- Course List C - Experiential Learning (See Program Note 10 above.)

18 units

from

- Course List D - Life Sciences Course List

3 units

from

- Course List E - Knowledge Transfer/Seminar Experience

27-39 units

- Electives (See Program Note 9 above.)

## HONOURS LIFE SCIENCES - ORIGINS OF DISEASE SPECIALIZATION (B.SC.)

### ADMISSION NOTE

Effective for students entering Level II in September 2020, completion of CHEM 1AA3 is required by the end of Level II. Completion in Level I is strongly recommended.

### ADMISSION

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement, but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

#### 3 UNITS

- BIOLOGY 1A03 - Cellular and Molecular Biology

#### 3 UNITS

- CHEM 1A03 - Introductory Chemistry I

#### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

#### 3 UNITS

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

#### 3 UNITS

from

- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity
- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03
- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour

#### 9 UNITS

from

- the Science I Course List

### ADMISSION (EFFECTIVE SEPTEMBER 2021)

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement, but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:



**3 UNITS**

- BIOLOGY 1A03 - Cellular and Molecular Biology

**6 UNITS**

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II

**3 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

**3 UNITS**

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

**3 UNITS**

from

- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity
- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03
- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour

**6 UNITS**

from

- the *Science I Course List*

**PROGRAM NOTES**

- Registration in an Honours Life Sciences program does not guarantee access to all courses. Some courses have program restrictions. Students are advised to check prerequisites carefully.
- Students interested in completing a thesis or independent study course should consider completing LIFESCI 3RP3 in Level III.
- Students interested in graduate school may wish to consider completion of a thesis or independent study course (See LIFESCI 4A03, 4B09 A/B S, 4C12 A/B S, 4D15 A/B S).
- LIFESCI 2G03 does not substitute for BIOLOGY 2C03 or MOLBIOL 2C03 for prerequisite purposes.
- This program does not have a Co-op option.
- Course planning is extremely important. Students must review and consider the requisites on Level II, III and IV courses when enrolling in the previous Levels.
- Students in the Honours Life Sciences - Origins of Disease Specialization are excluded from the pre-registration ballot process as LIFESCI 4CM3 is a program requirement and registration is guaranteed.
- For students entering Level II in September 2020, completion of CHEM 1AA3 is required by the end of Level II. Completion in Level I is strongly recommended

**LIFE SCIENCES COURSE LIST**

Astronomy	ASTRON 2B03
Biochemistry	Levels II, III, IV*
Biology	Levels II, III, IV*
Biophysics	BIOPHYS 3D03, 3G03
Chemistry	CHEM 2BC3, 2E03, 2OA3, 2OB3, 2P03, 3RC3
Chemical Biology	CHEMBIO 2A03, 2P03, 3BM3, 3OA3, 4OA3, 4OB3
Environmental Science	ENVIRSC 2EI3, 2GI3, 3B03, 3EE3, 3GI3, 3GV3, 3SR3, 4HH3
Environment & Society	ENVSOCY 2EI3, 2GI3, 2HI3, 2UI3, 3EC3, 3EE3, 3ER3, 3GI3, 3GV3, 3HP3, 3SR3, 3UP3, 4HH3
Explore	EXPLORE 3IS3

Geography	GEOG 2EI3, 2GI3, 2HI3, 2UI3, 3EC3, 3EE3, 3ER3, 3GI3, 3GV3, 3HP3, 3SR3, 3UP3, 4HH3
Health Sciences	HTHSCI 2G03, 3DD3, 3DD6 A/B, 3I03, 3K03, 4DM3, 4I13, 4O03
Kinesiology	KINESIOL 2Y03, 2YY3
Life Sciences	Levels II, III, IV*
Mathematics	MATH 2UU3, 3MB3
Medical Physics	MEDPHYS 4B03, 4F03, 4U03
Medical Radiation Sciences	MEDRADSC 3X03
Molecular Biology	Levels III, IV*
Neuroscience	NEUROSCI 3J03, 3SN3
Physics	PHYSICS 2G03
Psychology	PSYCH Levels II, III, IV*
Science	Levels II, III*
Science Communication	SCICOMM 2A03, 2M03

**\*All Levels II, III, IV courses for which prerequisites have been met are acceptable.**

**REQUIREMENTS**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)**LEVELS II-IV: 90 UNITS**

6 units

- LIFESCI 2A03 - Research Methods in Life Sciences
- LIFESCI 2L03 - Living Systems Laboratory

3 units

- BIOLOGY 2B03 - Cell Biology

3 units

- STATS 2B03 - Statistical Methods for Science

3 units

- BIOLOGY 2C03 - Genetics

6 units

- BIOPHYS 2S03 - Explorations in Medical and Biological Physics
- LIFESCI 2BP3 - Biophysics of the Cell and Living Organisms

6 units

- CHEM 2OA3 - Organic Chemistry I
- CHEM 2OB3 - Organic Chemistry II

0-3 units

- CHEM 1AA3 - Introductory Chemistry II (if not completed in Level I)

(See *Program Note 8* above.)

3 units

- LIFESCI 3M03 - Cellular Dynamics

3 units

from

- BIOLOGY 3AA3 - Fundamental Concepts of Pharmacology
- CHEMBIO 3BM3 - Implanted Biomaterials
- LIFESCI 3AA3 - Human Pathophysiology
- LIFESCI 3BM3 - Implanted Biomaterials
- MOLBIOL 3B03 - Advanced Cell Biology

3-15 units

from

- CMTYENGA 2MC3 - Design and Creation of Engaged Learning for Community Youth

- CMTYENGA 2MD3 - Community-based Learning with McMaster Children and Youth University
- CMTYENGA 4A06 - Semester at CityLAB: Design and Dialogue Inquiry
- CMTYENGA 4A09 - Semester at CityLAB: Applied Project Experience
- EXPLORE 3IS3 - Interdisciplinary Science Field Camp
- HUMAN 3CM3 - Leadership: Cross-Cultural Mentoring Lab
- HUMAN 3LM3 - Foundations of Leadership
- LIFESCI 3EP3 - Life Sciences Applied Placement
- LIFESCI 3N03 - Human Nutritional Toxicology
- LIFESCI 3RP3 - Life Sciences Research Practicum
- LIFESCI 3XX3 - Peer Mentoring in Science Communication
- LIFESCI 3YY3 - Peer Mentoring in Laboratory Skill Development
- LIFESCI 4A03 - Independent Study
- LIFESCI 4B06 A/B S
- LIFESCI 4B09 A/B S - Independent Project
- LIFESCI 4C09 A/B S
- LIFESCI 4C12 A/B S - Independent Thesis
- LIFESCI 4CC3
- LIFESCI 4D15 A/B S - Independent Thesis
- LIFESCI 4EP6 A/B S - Life Sciences Advanced Placement
- PSYCH 2NF3 - Clinical Neuropsychology
- SCIENCE 2A03 - Peer Mentoring in Science
- SCIENCE 3IS3
- SCIENCE 3M03 - Applied Curriculum Design in Science
- SUSTAIN 3S03 - Implementing Sustainable Change

15 units

from

- *Life Sciences Course List*

3 units

- LIFESCI 4CM3 - Foundations of Disease States Inquiry Lab

21-36 units

- Electives

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2020**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**30 units(See *Admission* above.)**LEVELS II-IV: 90 UNITS**6 units

- LIFESCI 2A03 - Research Methods in Life Sciences
- LIFESCI 2L03 - Living Systems Laboratory

3 units

- BIOLOGY 2B03 - Cell Biology

3 units

- STATS 2B03 - Statistical Methods for Science

3 units

from

- BIOLOGY 2C03 - Genetics
- LIFESCI 2G03 - Genes, Genomes and Society

6 units

- BIOPHYS 2S03 - Explorations in Medical and Biological Physics
- LIFESCI 2BP3 - Biophysics of the Cell and Living Organisms

6 units

- CHEM 2OA3 - Organic Chemistry I
- CHEM 2OB3 - Organic Chemistry II

3 units

from

- LIFESCI 3AA3 - Human Pathophysiology
- LIFESCI 3M03 - Cellular Dynamics

3 units

from

- BIOLOGY 3AA3 - Fundamental Concepts of Pharmacology
- CHEMBIO 3BM3 - Implanted Biomaterials
- LIFESCI 3BM3 - Implanted Biomaterials
- MOLBIOL 3B03 - Advanced Cell Biology

3-15 units

from

- CMTYENGA 2MC3 - Design and Creation of Engaged Learning for Community Youth
- CMTYENGA 2MD3 - Community-based Learning with McMaster Children and Youth University
- CMTYENGA 4A06 - Semester at CityLAB: Design and Dialogue Inquiry
- CMTYENGA 4A09 - Semester at CityLAB: Applied Project Experience
- EXPLORE 3IS3 - Interdisciplinary Science Field Camp
- HUMAN 3CM3 - Leadership: Cross-Cultural Mentoring Lab
- HUMAN 3LM3 - Foundations of Leadership
- LIFESCI 3EP3 - Life Sciences Applied Placement
- LIFESCI 3N03 - Human Nutritional Toxicology
- LIFESCI 3RP3 - Life Sciences Research Practicum
- LIFESCI 3XX3 - Peer Mentoring in Science Communication
- LIFESCI 3YY3 - Peer Mentoring in Laboratory Skill Development
- LIFESCI 4A03 - Independent Study
- LIFESCI 4B06 A/B S
- LIFESCI 4B09 A/B S - Independent Project
- LIFESCI 4C09 A/B S
- LIFESCI 4C12 A/B S - Independent Thesis
- LIFESCI 4CC3
- LIFESCI 4D15 A/B S - Independent Thesis
- LIFESCI 4EP6 A/B S - Life Sciences Advanced Placement
- PSYCH 2NF3 - Clinical Neuropsychology
- SCIENCE 2A03 - Peer Mentoring in Science
- SCIENCE 3IS3
- SCIENCE 3M03 - Applied Curriculum Design in Science
- SUSTAIN 3S03 - Implementing Sustainable Change

15 units

from

- *Life Sciences Course List*

3 units

- LIFESCI 4CM3 - Foundations of Disease States Inquiry Lab

24-36 units

- Electives

**HONOURS LIFE SCIENCES - SENSORY MOTOR SYSTEMS SPECIALIZATION (B.SC.)****ADMISSION NOTES**

- Completion of BIOLOGY 1M03, CHEM 1AA3 and either PSYCH 1FF3 or 1XX3 is strongly recommended as they serve as prerequisites for required courses in Levels II and III.
- Effective for students entering Level II in September 2020, completion of CHEM 1AA3 is required by the end of Level II. Completion in Level I is strongly recommended.

**ADMISSION**

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement, but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

**3 UNITS**

- BIOLOGY 1A03 - Cellular and Molecular Biology

**3 UNITS**

- CHEM 1A03 - Introductory Chemistry I

**3 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

**3 UNITS**

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

**3 UNITS**

from

- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity
- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03
- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour

**9 UNITS**

from

- the Science I Course List (See *Admission Notes 1 and 2* above.)

**PROGRAM NOTES**

- Registration in an Honours Life Sciences program does not guarantee access to all courses. Some courses have program restrictions. Students are advised to check prerequisites carefully.
- Students interested in completing a thesis or independent study course should consider completing LIFESCI 3RP3 in Level III.
- Students interested in graduate school may wish to consider completion of a thesis or independent study course (See LIFESCI 4A03, 4B09 A/B S, 4C12 A/B S, 4D15 A/B S).
- LIFESCI 2G03 does not substitute for BIOLOGY 2C03 or MOLBIOL 2C03 for prerequisite purposes.
- This program does not have a Co-op option.
- Course planning is extremely important. Students must review and consider the requisites on Level II, III and IV courses when enrolling in the previous Levels.
- Students in the Honours Life Sciences - Sensory Motor Systems Specialization are excluded from the pre-registration ballot process as LIFESCI 4XX3 is a program requirement and registration is guaranteed.
- For students entering Level II in September 2020, completion of CHEM 1AA3 is required by the end of Level II. Completion in Level I is strongly recommended.

**LIFE SCIENCES COURSE LIST**

Astronomy	ASTRON 2B03
Biochemistry	Levels II, III, IV*
Biology	Levels II, III, IV*
Biophysics	BIOPHYS 2A03, 2S03, 3D03, 3G03
Chemistry	CHEM 2BC3, 2E03, 2OA3, 2OB3, 2P03, 3RC3
Chemical Biology	CHEMBIO 2A03, 2P03, 3BM3, 3OA3, 4OA3, 4OB3
Environmental Science	ENVIRSC 2Ei3, 2Gi3, 3B03, 3EE3, 3Gi3, 3GV3, 3SR3, 4HH3
Environment & Society	ENVSOCY 2Ei3, 2Gi3, 2Hi3, 2Ui3, 3EC3, 3EE3, 3ER3, 3Gi3, 3GV3, 3HP3, 3SR3, 3UP3, 4HH3
Explore	EXPLORE 3IS3
Geography	GEOG 2Ei3, 2Gi3, 2Hi3, 2Ui3, 3EC3, 3EE3, 3ER3, 3Gi3, 3GV3, 3HP3, 3SR3, 3UP3, 4HH3
Health Sciences	HTHSCI 2G03, 3DD3, 3DD6 A/B, 3I03, 3K03, 4DM3, 4Ii3, 4O03
Kinesiology	KINESIOL 2YY3

Life Sciences	Levels II, III, IV*
Mathematics	MATH 2JU3, 3MB3
Medical Physics	MEDPHYS 4B03, 4F03, 4U03
Medical Radiation Sciences	MEDRADSC 3X03
Molecular Biology	Levels III, IV*
Neuroscience	NEUROSCI 3J03, 3SN3
Physics	PHYSICS 2G03
Psychology	PSYCH Levels II, III, IV*
Science	Levels II, III*
Science Communication	SCICOMM 2A03, 2M03

**\*All Levels II, III, IV courses for which the prerequisites have been met are acceptable.**

**REQUIREMENTS**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above)**LEVELS II-IV: 90 UNITS**

9 units

- LIFESCI 2A03 - Research Methods in Life Sciences
- LIFESCI 2CC3 - Fundamentals of Neuroscience
- LIFESCI 2L03 - Living Systems Laboratory

3 units

- STATS 2B03 - Statistical Methods for Science

3 units

from

- BIOLOGY 2C03 - Genetics
- LIFESCI 2G03 - Genes, Genomes and Society

3 units

- KINESIOL 2Y03 - Human Anatomy and Physiology I

3 units

- PSYCH 2E03 - Sensory Processes

0-3 units

- CHEM 1AA3 - Introductory Chemistry II (if not completed in Level I)

(See *Program Note 8* above.)

6 units

from

- NEUROSCI 3J03 - Visual Neuroscience
- PSYCH 3A03 - Audition
- PSYCH 3BN3 - Cognitive Neuroscience I
- PSYCH 3J03

3 units

from

- LIFESCI 3J03 - Human Biomechanics
- LIFESCI 3K03 - Neural Control of Human Movement

3 units

- LIFESCI 3BB3 - Neurobiology of Disease

3 units

from

- BIOLOGY 3U03 - Animal Physiology - Homeostasis
- BIOLOGY 3VV3 - Laboratory Methods in Molecular Biology
- BIOPHYS 2S03 - Explorations in Medical and Biological Physics

- LIFESCI 3L03 - Laboratory Methods in Life Sciences
- LIFESCI 3LL3 - Living Systems Laboratory Practicum
- MOLBIOL 3D03 - Experimental Approaches in Cell Biology
- MOLBIOL 3M03 - Fundamental Concepts of Development

3-15 units

from

- CMTYENGA 2MC3 - Design and Creation of Engaged Learning for Community Youth
- CMTYENGA 2MD3 - Community-based Learning with McMaster Children and Youth University
- CMTYENGA 4A06 - Semester at CityLAB: Design and Dialogue Inquiry
- CMTYENGA 4A09 - Semester at CityLAB: Applied Project Experience
- EXPLORE 3IS3 - Interdisciplinary Science Field Camp
- HUMAN 3CM3 - Leadership: Cross-Cultural Mentoring Lab
- HUMAN 3LM3 - Foundations of Leadership
- LIFESCI 3EP3 - Life Sciences Applied Placement
- LIFESCI 3N03 - Human Nutritional Toxicology
- LIFESCI 3RP3 - Life Sciences Research Practicum
- LIFESCI 3XX3 - Peer Mentoring in Science Communication
- LIFESCI 3YY3 - Peer Mentoring in Laboratory Skill Development
- LIFESCI 4A03 - Independent Study
- LIFESCI 4B06 A/B S
- LIFESCI 4B09 A/B S - Independent Project
- LIFESCI 4C09 A/B S
- LIFESCI 4C12 A/B S - Independent Thesis
- LIFESCI 4CC3
- LIFESCI 4D15 A/B S - Independent Thesis
- LIFESCI 4EP6 A/B S - Life Sciences Advanced Placement
- PSYCH 2NF3 - Clinical Neuropsychology
- SCIENCE 2A03 - Peer Mentoring in Science
- SCIENCE 3IS3
- SCIENCE 3M03 - Applied Curriculum Design in Science
- SUSTAIN 3S03 - Implementing Sustainable Change

12 units

from

- *Life Sciences Course List*

3 units

- LIFESCI 4XX3 - The Synapse

21-36 units

- Electives

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2020**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**30 units(See *Admission* above)**LEVELS II-IV: 90 UNITS**9 units

- LIFESCI 2A03 - Research Methods in Life Sciences
- LIFESCI 2CC3 - Fundamentals of Neuroscience
- LIFESCI 2L03 - Living Systems Laboratory

3 units

- STATS 2B03 - Statistical Methods for Science

3 units

from

- BIOLOGY 2C03 - Genetics
- LIFESCI 2G03 - Genes, Genomes and Society

3 units

- KINESIOL 2Y03 - Human Anatomy and Physiology I

3 units

- PSYCH 2E03 - Sensory Processes

6 units

from

- NEUROSCI 3J03 - Visual Neuroscience
- PSYCH 3A03 - Audition
- PSYCH 3BN3 - Cognitive Neuroscience I
- PSYCH 3J03

3 units

from

- LIFESCI 3J03 - Human Biomechanics
- LIFESCI 3K03 - Neural Control of Human Movement

3 units

- LIFESCI 3BB3 - Neurobiology of Disease

3 units

from

- BIOLOGY 3U03 - Animal Physiology - Homeostasis
- BIOLOGY 3VV3 - Laboratory Methods in Molecular Biology
- BIOPHYS 2S03 - Explorations in Medical and Biological Physics
- LIFESCI 3L03 - Laboratory Methods in Life Sciences
- LIFESCI 3LL3 - Living Systems Laboratory Practicum
- MOLBIOL 3D03 - Experimental Approaches in Cell Biology
- MOLBIOL 3M03 - Fundamental Concepts of Development

3-15 units

from

- CMTYENGA 2MC3 - Design and Creation of Engaged Learning for Community Youth
- CMTYENGA 2MD3 - Community-based Learning with McMaster Children and Youth University
- CMTYENGA 4A06 - Semester at CityLAB: Design and Dialogue Inquiry
- CMTYENGA 4A09 - Semester at CityLAB: Applied Project Experience
- EXPLORE 3IS3 - Interdisciplinary Science Field Camp
- HUMAN 3CM3 - Leadership: Cross-Cultural Mentoring Lab
- HUMAN 3LM3 - Foundations of Leadership
- LIFESCI 3EP3 - Life Sciences Applied Placement
- LIFESCI 3N03 - Human Nutritional Toxicology
- LIFESCI 3RP3 - Life Sciences Research Practicum
- LIFESCI 3XX3 - Peer Mentoring in Science Communication
- LIFESCI 3YY3 - Peer Mentoring in Laboratory Skill Development
- LIFESCI 4A03 - Independent Study
- LIFESCI 4B06 A/B S
- LIFESCI 4B09 A/B S - Independent Project
- LIFESCI 4C09 A/B S
- LIFESCI 4C12 A/B S - Independent Thesis
- LIFESCI 4CC3
- LIFESCI 4D15 A/B S - Independent Thesis
- LIFESCI 4EP6 A/B S - Life Sciences Advanced Placement
- PSYCH 2NF3 - Clinical Neuropsychology
- SCIENCE 2A03 - Peer Mentoring in Science
- SCIENCE 3IS3
- SCIENCE 3M03 - Applied Curriculum Design in Science
- SUSTAIN 3S03 - Implementing Sustainable Change

12 units

from

- *Life Sciences Course List*

3 units

- LIFESCI 4XX3 - The Synapse

24-36 units

- Electives



## HONOURS LIFE SCIENCES CO-OP (B.SC.)

### ADMISSION

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline and completion of Level II Honours Life Sciences with a Grade Point Average of at least 5.0 and completion of the following courses:

#### 9 UNITS

- LIFESCI 2A03 - Research Methods in Life Sciences
- LIFESCI 2AA3 - Introduction to Topics in Life Sciences
- LIFESCI 2L03 - Living Systems Laboratory

#### 3 UNITS

- STATS 2B03 - Statistical Methods for Science

#### 3 UNITS

from

- BIOLOGY 2C03 - Genetics
- LIFESCI 2G03 - Genes, Genomes and Society

#### 3 UNITS

from

- BIOLOGY 2B03 - Cell Biology
- LIFESCI 2CC3 - Fundamentals of Neuroscience
- LIFESCI 2D03 - Behavioural Processes
- LIFESCI 2N03 - Human Nutrition for Life Sciences
- LIFESCI 2X03 - Environmental Change and Human Health

#### NOTE:

Information about this program and the selection procedure can be obtained from Science Career and Cooperative Education and the Academic Program Advisor.

#### PROGRAM NOTES

- This is a five-level (year) co-op program which includes two eight-month work terms which must be spent in life sciences related placements.
- Students must be registered full-time and take a full academic workload, as prescribed by Level and Term.
- Students are required to complete SCIENCE 2C00 and SCIENCE 3C00 before the first work placement and are strongly recommended to complete SCIENCE 2C00 in Level II.
- Registration in the Honours Life Sciences Co-op program does not guarantee access to all courses. Some courses have program restrictions and students are responsible to read course prerequisites carefully.
- Students interested in completing a thesis or independent study course should consider completing LIFESCI 3RP3 in Level III.
- Students interested in graduate school may wish to consider completion of a thesis or independent study course (see LIFESCI 4A03, 4B09 A/B S, 4C12 A/B S, 4D15 A/B S).
- Level IV Research Seminar topics may change from year to year. Research Seminar topics and descriptions are available on the program web site (<https://www.science.mcmaster.ca/sis/undergraduate/life-sciences.html>).
- Students entering Level IV or V of Honours Life Sciences Co-op must complete and submit a ballot, rank ordering their preference for enrolment in Level IV seminar offerings by **the end of March**. Students will be informed of their ballot result by the end of May. Failure to submit a ballot by the stated deadline may compromise enrolment in preferred seminar. The Life Sciences program pre-registration ballot will include all Level IV Life Sciences research seminar courses. Co-op students will have access to the ballot only once during their undergraduate degree.
- LIFESCI 4CM3 is required for students completing the Honours Life Sciences - Origins of Disease Specialization and is not included in the

pre-registration ballot.

- LIFESCI 4XX3 is required for students completing the Honours Life Sciences - Sensory Motor Systems Specialization and is not included in the pre-registration ballot.
- Effective September 2017, students must complete at least one of EXPLORE 3IS3, LIFESCI 3EP3, 3R03, 3RP3, 3XX3, 3YY3, 4A03, 4B06 A/B S, 4B09 A/B S, 4C09 A/B S, 4C12 A/B S, 4D15 A/B S, 4EP6 A/B S, SCIENCE 2A03, 3A03, 3IS3, 3M03, 3WT0.
- The Co-op option is not available with either the Origins of Disease or Sensory Motor Systems Specializations.
- Course planning is extremely important. Students must review and consider the requisites on Level II, III and IV courses when enrolling in the previous Levels.

#### LIFE SCIENCES COURSE LIST

Astronomy	ASTRON 2B03
Biochemistry	Levels II, III, IV*
Biology	Levels II, III, IV*
Biophysics	BIOPHYS 2A03, 2S03, 3D03, 3G03
Chemistry	CHEM 2BC3, 2E03, 2OA3, 2OB3, 2P03, 3RC3
Chemical Biology	CHEMBIO 2A03, 2P03, 3BM3, 3OA3, 4OA3, 4OB3
Environmental Science	ENVIRSC 2EI3, 2GI3, 3B03, 3EE3, 3GI3, 3GV3, 3SR3, 4HH3
Environment & Society	ENVSOCY 2EI3, 2GI3, 2HI3, 2UI3, 3EC3, 3EE3, 3ER3, 3GI3, 3GV3, 3HP3, 3SR3, 3UP3, 4HH3
Explore	EXPLORE 3IS3
Geography	GEOG 2EI3, 2GI3, 2HI3, 2UI3, 3EC3, 3EE3, 3ER3, 3GI3, 3GV3, 3HP3, 3SR3, 3UP3, 4HH3
Health Sciences	HTHSCI 2G03, 3DD3, 3DD6 A/B, 3I03, 3K03, 4DM3, 4II3, 4O03
Kinesiology	KINESIOL 2Y03, 2YY3
Life Sciences	Levels II, III, IV*
Mathematics	MATH 2UU3, 3MB3
Medical Physics	MEDPHYS 2D03, 4B03, 4F03, 4U03
Medical Radiation Sciences	MEDRADSC 3X03
Molecular Biology	Levels III, IV*
Neuroscience	NEUROSCI 3J03, 3SN3
Physics	PHYSICS 2G03
Psychology	PSYCH Levels II, III, IV*
Science	Levels II, III*
Science Communication	SCICOMM 2A03, 2M03
<b>* All Levels II, III, IV courses for which the prerequisites have been met are acceptable.</b>	

#### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

- Completed prior to admission to program

**LEVEL II: 30 UNITS**30 units

- Completion of any Level II Honours Life Sciences program, including:

9 units

- LIFESCI 2A03 - Research Methods in Life Sciences
- LIFESCI 2AA3 - Introduction to Topics in Life Sciences
- LIFESCI 2L03 - Living Systems Laboratory

3 units

- STATS 2B03 - Statistical Methods for Science

3 units

from

- BIOLOGY 2C03 - Genetics
- LIFESCI 2G03 - Genes, Genomes and Society

3 units

from

- BIOLOGY 2B03 - Cell Biology
- LIFESCI 2CC3 - Fundamentals of Neuroscience
- LIFESCI 2D03 - Behavioural Processes
- LIFESCI 2N03 - Human Nutrition for Life Sciences
- LIFESCI 2X03 - Environmental Change and Human Health

1 course

- SCIENCE 2C00 - Skills for Career Success in Science

(See *Program Note 3* above.)**LEVEL III**

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:**3 units**

from

- LIFESCI 3AA3 - Human Pathophysiology
- LIFESCI 3BB3 - Neurobiology of Disease
- LIFESCI 3E03 - Reproductive Endocrinology
- LIFESCI 3G03 - Introduction to Epidemiology
- LIFESCI 3M03 - Cellular Dynamics
- LIFESCI 3N03 - Human Nutritional Toxicology
- LIFESCI 3P03 - Science Communication in Life Sciences
- LIFESCI 3Q03 - Global Human Health and Disease
- LIFESCI 3RC3 - Radioisotopes in Medicine
- LIFESCI 3Z03 - Life Sciences Inquiry

**6 units**

from

- *Life Sciences Course List*

**6 units**

- Electives

**2 courses**

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

**LEVEL IV**

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:**3 units**

from

- LIFESCI 3AA3 - Human Pathophysiology
- LIFESCI 3BB3 - Neurobiology of Disease
- LIFESCI 3E03 - Reproductive Endocrinology
- LIFESCI 3G03 - Introduction to Epidemiology
- LIFESCI 3M03 - Cellular Dynamics
- LIFESCI 3N03 - Human Nutritional Toxicology
- LIFESCI 3P03 - Science Communication in Life Sciences
- LIFESCI 3Q03 - Global Human Health and Disease
- LIFESCI 3RC3 - Radioisotopes in Medicine
- LIFESCI 3Z03 - Life Sciences Inquiry

**3 units**

from

- BIOLOGY 3B03 - Plant Physiology
- BIOLOGY 3JJ3 - Field Methods In Ecology
- BIOLOGY 3U03 - Animal Physiology - Homeostasis
- BIOLOGY 3VV3 - Laboratory Methods in Molecular Biology
- BIOPHYS 2S03 - Explorations in Medical and Biological Physics
- LIFESCI 3L03 - Laboratory Methods in Life Sciences
- LIFESCI 3LL3 - Living Systems Laboratory Practicum
- MOLBIOL 3D03 - Experimental Approaches in Cell Biology
- MOLBIOL 3M03 - Fundamental Concepts of Development

**9 units**

from

- *Life Sciences Course List*

**15 units**

- Electives

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 4WT0 - Science Co-op Work Term

**LEVEL V**

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

**1 course**

- SCIENCE 5WT0 - Science Co-op Work Term

Winter Term: 15 units:**3 units**

from

- LIFESCI 4CM3 - Foundations of Disease States Inquiry Lab
- LIFESCI 4E03 - Science & Storytelling
- LIFESCI 4F03 - Emerging Paradigms in Environmental Change and Health
- LIFESCI 4H03 - Regeneration: What Can We Learn From Animal Models?
- LIFESCI 4I03 - Research Seminar
- LIFESCI 4J03 - Science Communication in the Media
- LIFESCI 4L03 - Research Seminar
- LIFESCI 4M03 - Research Seminar
- LIFESCI 4N03 - Research Seminar
- LIFESCI 4O03 - Research Seminar
- LIFESCI 4P03 - Research Seminar
- LIFESCI 4Q03 - Research Seminar
- LIFESCI 4U03 - Mechanisms of Disease
- LIFESCI 4V03 - Extracellular Vesicles in Health and Disease
- LIFESCI 4W03 - Advanced Topics in Nutrition
- LIFESCI 4X03 - The Biopsychology of Sex
- LIFESCI 4XX3 - The Synapse
- LIFESCI 4Y03 - Applied Biomechanics

**3 units**

from

- *Life Sciences Course List*

9 units

- Electives

#### NOTE

Students who entered the program prior to September 2018 may refer to their Academic Advisement report or contact an Academic Advisor in the Office of the Associate Dean of Science (Academic) for program requirements.

#### CO-OP PROGRAM CHART

	<b>FALL TERM (September to December)</b>	<b>WINTER TERM (January to April)</b>	<b>SPRING/ SUMMER TERM (May to August)</b>
<b>Level III</b>	15 units from Academic Level III and SCIENCE 2C00 (if not completed) and SCIENCE 3C00	Work Term SCIENCE 3WT0	Work Term SCIENCE 3WT0
<b>Level IV</b>	30 units from Academic Levels III and IV		Work Term SCIENCE 4WT0
<b>Level V</b>	Work Term SCIENCE 5WT0	15 units from Academic Level IV	

## Bachelor of Science

### LIFE SCIENCES (B.SC.)

#### NOTE APPLICABLE TO B.SC. IN LIFE SCIENCES

The B.Sc. in Life Sciences, as a second degree, may not be possible if the student's first undergraduate degree is in Biochemistry, Biology, Environmental Sciences, or Psychology, Neurosciences & Behaviour. Students wishing further information should consult with the Office of the Associate Dean of Science (Academic).

#### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 3.5 including:

#### 3 UNITS

- BIOLOGY 1A03 - Cellular and Molecular Biology

#### 3 UNITS

- CHEM 1A03 - Introductory Chemistry I

#### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

#### 3 UNITS

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

#### 3 UNITS

from

- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity
- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 1G03

- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour

#### 9 UNITS

from

- the Science I Course List

#### PROGRAM NOTES

- Students who intend to complete Biochemistry courses or who wish to be eligible for a wider selection of Biology and Psychology courses must complete CHEM 1A03, 1AA3.
- Registration in the B.Sc. Life Sciences program does not guarantee access to all courses. Some courses have program restrictions and students are responsible to read course prerequisites carefully.
- Students registered in the B.Sc. Life Sciences program who are interested in transferring to Honours Life Sciences should meet with an Academic Advisor.

#### LIFE SCIENCES COURSE LIST

Astronomy	ASTRON 2B03
Biochemistry	Levels II, III, IV*
Biology	Levels II, III, IV*
Biophysics	BIOPHYS 2A03, 2S03, 3D03, 3G03
Chemistry	CHEM 2BC3, 2E03, 2OA3, 2OB3, 2P03, 3RC3
Chemical Biology	CHEMBIO 2A03, 2P03, 3BM3, 3OA3, 4OA3, 4OB3
Environmental Science	ENVIRSC 2EI3, 2GI3, 3B03, 3EE3, 3GI3, 3GV3, 3SR3, 4HH3
Environment & Society	ENVSOCY 2EI3, 2GI3, 2HI3, 2UI3, 3EC3, 3EE3, 3ER3, 3GI3, 3GV3, 3HP3, 3SR3, 3UP3, 4HH3
Explore	EXPLORE 3IS3
Geography	GEOG 2EI3, 2GI3, 2HI3, 2UI3, 3EC3, 3EE3, 3ER3, 3GI3, 3GV3, 3HP3, 3SR3, 3UP3, 4HH3
Health Sciences	HTHSCI 2G03, 3DD3, 3DD6 A/B, 3I03, 3K03, 4DM3, 4II3, 4O03
Kinesiology	KINESIOL 2Y03, 2YY3
Life Sciences	Levels II, III, IV*
Mathematics	MATH 2JU3, 3MB3
Medical Physics	MEDPHYS 2D03, 4B03, 4F03, 4U03
Medical Radiation Sciences	MEDRADSC 3X03
Molecular Biology	Levels III, IV*
Neuroscience	NEUROSCI 3J03, 3SN3
Physics	PHYSICS 2G03
Psychology	PSYCH Levels II, III, IV*
Science	Levels II, III*
Science Communication	SCICOMM 2A03, 2M03
<b>* All Levels II, III, IV courses for which the prerequisites have been met are acceptable.</b>	

#### REQUIREMENTS

90 units total (Levels I to III), of which no more than 42 units may be Level I

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)**LEVELS II-III: 60 UNITS**

24 units

from

- the *Life Sciences Course List* of which at least 12 units must be Levels III, IV courses (See *Note Applicable to B.Sc. in Life Sciences and Program Note 1* above.)

36 units

- Electives of which at least nine units must be selected from the Faculty of Science

## Bachelor of Medical Radiation Sciences

### MEDICAL RADIATION SCIENCES - RADIATION THERAPY SPECIALIZATION (B.M.R.SC.)

**PROGRAM NOTES**

- Students in this program pursue two qualifications simultaneously, and graduates receive the Ontario College Advanced Diploma in Medical Radiation Sciences from Mohawk College and the McMaster Bachelor of Medical Radiation Sciences degree.
- The timing of the Spring/Summer and the Level III and IV Fall/Winter sessions may not adhere to the *Sessional Dates*, as published in this Calendar.

**ADMISSION**

**Enrolment in this program is limited** and admission is by selection but requires, as a minimum, completion of Level I Medical Radiation Sciences with a Fall-Winter Average (on a minimum of 24 units) of at least 5.0 and a Grade Point Average of at least 5.0 including:

**12 UNITS**

- LIFESCI 1D03 - Medical Imaging Physics
- MEDRADSC 1B03 - Introduction to Pathology
- MEDRADSC 1E03 - Inquiry in Medical Radiation Sciences
- MEDRADSC 1F03 - Professions in Medical Radiation Sciences

**3 UNITS**

- BIOLOGY 1A03 - Cellular and Molecular Biology

**6 UNITS**

- KINESIOL 1Y03 - Human Anatomy and Physiology I
- KINESIOL 1Y3 - Human Anatomy and Physiology II

**3 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

**REQUIREMENTS**

150 units total (Levels I to IV), 45 units of clinical practicum are interspersed with 75 units of academic courses in Levels II to IV

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)**LEVEL II**

Fall and Winter Terms: 30 units:

27 units

from

- MEDRADSC 2A03 - Patient Care
- MEDRADSC 2AA3 - Imaging Procedures in Health Care
- MEDRADSC 2D03 - Relational Anatomy I
- MEDRADSC 2RA3 - Relational Anatomy II
- MEDRADSC 2S03 - Clinical Oncology I
- MEDRADSC 2T03 - Clinical Oncology II

- MEDRADSC 2U03 - Radiation Therapy Skills I
- MEDRADSC 2W03 - Physics and Instrumentation for Radiation Therapy
- MEDRADSC 2X03 - Radiobiology and Protection
- MEDRADSC 2Z03

3 units

- Electives

Spring/Summer Term: 15 units:

(See *Program Note 2* above.)

15 units

- MEDRADSC 2V15 - Radiation Therapy Clinical Practicum I

**LEVEL III**

Fall and Winter Terms: 30 units:

21 units

from

- MEDRADSC 3DA3 - Subspecialties in Medical Radiation Sciences - Advanced Studies in Computed Tomography
- MEDRADSC 3K03 - Computed Tomography
- MEDRADSC 3S03 - Treatment Planning I
- MEDRADSC 3U03
- MEDRADSC 3V03 - Treatment Planning II
- MEDRADSC 3W03 - Radiation Therapy Skills II
- MEDRADSC 3X03 - Research Methods in Medical Radiation Sciences
- MEDRADSC 3Y03 - Ethics for Medical Radiation Sciences

3 units

- STATS 2B03 - Statistical Methods for Science

3 units

from

- PSYCH 1F03 - Survey of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

3 units

- Electives

Spring/Summer Term: 15 units:

(See *Program Note 2* above.)

6 units

from

- MEDRADSC 3B03 - Quality Management in Medical Radiation Sciences
- MEDRADSC 3BB3 - Radiation Therapy Skills III
- MEDRADSC 3DH3
- MEDRADSC 3T03

3 units

from

- MEDRADSC 3AA3 - Interdisciplinary Rounds in Medical Radiation Sciences
- MEDRADSC 3C03

6 units

- Electives

which may include

- MEDRADSC 3DE3 - Subspecialties in Medical Radiation Sciences: Introduction to Magnetic Resonance Imaging
- MEDRADSC 3DI3 - Subspecialties in Medical Radiation Sciences: Image Guidance in Radiation Therapy
- MEDRADSC 3Z06 - Research Project

**LEVEL IV**

Fall and Winter Terms: 30 units:

30 units

- MEDRADSC 4E15 - Radiation Therapy Clinical Practicum II
- MEDRADSC 4F15 - Radiation Therapy Clinical Practicum III



**PROGRAM CHART**

	<b>FALL TERM (September to December)</b>	<b>WINTER TERM (January to April)</b>	<b>SPRING/ SUMMER TERM (May to August)</b>
<b>Level II</b>	30 units from Academic Level II		Clinical Practicum I
<b>Level III</b>	45 units from Academic Level III		
<b>Level IV</b>	Clinical Practicum II	Clinical Practicum III	

**MEDICAL RADIATION SCIENCES - RADIOGRAPHY SPECIALIZATION (B.M.R.SC.)****PROGRAM NOTES**

- Students in this program pursue two qualifications simultaneously, and graduates receive the Ontario College Advanced Diploma in Medical Radiation Sciences from Mohawk College and the McMaster Bachelor of Medical Radiation Sciences degree.
- The timing of the Spring/Summer and the Level III and IV Fall/Winter sessions may not adhere to the *Sessional Dates*, as published in this Calendar.

**ADMISSION**

**Enrolment in this program is limited** and admission is by selection but requires, as a minimum, completion of Level I Medical Radiation Sciences with a Fall-Winter Average (on a minimum of 24 units) of at least 5.0 and a Grade Point Average of at least 5.0 including:

**12 UNITS**

- LIFESCI 1D03 - Medical Imaging Physics
- MEDRADSC 1B03 - Introduction to Pathology
- MEDRADSC 1E03 - Inquiry in Medical Radiation Sciences
- MEDRADSC 1F03 - Professions in Medical Radiation Sciences

**3 UNITS**

- BIOLOGY 1A03 - Cellular and Molecular Biology

**6 UNITS**

- KINESIOL 1Y03 - Human Anatomy and Physiology I
- KINESIOL 1YY3 - Human Anatomy and Physiology II

**3 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

**REQUIREMENTS**

150 units total (Levels I to IV), 45 units of clinical practicum are interspersed with 75 units of academic courses in Levels II to IV

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)

**LEVEL II**

Fall and Winter Terms: 30 units:

27 units

from

- MEDRADSC 2A03 - Patient Care
- MEDRADSC 2AA3 - Imaging Procedures in Health Care
- MEDRADSC 2BB3
- MEDRADSC 2D03 - Relational Anatomy I
- MEDRADSC 2G03 - Radiographic Skills I
- MEDRADSC 2H03 - Radiographic Skills II
- MEDRADSC 2I03 - Pathology and Procedures I

- MEDRADSC 2RA3 - Relational Anatomy II
- MEDRADSC 2X03 - Radiobiology and Protection
- MEDRADSC 2Y03 - Radiographic Imaging and Instrumentation I

3 units

- Electives

Spring/Summer Term: 15 units:

(See *Program Note 2* above.)

15 units

- MEDRADSC 2J15 - Radiography Clinical Practicum I

**LEVEL III**

Fall and Winter Terms: 30 units:

21 units

- MEDRADSC 3DA3 - Subspecialties in Medical Radiation Sciences - Advanced Studies in Computed Tomography
- MEDRADSC 3G03 - Radiographic Imaging and Instrumentation II
- MEDRADSC 3H03 - Quality Control in Radiography
- MEDRADSC 3J03 - Pathology and Procedures II
- MEDRADSC 3K03 - Computed Tomography
- MEDRADSC 3X03 - Research Methods in Medical Radiation Sciences
- MEDRADSC 3Y03 - Ethics for Medical Radiation Sciences

3 units

- STATS 2B03 - Statistical Methods for Science

3 units

from

- PSYCH 1F03 - Survey of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

3 units

- Electives

Spring/Summer Term: 15 units:

(See *Program Note 2* above.)

9 units

from

- MEDRADSC 3AA3 - Interdisciplinary Rounds in Medical Radiation Sciences
- MEDRADSC 3B03 - Quality Management in Medical Radiation Sciences
- MEDRADSC 3C03
- MEDRADSC 3L03 - Radiographic Skills III

6 units

- Electives

which may include

- MEDRADSC 3DE3 - Subspecialties in Medical Radiation Sciences: Introduction to Magnetic Resonance Imaging
- MEDRADSC 3Z06 - Research Project

**LEVEL IV**

Fall and Winter Terms: 30 units:

30 units

- MEDRADSC 4A15 - Radiography Clinical Practicum II
- MEDRADSC 4B15 - Radiography Clinical Practicum III

**PROGRAM CHART**

	<b>FALL TERM (September to December)</b>	<b>WINTER TERM (January to April)</b>	<b>SPRING/SUMMER TERM (May to August)</b>
<b>Level II</b>	30 units from Academic Level II		Clinical Practicum I
<b>Level III</b>	45 units from Academic Level III		
<b>Level IV</b>	Clinical Practicum II	Clinical Practicum III	

## MEDICAL RADIATION SCIENCES - ULTRASONOGRAPHY SPECIALIZATION (B.M.R.SC.)

### PROGRAM NOTES

- Students in this program pursue two qualifications simultaneously, and graduates receive the Ontario College Advanced Diploma in Medical Radiation Sciences from Mohawk College and the McMaster Bachelor of Medical Radiation Sciences degree.
- The timing of the Spring/Summer and the Level III and IV Fall/Winter sessions may not adhere to the *Sessional Dates*, as published in this Calendar.

### ADMISSION

**Enrolment in this program is limited** and admission is by selection but requires, as a minimum, completion of Level I Medical Radiation Sciences with a Fall-Winter Average (on a minimum of 24 units) of at least 5.0 and a Grade Point Average of at least 5.0 including:

#### 12 UNITS

- LIFESCI 1D03 - Medical Imaging Physics
- MEDRADSC 1B03 - Introduction to Pathology
- MEDRADSC 1E03 - Inquiry in Medical Radiation Sciences
- MEDRADSC 1F03 - Professions in Medical Radiation Sciences

#### 3 UNITS

- BIOLOGY 1A03 - Cellular and Molecular Biology

#### 6 UNITS

- KINESIOL 1Y03 - Human Anatomy and Physiology I
- KINESIOL 1YY3 - Human Anatomy and Physiology II

#### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

### REQUIREMENTS

150 units total (Levels I to IV), 45 units of clinical practicum are interspersed with 75 units of academic courses in Levels II to IV

#### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

#### LEVEL II

Fall and Winter Terms: 30 units:

27 units

from

- MEDRADSC 2A03 - Patient Care
- MEDRADSC 2AA3 - Imaging Procedures in Health Care
- MEDRADSC 2BB3
- MEDRADSC 2K03 - Applied Sonographic Physics and Instrumentation I
- MEDRADSC 2L03 - Abdominal Ultrasonography I
- MEDRADSC 2M03 - Obstetrical and Gynecologic Ultrasonography I
- MEDRADSC 2N03 - Sonographic Skills I
- MEDRADSC 2O03 - Abdominal Ultrasonography II
- MEDRADSC 2P03 - Obstetrical and Gynecological Ultrasonography II
- MEDRADSC 2Q03 - Sonographic Skills II

3 units

- Electives

Spring/Summer Term: 15 units:

(See *Program Note 2* above.)

15 units

- MEDRADSC 2R15 - Ultrasonography Clinical Practicum I

#### LEVEL III

Fall and Winter Terms: 30 units:

21 units

- MEDRADSC 3N03 - Vascular Ultrasonography
- MEDRADSC 3O03 - Sonographic Skills III

- MEDRADSC 3P03 - Obstetrical and Gynecologic Ultrasonography III
- MEDRADSC 3Q03 - Applied Sonographic Physics and Instrumentation II
- MEDRADSC 3R03 - Musculoskeletal Ultrasonography
- MEDRADSC 3X03 - Research Methods in Medical Radiation Sciences
- MEDRADSC 3Y03 - Ethics for Medical Radiation Sciences

3 units

- STATS 2B03 - Statistical Methods for Science

3 units

from

- PSYCH 1F03 - Survey of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

3 units

- Electives

Spring/Summer Term: 15 units:

(See *Program Note 2* above.)

9 units

from

- MEDRADSC 3AA3 - Interdisciplinary Rounds in Medical Radiation Sciences
- MEDRADSC 3B03 - Quality Management in Medical Radiation Sciences
- MEDRADSC 3C03
- MEDRADSC 3M03 - Abdominal Ultrasonography III

6 units

- Electives

which may include

- MEDRADSC 3DE3 - Subspecialties in Medical Radiation Sciences: Introduction to Magnetic Resonance Imaging
- MEDRADSC 3DH3
- MEDRADSC 3DJ3 - Subspecialties in Medical Radiation Sciences: Pediatric Sonography
- MEDRADSC 3Z06 - Research Project

#### LEVEL IV

Fall and Winter Terms: 30 units:

30 units

- MEDRADSC 4C15 - Ultrasonography Clinical Practicum II
- MEDRADSC 4D15 - Ultrasonography Clinical Practicum III

### PROGRAM CHART

	FALL TERM (September to December)	WINTER TERM (January to April)	SPRING/ SUMMER TERM (May to August)
Level II	30 units from Academic Level II		Clinical Practicum I
Level III	45 units from Academic Level III		
Level IV	Clinical Practicum II	Clinical Practicum III	

## Department of Kinesiology

<http://www.science.mcmaster.ca/kinesiology>

Faculty as of January 15, 2020

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**Martin Gibala**

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**Marina Mourtzakis**/B.Sc., B. Kin. (*McMaster*), Ph.D. (*Guelph*)

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## Bachelor of Science Kinesiology (Honours)

### HONOURS KINESIOLOGY (B.SC.KIN.)

#### ADMISSION

Completion of Level I Honours Kinesiology including, KINESIOL 1A03, 1AA3, 1E03, 1F03, 1K03 with a Grade Point Average of at least 6.0.

#### PROGRAM NOTES

- Completion of MATH 1A03 or 1LS3 is a requirement for this program and must be completed by the end of Level II.
- PHYSICS 1A03 serves as excellent preparation for KINESIOL 2A03, especially for students who did not complete Grade 12 Physics U.
- Honours B.Sc. Kinesiology students must complete at least six units of electives chosen from the Faculty of Science.
- Kinesiology courses may not be used toward the elective component of the degree.
- A maximum of 18 units of Levels III, IV Kinesiology courses may be completed in Level III of the program.
- Honours Kinesiology students who have a minimum Grade Point Average of 3.5 and successfully completed at least 90 units including all requirements up to the end of Level III of the Honours B.Sc. Kinesiology program may request permission from the Office of the Associate Dean of Science (Academic) to transfer to graduate with the Bachelor of Science Kinesiology (B.Sc.Kin.) degree.

#### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

#### LEVELS II-IV: 90 UNITS

18 units

- KINESIOL 2A03 - Biomechanics
- KINESIOL 2C03 - Neuromuscular Exercise Physiology
- KINESIOL 2CC3 - Cardiorespiratory and Metabolic Exercise Physiology
- KINESIOL 2E03 - Musculoskeletal Anatomy
- KINESIOL 2F03 - Growth, Maturation and Physical Activity in Children and Youth
- KINESIOL 2G03 - Health Psychology

#### 0-3 units

from the following courses, if not completed in Level I

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

(See *Program Note 1* above.)

#### 3 units

- STATS 2B03 - Statistical Methods for Science

#### 36 units

from

- Levels III, IV Kinesiology courses including at least nine units of Level IV (See *Program Note 5* above.)

#### 33-36 units

- Electives (See *Program Notes 2, 3 and 4* above.)

## Department of Mathematics and Statistics

<http://www.math.mcmaster.ca/>

Faculty as of January 15, 2020

#### CHAIR

**Matheus Grasselli**

ASSOCIATE CHAIRS

**Shui Feng**/Statistics

**Deirdre Haskell**/Undergraduate

**Bartosz Protas**/Graduate

DISTINGUISHED UNIVERSITY PROFESSORS

**N. Balakrishnan**/B.Sc., M.Sc. (Madras), Ph.D. (I.I.T., Kanpur)

UNIVERSITY SCHOLAR

**Paul D. McNicholas**

PROFESSORS

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**Hans U. Boden**/B.S. (New Hampshire), Ph.D. (Brandeis)

**Ben Bolker**/B.S. (Yale), Ph.D. (Cambridge)

**Lia Bronsard**/B.A. (Montreal), M.Sc., Ph.D. (Courant, NYU)

**David Earn**/B.Sc., M.Sc. (Toronto), Ph.D. (Cambridge)

**Shui Feng**/B.Sc., M.Sc. (Beijing Normal), Ph.D. (Carleton)

**Jean-Pierre Gabardo**/B.Sc. (Université de l'État a Mons), Ph.D. (Maryland)

**Matheus Grasselli**/B.Sc. (Sao Paolo), Ph.D. (King's College, London)

**Ian Hambleton**/B.Sc., M.Sc. (Toronto), Ph.D. (Yale), Britton Professor of Mathematics

**Megumi Harada**/A.B. (Harvard), Ph.D. (California-Berkeley)

**Bradd Hart**/B.Math. (Waterloo), Ph.D. (McGill)

**Deirdre Haskell**/B.A. (Oxford), M.S., Ph.D. (Stanford)

**Fred M. Hoppe**/B.Sc. (Toronto), M.Sc. (Weizmann Institute of Science), M.A., Ph.D. (Princeton)

**Thomas R. Hurd**/B.Sc. (Queen's), D.Phil. (Oxford)

**Nicholas Kevlahan**/B.Sc. (British Columbia), Ph.D. (Cambridge)

**Paul D. McNicholas**/B.A., M.Sc., Ph.D. (Trinity College, Dublin)

**Miroslav Lovric**/B.S. (Zagreb), M.S., Ph.D. (Ohio State), 3M Teaching Fellow

**Andrew J. Nicas**/B.Sc. (McGill), M.A., Ph.D. (Princeton)

**Dmitry E. Pelinovsky**/M.S. (Nizhny Novgorod State, Russia), Ph.D. (Monash)

**Bartosz Protas**/M.Sc. (Warsaw University of Technology), Ph.D. (Warsaw University of Technology and Université de Paris)

**Eric T. Sawyer**/B.Sc., Ph.D. (McGill)/McKay Professor of Mathematics

**Patrick Speissegger**/M.Sc. (Swiss Federal Institute of Technology), Ph.D. (Illinois-Urbana)

**Matthew A. Valeriote**/B.Math. (Waterloo), Ph.D. (California-Berkeley)

**McKenzie Y.-K. Wang**/A.B. (Princeton), Ph.D. (Stanford)

**Gail S.K. Wolkowicz**/B.Sc., M.Sc. (McGill), Ph.D. (Alberta)

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**Aaron Childs**/B.Sc., M.Sc., Ph.D. (McMaster)

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**Adam Van Tuyl**/B.Sc. (Calvin College), M.Sc., Ph.D. (Queen's)

ADJUNCT ASSOCIATE PROFESSORS

**Katherine Davies**/B.Sc., M.Sc. (McMaster), Ph.D. (Western)

**Il Yong Kim**/B.Sc. (Korea), M.Sc., Ph.D. (KAIST)

**Scott Rodney**/B.Sc. (Concordia), Ph.D. (McMaster)

ASSISTANT PROFESSORS

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**Noah Forman**/B.Sc. (Oberlin), Ph.D. (California-Berkeley)

**Siyuan Lu**/B.Sc. (University of Science and Technology, China), Ph.D. (McGill)

**Sharon McNicholas**/B.Sc. (Dublin Institute Technology), Ph.D. (Dublin), Ph.D. (Guelph)

ADJUNCT ASSISTANT PROFESSORS

**Jamie Foster**/B.Sc., Ph.D. (Southampton)

**Petar Jevtic**/M.S. (Belgrade), Ph.D. (Turin)

ASSOCIATE MEMBERS

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Chaussées), Ph.D. (Tokyo Institute of Technology)

**Jonathan Dushoff**/(Biology) B.A. (Pennsylvania), Ph.D. (Princeton)

**Timothy Field**/(Electrical and Computer Engineering) B.A. (Cambridge), D. Phil (Oxford)

**Gregory Pond**/(Oncology) B.Sc. (Brock), M.Sc. (Simon Fraser), Ph.D. (Toronto)

**Jeffery I. Zucker**/(Computing and Software) B.Sc. (Witwatersrand), Ph.D. (Stanford), L.E.L.

**NOTES APPLICABLE TO ALL PROGRAMS OFFERED BY THE DEPARTMENT OF MATHEMATICS AND STATISTICS**

- The Department offers an Honours Mathematics and Statistics program, which may be complemented with a Sub-Plan in Mathematics or Statistics, and an Honours Actuarial and Financial Mathematics program. Combined Honours programs are available with Arts and Science, Biology, Computer Science, Economics, English, French, History, Philosophy, and Physics.
- Students considering graduate studies in Mathematics are encouraged to complete MATH 2XX3, 3A03, 3F03, 3GR3, 3X03, 4A03 or register in the Mathematics Sub-Plan. Students considering graduate studies in Statistics are encouraged to complete STATS 3A03, 3D03, 3F03\*, 3S03\*, 3U03\* or register in the Statistics Sub-Plan. Students considering a career as an actuary are encouraged to complete MATH 2FM3, 3FM3, 4FM3, STATS 2D03, 2MB3, 3A03, 3D03, 3G03, 3H03, 4A03 or register in Honours Actuarial and Financial Mathematics.
- Cooperative Education programs are available; see the requirements for Honours Mathematics and Statistics Co-op programs in this section of the Calendar. Admission to the co-op programs is in Level III.

## Bachelor of Science (Honours)

### HONOURS ACTUARIAL AND FINANCIAL MATHEMATICS (B.SC.)

**ADMISSION NOTES**

- Completion of ECON 1B03 and 1BB3 is required by the end of Level II. Completion in Level I is strongly recommended.
- Completion of COMMERCE 1AA3 is required by the end of Level II. Completion in Level I is strongly recommended.
- Students seeking admission to the program are strongly discouraged from taking MATH 1LS3 and 1LT3 as they do not cover all content needed for MATH 2X03.

**ADMISSION**

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Admission is by selection and is based on completion of the supplementary application by the stated deadline and academic achievement, but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

**3 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1X03 - Calculus for Math and Stats I
- MATH 1ZA3 - Engineering Mathematics I

(See *Admission Note 3* above.)

**3 UNITS**

from the following courses, with a grade of at least C+

- MATH 1AA3 - Calculus For Science II
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1XX3 - Calculus for Math and Stats II
- MATH 1ZB3 - Engineering Mathematics II-A

(See *Admission Note 3* above.)



**3 UNITS**

from

- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

**PROGRAM NOTES**

- Students interested in focusing on financial mathematics are strongly encouraged to complete MATH 2X03, 2XX3, 3FF3 and one of COMPSCI 1MD3, MATH 1MP3 or 3NA3. Students should note that MATH 2R03 is a prerequisite for MATH 3FF3.
- Students are strongly encouraged to complete COMMERCE 2FA3 by the end of Level II, especially if the Honours Actuarial and Financial Mathematics Co-op program is being considered for Level III.

**COURSE LIST**

- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 4FP3 - Personal Finance
- COMMERCE 4FW3 - Finance for Entrepreneurs
- ECON 2G03
- ECON 2GG3 - Intermediate Microeconomics II
- ECON 2H03 - Intermediate Macroeconomics I
- ECON 2HH3 - Intermediate Macroeconomics II
- ECON 2Z03 - Intermediate Microeconomics I
- ECON 2ZZ3 - Intermediate Microeconomics II
- All Level III and IV Mathematics or Statistics courses

**REQUIREMENTS**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)**LEVELS II-IV: 90 UNITS**

15 units

- COMMERCE 2FA3 - Introduction to Finance (See *Program Note 2* above.)
- MATH 2C03 - Introduction to Differential Equations
- MATH 2FM3 - Introduction To Mathematical Finance
- STATS 2D03 - Introduction to Probability
- STATS 2MB3 - Statistical Methods and Applications

3 units

from

- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II

15 units

- MATH 3FM3 - Mathematics of Finance
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3D03 - Mathematical Statistics
- STATS 3G03 - Actuarial Mathematics I
- STATS 3ST3 - Actuarial Models in Non-Life Insurance

3 units

from

- MATH 3A03 - Real Analysis I
- MATH 3IA3 - Introduction to Analysis

6 units

from

- MATH 4FM3 - Financial Markets and Derivatives
- STATS 4G03 - Advanced Topics in Actuarial Science
- STATS 4H03 - Actuarial Mathematics II

3 units

from

- COMMERCE 3FA3 - Managerial Finance
- STATS 4A03 - Time Series

9 units

from

- *Course List* (See *Program Note 1* above.)

0-9 units

from the following courses, if not already completed

- COMMERCE 1AA3 - Introductory Financial Accounting
- ECON 1B03 - Introductory Microeconomics
- ECON 1BB3 - Introductory Macroeconomics

27-36 units

- Electives

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2020**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)**LEVELS II-IV: 90 UNITS**

15 units

- COMMERCE 2FA3 - Introduction to Finance (See *Program Note 2* above.)
- MATH 2C03 - Introduction to Differential Equations
- MATH 2FM3 - Introduction To Mathematical Finance
- STATS 2D03 - Introduction to Probability
- STATS 2MB3 - Statistical Methods and Applications

3 units

from

- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II

0-9 units

from the following courses, if not completed in Level I

- COMMERCE 1AA3 - Introductory Financial Accounting
- ECON 1B03 - Introductory Microeconomics
- ECON 1BB3 - Introductory Macroeconomics

12 units

- MATH 3FM3 - Mathematics of Finance
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3D03 - Mathematical Statistics
- STATS 3G03 - Actuarial Mathematics I

3 units

from

- STATS 3ST3 - Actuarial Models in Non-Life Insurance
- STATS 4H03

3 units

- MATH 4FM3 - Financial Markets and Derivatives

3 units

from

- COMMERCE 3FA3 - Managerial Finance
- STATS 4A03 - Time Series

12 units

from

- *Course List* (See *Program Note 1* above.)

30-39 units

- Electives

**HONOURS ACTUARIAL AND FINANCIAL MATHEMATICS CO-OP (B.SC.)****ADMISSION**

**Enrolment in this program is limited.** Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline, and completion of Level II Honours Actuarial and Financial Mathematics with a Grade Point Average of at least 5.0.

**NOTE:**

Information about the program and the selection procedure may be obtained from Science Career and Cooperative Education.

**PROGRAM NOTES**

- Students interested in focusing on financial mathematics are strongly encouraged to complete MATH 2XX3, 3FF3 and one of COMPSCI 1MD3, MATH 1MP3 or 3NA3. Students should note that MATH 2X03 is a prerequisite for MATH 2XX3 and that MATH 2R03 is a prerequisite for MATH 3FF3.
- Students must complete STATS 4A03 or COMMERCE 3FA3. However, COMMERCE 3FA3 is not usually available in the Winter Term, so may have to be taken in the Fall or Spring/Summer Terms.
- Students should take COMMERCE 1AA3 and COMMERCE 2FA3 by the end of Level II, to enable completion of COMMERCE 3FA3 in a Fall term of Level III or IV.
- Alternatives for meeting the requirement of three units of STATS 4A03 or COMMERCE 3FA3 would include distance learning courses accredited by the actuarial agencies for fulfillment of either the Applied Statistical Methods VEE, or the Corporate Finance VEE, respectively. Students considering this alternative must speak with a faculty advisor from the Department of Mathematics and Statistics.

**COURSE LIST**

- COMMERCE 2AB3 - Managerial Accounting I
- COMMERCE 4FP3 - Personal Finance
- COMMERCE 4FW3 - Finance for Entrepreneurs
- ECON 2G03
- ECON 2GG3 - Intermediate Microeconomics II
- ECON 2H03 - Intermediate Macroeconomics I
- ECON 2HH3 - Intermediate Macroeconomics II
- ECON 2Z03 - Intermediate Microeconomics I
- ECON 2ZZ3 - Intermediate Microeconomics II
- All Level III and IV Mathematics or Statistics courses

**REQUIREMENTS**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

Completed prior to admission to the program

**LEVEL II: 30 UNITS**

30 units

Completion of Level II Honours Actuarial and Financial Mathematics program including:

**15 units**

- COMMERCE 2FA3 - Introduction to Finance
- MATH 2C03 - Introduction to Differential Equations
- MATH 2FM3 - Introduction To Mathematical Finance
- STATS 2D03 - Introduction to Probability
- STATS 2MB3 - Statistical Methods and Applications

**3 units**

from

- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II

**0-9 units**

from the following courses, if not completed in Level I

- COMMERCE 1AA3 - Introductory Financial Accounting
- ECON 1B03 - Introductory Microeconomics
- ECON 1BB3 - Introductory Macroeconomics

**1 course**

- SCIENCE 2C00 - Skills for Career Success in Science

**LEVEL III**

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:

**9 units**

- MATH 3FM3 - Mathematics of Finance
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3D03 - Mathematical Statistics

**0-3 units**

- COMMERCE 3FA3 - Managerial Finance if eligible (See *Program Notes 2, 3 and 4* above.)

**0-6 units**

- Electives

**2 courses**

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

**LEVEL IV**

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:

**3 units**

- STATS 3G03 - Actuarial Mathematics I

**3 units**

from

- STATS 3H03
- STATS 3ST3 - Actuarial Models in Non-Life Insurance
- STATS 4H03 - Actuarial Mathematics II

**0-3 units**

- COMMERCE 2FA3 - Introduction to Finance (if not completed in Level II)

**0-3 units**

- COMMERCE 3FA3 - Managerial Finance if not completed in Level III (See *Program Notes 2, 3 and 4* above.)

**9 units**

from

- *Course List* (See *Program Note 1* above.)

**9-15 units**

- Electives

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 4WT0 - Science Co-op Work Term

**LEVEL V**

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

**1 course**

- SCIENCE 5WT0 - Science Co-op Work Term

Winter Term: 15 units:

**3 units**

- MATH 4FM3 - Financial Markets and Derivatives

**3 units**

- STATS 4A03 - Time Series (if COMMERCE 3FA3 not completed)

(See *Program Notes 2, 3 and 4* above.)

**3 units**

from

- *Course List* (See *Program Note 1* above.)

6 units

- Electives

### REQUIREMENTS FOR STUDENTS WHO ENTER IN SEPTEMBER 2021

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

Completed prior to admission to the program

#### LEVEL II: 30 UNITS

30 units

Completion of Level II Honours Actuarial and Financial Mathematics program including:

15 units

- COMMERCE 2FA3 - Introduction to Finance
- MATH 2C03 - Introduction to Differential Equations
- MATH 2FM3 - Introduction To Mathematical Finance
- STATS 2D03 - Introduction to Probability
- STATS 2MB3 - Statistical Methods and Applications

3 units

from

- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II

0-9 units

from the following courses, if not completed in Level I

- COMMERCE 1AA3 - Introductory Financial Accounting
- ECON 1B03 - Introductory Microeconomics
- ECON 1BB3 - Introductory Macroeconomics

1 course

- SCIENCE 2C00 - Skills for Career Success in Science

#### LEVEL III

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:

9 units

- MATH 3FM3 - Mathematics of Finance
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3D03 - Mathematical Statistics

0-3 units

- COMMERCE 3FA3 - Managerial Finance if eligible (See *Program Notes 2, 3, and 4* above.)

0-6 units

- Electives

1 course

- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

1 course

- SCIENCE 3WT0 - Science Co-op Work Term

Spring/Summer Term:

Work Term

1 course

- SCIENCE 3WT0 - Science Co-op Work Term

#### LEVEL IV

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:

6 units

- STATS 3G03 - Actuarial Mathematics I
- STATS 3ST3 - Actuarial Models in Non-Life Insurance

0-3 units

- COMMERCE 3FA3 - Managerial Finance if not completed in Level III (See *Program Notes 2, 3 and 4* above.)

9 units

from

- *Course List* (See *Program Note 1* above.)

12-15 units

- Electives

Spring/Summer Term:

Work Term

1 course

- SCIENCE 4WT0 - Science Co-op Work Term

#### LEVEL V

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

1 course

- SCIENCE 5WT0 - Science Co-op Work Term

Winter Term: 15 units:

6 units

from

- MATH 4FM3 - Financial Markets and Derivatives
- STATS 4G03 - Advanced Topics in Actuarial Science
- STATS 4H03 - Actuarial Mathematics II (formerly called STATS 3H03)

3 units

- STATS 4A03 - Time Series (if COMMERCE 3FA3 not completed)

(See *Program Notes 2, 3, and 4* above.)

6 units

- Electives

#### CO-OP PROGRAM CHART

	FALL TERM (September to December)	WINTER TERM (January to April)	SPRING/SUMMER TERM (May to August)
<b>Level III</b>	15 units from Academic Level III + SCIENCE 2C00 (if not completed) and SCIENCE 3C00	Work Term SCIENCE 3WT0	Work Term SCIENCE 3WT0
<b>Level IV</b>	15 units from Academic Levels III, IV	15 units from Academic Levels III, IV	Work Term SCIENCE 4WT0
<b>Level V</b>	Work Term SCIENCE 5WT0	15 units from Academic Level IV	

### HONOURS MATHEMATICS AND COMPUTER SCIENCE (B.SC.)

#### ADMISSION NOTES

- For students entering the program as of September 2019, completion of MATH 1C03 is required by the end of Level II.
- Students seeking admission to the program are strongly discouraged from taking MATH 1LS3 and 1LT3 as they do not cover all content needed for MATH 2X03.

#### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 5.0 including:

3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1X03 - Calculus for Math and Stats I

- MATH 1ZA3 - Engineering Mathematics I

(See *Admission Note 2* above.)

### 3 UNITS

from the following courses, with a grade of at least C+

- MATH 1AA3 - Calculus For Science II
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1XX3 - Calculus for Math and Stats II
- MATH 1ZB3 - Engineering Mathematics II-A

(See *Admission Note 2* above.)

### 3 UNITS

from the following courses, with a grade of at least C+

- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

### 3 UNITS

from

- COMPSCI 1MD3 - Introduction to Programming
- MATH 1MP3 - Introduction to Mathematical Scientific Computation

### ADMISSION (EFFECTIVE SEPTEMBER 2021)

Completion of any Level I program with a Grade Point Average of at least 5.0 including:

### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1X03 - Calculus for Math and Stats I
- MATH 1ZA3 - Engineering Mathematics I

(See *Admission Note 2* above.)

### 3 UNITS

from the following courses, with a grade of at least C+

- MATH 1AA3 - Calculus For Science II
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1XX3 - Calculus for Math and Stats II
- MATH 1ZB3 - Engineering Mathematics II-A

(See *Admission Note 2* above.)

### 3 UNITS

from the following courses, with a grade of at least C+

- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

### 3 UNITS

- COMPSCI 1DM3 - Discrete Mathematics for Computer Science

### 3 UNITS

from

- COMPSCI 1MD3 - Introduction to Programming
- MATH 1MP3 - Introduction to Mathematical Scientific Computation

### 3 UNITS

from

- COMPSCI 1XC3 - Computer Science Practice and Experience: Development Basics
- COMPSCI 1XD3 - Computer Science Practice and Experience: Introduction to Software Design Using Web Programming

### PROGRAM NOTES

- To meet the prerequisites of required Level III COMPSCI courses, students are strongly encouraged to take COMPSCI 2LC3 and one of COMPSCI 2AC3 or 2ME3 in Level II.
- For students entering the program as of September 2019, completion of MATH 1C03 is required by the end of Level II.

### CORE COURSE LIST

- MATH 2ET3\* - Theory and Practice of Teaching Mathematics
- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II
- MATH 2S03

- MATH 2T03
- MATH 3CY3 - Cryptography
- MATH 3DC3 - Discrete Dynamical Systems and Chaos
- MATH 3E03
- MATH 3EE3
- MATH 3F03 - Ordinary Differential Equations
- MATH 3FF3 - Partial Differential Equations
- MATH 3GR3 - Abstract Algebra
- MATH 3H03\* - Number Theory
- MATH 3NA3 - Numerical Linear Algebra
- MATH 3Q03
- MATH 3QC3 - Introduction to Quantum Computing
- MATH 3T03 - Inquiry in Topology
- MATH 3TP3 - Truth and Provability
- MATH 3U03 - Combinatorics
- MATH 3V03 - Graph Theory

### SCIENTIFIC COMMUNICATION COURSE LIST

- MATH 3CY3 - Cryptography
- MATH 3DC3 - Discrete Dynamical Systems and Chaos
- MATH 3ET3 A/B S - Mathematics Teaching Placement
- MATH 3G03 - Problem Solving
- MATH 3MB3 - Introduction to Modelling
- MATH 3QC3 - Introduction to Quantum Computing
- MATH 3TP3 - Truth and Provability
- MATH 3U03 - Combinatorics
- MATH 3V03 - Graph Theory
- MATH 3Z03 - Inquiry: History of Mathematics
- MATH 4FM3 - Financial Markets and Derivatives
- MATH 4MB3 - Mathematical Biology
- MATH 4P06 A/B S - Senior Research Project
- MATH 4W03 - Reading in Mathematics
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3DS3 - Introduction to Data Science Theory
- STATS 3PG3 - Probability and Games of Chance
- STATS 4A03 - Time Series
- STATS 4M03 - Multivariate Analysis
- STATS 4P03 - Advanced Applied Statistics
- STATS 4T06 A/B - Senior Research Project
- STATS 4W03 - Reading in Statistics

### REQUIREMENTS FOR STUDENTS WHO ENTER IN SEPTEMBER 2020 OR PRIOR

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

#### LEVELS II-IV: 90 UNITS

6 units

- MATH 2X03 - Advanced Calculus I
- MATH 2XX3 - Advanced Calculus II

3 units

from

- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II

3 units

from

- MATH 2C03 - Introduction to Differential Equations
- STATS 2D03 - Introduction to Probability

9 units

- COMPSCI 2C03 - Data Structures and Algorithms
- COMPSCI 2DM3 - Discrete Mathematics with Applications I
- COMPSCI 2S03 - Principles of Programming



3 units

from

- COMPSCI 2FA3 - Discrete Mathematics with Applications II
- COMPSCI 2ME3 - Introduction to Software Development

0-3 units

- MATH 1C03 - Introduction to Mathematical Reasoning (if not completed in Level I)

3 units

from

- MATH 3A03 - Real Analysis I
- MATH 3IA3 - Introduction to Analysis

3 units

- MATH 3X03 - Complex Analysis I

3 units

from

- *Core Course List*

6 units

from

- COMPSCI 3AC3 - Algorithms and Complexity
- COMPSCI 3DB3 - Databases
- COMPSCI 3MI3 - Principles of Programming Languages
- COMPSCI 3SD3 - Concurrent Systems
- COMPSCI 3SH3 - Computer Science Practice and Experience: Operating Systems

3 units

from

- Levels II, III, IV Computer Science courses

9 units

from

- Levels III, IV, V Mathematics or Statistics courses including one course selected from the *Scientific Communication Course List*

9 units

from

- Levels III, IV Computer Science courses

27-30 units

- Electives

**REQUIREMENTS FOR STUDENTS WHO ENTER IN SEPTEMBER 2021***120 units total (Levels I to IV), of which no more than 48 units may be Level I***LEVEL I: 30 UNITS**30 units(See *Admission* above.)**LEVELS II-IV: 90 UNITS**0-3 units

- MATH 1C03 - Introduction to Mathematical Reasoning (if not completed in Level I)

6 units

- MATH 2X03 - Advanced Calculus I
- MATH 2XX3 - Advanced Calculus II

3 units

from

- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II

3 units

from

- MATH 2C03 - Introduction to Differential Equations
- STATS 2D03 - Introduction to Probability

3 units

from

- MATH 3A03 - Real Analysis I
- MATH 3IA3 - Introduction to Analysis

3 units

- MATH 3X03 - Complex Analysis I

3 units

from

- *Core Course List*

9 units

from

- Levels III, IV, V Mathematics or Statistics courses including one course selected from the *Scientific Communication Course List*

12 units

- COMPSCI 2AC3 - Automata and Computability
- COMPSCI 2C03 - Data Structures and Algorithms
- COMPSCI 2LC3 - Logical Reasoning for Computer Science
- COMPSCI 2ME3 - Introduction to Software Development

6 units

from

- COMPSCI 3AC3 - Algorithms and Complexity
- COMPSCI 3DB3 - Databases
- COMPSCI 3MI3 - Principles of Programming Languages
- COMPSCI 3SD3 - Concurrent Systems
- COMPSCI 3SH3 - Computer Science Practice and Experience: Operating Systems

12 units

from

- Levels II, III, IV Computer Science Courses, with at most 6 units from Level II

27-30 units

- Electives

**HONOURS MATHEMATICS AND PHYSICS (B.SC.)****ADMISSION NOTES**

- For students entering the program as of September 2019, completion of MATH 1C03 is required by the end of Level II.
- Students seeking admission to the program are strongly discouraged from taking MATH 1LS3 and 1LT3 as they do not cover all content needed for MATH 2X03.

**ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 5.0 including:

**3 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1X03 - Calculus for Math and Stats I
- MATH 1ZA3 - Engineering Mathematics I

(See *Admission Note 2* above.)**3 UNITS**

from the following courses, with a grade of at least C+

- MATH 1AA3 - Calculus For Science II
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1XX3 - Calculus for Math and Stats II
- MATH 1ZB3 - Engineering Mathematics II-A

(See *Admission Note 2* above.)**3 UNITS**

from

- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

**3 UNITS**

from

- PHYSICS 1A03 - Introductory Physics

- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

**3 UNITS**

from

- PHYSICS 1AA3 - Introduction To Modern Physics
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences

**3 UNITS**

from

- the Science I Course List

**PROGRAM NOTES**

- PHYSICS 3A03 and 3C03 are listed in Level III but are offered in alternate years and may be taken in Level IV.
- A Minor in Astronomy or Statistics is not permitted in the Honours Mathematics and Physics program.
- MATH 1MP3, although not required, is strongly recommended, if not completed in Level I.
- For students entering the program as of September 2019, completion of MATH 1C03 is required by the end of Level II.

**SCIENTIFIC COMMUNICATION COURSE LIST**

- MATH 3CY3 - Cryptography
- MATH 3DC3 - Discrete Dynamical Systems and Chaos
- MATH 3ET3 A/B S - Mathematics Teaching Placement
- MATH 3G03 - Problem Solving
- MATH 3MB3 - Introduction to Modelling
- MATH 3QC3 - Introduction to Quantum Computing
- MATH 3TP3 - Truth and Provability
- MATH 3U03 - Combinatorics
- MATH 3V03 - Graph Theory
- MATH 3Z03 - Inquiry: History of Mathematics
- MATH 4FM3 - Financial Markets and Derivatives
- MATH 4MB3 - Mathematical Biology
- MATH 4P06 A/B S - Senior Research Project
- MATH 4W03 - Reading in Mathematics
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3DS3 - Introduction to Data Science Theory
- STATS 3PG3 - Probability and Games of Chance
- STATS 4A03 - Time Series
- STATS 4M03 - Multivariate Analysis
- STATS 4P03 - Advanced Applied Statistics
- STATS 4T06 A/B - Senior Research Project
- STATS 4W03 - Reading in Statistics

**REQUIREMENTS**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**30 units(See *Admission* above.)**LEVEL II: 30 UNITS**9 units

- MATH 2C03 - Introduction to Differential Equations
- MATH 2X03 - Advanced Calculus I
- MATH 2XX3 - Advanced Calculus II

3 units

from

- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II

12 units

- PHYSICS 2B03 - Electricity and Magnetism I
- PHYSICS 2BB3 - Electricity and Magnetism II (or 2B06)
- PHYSICS 2C03 - Modern Physics
- PHYSICS 2E03 - Mechanics

0-3 units

- MATH 1C03 - Introduction to Mathematical Reasoning (if not completed

in Level I)

0-3 units

from

- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 2G03 - Scientific Computing

0-6 units

- Electives (See *Program Notes 3* and *4* above.)

**LEVEL III: 30 UNITS**3 units

from

- MATH 3A03 - Real Analysis I
- MATH 3IA3 - Introduction to Analysis

3 units

- MATH 3X03 - Complex Analysis I

6 units

- Levels II, III, IV Mathematics or Statistics courses

3 units

from

- PHYSICS 3A03 - Relativity, Gravity and the Geometry of Spacetime
- PHYSICS 3C03 - Analytical Mechanics

9 units

- PHYSICS 3D03 A/B - Inquiry in Physics
- PHYSICS 3K03 - Thermodynamics and Statistical Mechanics
- PHYSICS 3MM3 - Quantum Mechanics I

6 units

- Electives

**LEVEL IV: 30 UNITS**12 units

from

- Levels III, IV, V Mathematics or Statistics courses with at least three units from Level IV and one course selected from the *Scientific Communication Course List*

3 units

- PHYSICS 4B03 - Electromagnetic Theory

9 units

- Levels III, IV, V Physics or Astronomy courses

Including:

- PHYSICS 4L03 A/B - Literature Review **or**
- PHYSICS 4P06 A/B - Senior Research Project

6 units

- Electives

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2019**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**30 units(See *Admission* above.)**LEVEL II: 30 UNITS**12 units

- MATH 2C03 - Introduction to Differential Equations
- MATH 2R03 - Linear Algebra II
- MATH 2X03 - Advanced Calculus I
- MATH 2XX3 - Advanced Calculus II

12 units

- PHYSICS 2B03 - Electricity and Magnetism I
- PHYSICS 2BB3 - Electricity and Magnetism II (or 2B06)
- PHYSICS 2C03 - Modern Physics
- PHYSICS 2E03 - Mechanics

0-3 units

from

- MATH 1MP3 - Introduction to Mathematical Scientific Computation

- PHYSICS 2G03 - Scientific Computing

3-6 units

- Electives (See *Program Note 3* above.)

#### LEVEL III: 30 UNITS

6 units

- MATH 3A03 - Real Analysis I
- MATH 3X03 - Complex Analysis I

6 units

- Levels II, III, IV Mathematics or Statistics courses

3 units

from

- PHYSICS 3A03 - Relativity, Gravity and the Geometry of Spacetime
- PHYSICS 3C03 - Analytical Mechanics

9 units

- PHYSICS 3D03 A/B - Inquiry in Physics
- PHYSICS 3K03 - Thermodynamics and Statistical Mechanics
- PHYSICS 3MM3 - Quantum Mechanics I

6 units

- Electives

#### LEVEL IV: 30 UNITS

12 units

from

- Levels III, IV, V Mathematics or Statistics courses with at least three units from Level IV

3 units

- PHYSICS 4B03 - Electromagnetic Theory

9 units

- Level III, IV, V Physics or Astronomy courses

Including:

- PHYSICS 4L03 A/B - Literature Review **or**
- PHYSICS 4P06 A/B - Senior Research Project

6 units

- Electives

## HONOURS MATHEMATICS AND STATISTICS (B.SC.)

### ADMISSION NOTES

- For students entering the program as of September 2019, completion of MATH 1C03 is required by the end of Level II.
- Students seeking admission to the program are strongly discouraged from taking MATH 1LS3 and 1LT3 as they do not cover all content needed for MATH 2X03.

### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 5.0 including:

#### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1X03 - Calculus for Math and Stats I
- MATH 1ZA3 - Engineering Mathematics I

(See *Admission Note 2* above.)

#### 3 UNITS

from the following courses, with a grade of at least C+

- MATH 1AA3 - Calculus For Science II
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1XX3 - Calculus for Math and Stats II
- MATH 1ZB3 - Engineering Mathematics II-A

(See *Admission Note 2* above.)

#### 3 UNITS

from

- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

### PROGRAM NOTES

- For students entering the program as of September 2019, MATH 1C03 must be completed by the end of Level II.
- Students must satisfy a Scientific Computing requirement, by completing one of: COMPSCI 1MD3, MATH 1MP3, PHYSICS 2G03.

### CORE COURSE LIST

- MATH 2E03
- MATH 2ET3\* - Theory and Practice of Teaching Mathematics
- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II
- MATH 2S03
- MATH 2T03
- MATH 3B03 - Geometry
- MATH 3E03
- MATH 3EE3
- MATH 3F03 - Ordinary Differential Equations
- MATH 3FF3 - Partial Differential Equations
- MATH 3GR3 - Abstract Algebra
- MATH 3MB3 - Introduction to Modelling
- MATH 3NA3 - Numerical Linear Algebra
- MATH 3Q03
- MATH 3T03 - Inquiry in Topology
- STATS 2MB3 - Statistical Methods and Applications
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3CI3
- STATS 3D03 - Mathematical Statistics
- STATS 3F03
- STATS 3S03\* - Survey Sampling
- STATS 3U03\* - Stochastic Processes

### SCIENTIFIC COMMUNICATION COURSE LIST

- MATH 3CY3 - Cryptography
- MATH 3DC3 - Discrete Dynamical Systems and Chaos
- MATH 3ET3 A/B S - Mathematics Teaching Placement
- MATH 3G03 - Problem Solving
- MATH 3MB3 - Introduction to Modelling
- MATH 3QC3 - Introduction to Quantum Computing
- MATH 3TP3 - Truth and Provability
- MATH 3U03 - Combinatorics
- MATH 3V03 - Graph Theory
- MATH 3Z03 - Inquiry: History of Mathematics
- MATH 4FM3 - Financial Markets and Derivatives
- MATH 4MB3 - Mathematical Biology
- MATH 4P06 A/B S - Senior Research Project
- MATH 4W03 - Reading in Mathematics
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3DS3 - Introduction to Data Science Theory
- STATS 3PG3 - Probability and Games of Chance
- STATS 4A03 - Time Series
- STATS 4M03 - Multivariate Analysis
- STATS 4P03 - Advanced Applied Statistics
- STATS 4T06 A/B - Senior Research Project
- STATS 4W03 - Reading in Statistics

### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

#### LEVELS II-IV: 90 UNITS

12 units

- MATH 2C03 - Introduction to Differential Equations
- MATH 2X03 - Advanced Calculus I
- MATH 2XX3 - Advanced Calculus II
- MATH 3X03 - Complex Analysis I

3 units

from

- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II

3 units

from

- MATH 3A03 - Real Analysis I
- MATH 3IA3 - Introduction to Analysis

3 units

- STATS 2D03 - Introduction to Probability

9 units

from

- the *Core Course List*

15 units

from

- Levels III, IV, V Mathematics or Statistics courses including one course selected from the *Scientific Communication Course List*

0-3 units

- MATH 1C03 - Introduction to Mathematical Reasoning (if not completed in Level I)

0-3 units

from

- COMPSCI 1MD3 - Introduction to Programming
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 2G03 - Scientific Computing

(See *Program Note 2* above.)39-45 units

- Electives

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2019***120 units total (Levels I to IV), of which no more than 48 units may be Level I***LEVEL I: 30 UNITS**30 units(See *Admission* above.)**LEVELS II-IV: 90 UNITS**18 units

- MATH 2C03 - Introduction to Differential Equations
- MATH 2R03 - Linear Algebra II
- MATH 2X03 - Advanced Calculus I
- MATH 2XX3 - Advanced Calculus II
- MATH 3A03 - Real Analysis I
- MATH 3X03 - Complex Analysis I

3 units

- STATS 2D03 - Introduction to Probability

9 units

from

- the *Core Course List*

15 units

from

- Levels III, IV, V Mathematics or Statistics courses

0-3 units

from

- COMPSCI 1MD3 - Introduction to Programming
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 2G03 - Scientific Computing

(See *Program Note 2* above.)42-45 units

- Electives

**HONOURS MATHEMATICS AND STATISTICS - MATHEMATICS SUB-PLAN (B.SC.)****ADMISSION NOTES**

- For students entering the program as of September 2019, completion of MATH 1C03 is required by the end of Level II.
- Students seeking admission to the program are strongly discouraged from taking MATH 1LS3 and 1LT3 as they do not cover all content needed for MATH 2X03.

**ADMISSION**

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Admission is by selection but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

**3 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1X03 - Calculus for Math and Stats I
- MATH 1ZA3 - Engineering Mathematics I

(See *Admission Note 2* above.)**3 UNITS**

from the following courses, with a grade of at least C+

- MATH 1AA3 - Calculus For Science II
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1XX3 - Calculus for Math and Stats II
- MATH 1ZB3 - Engineering Mathematics II-A

(See *Admission Note 2* above.)**3 UNITS**

from

- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

**PROGRAM NOTES**

- Students must satisfy a Scientific Computing requirement, by completing one of: COMPSCI 1MD3, MATH 1MP3, PHYSICS 2G03.
- For students entering the program as of September 2019, MATH 1C03 must be completed by the end of Level II.

**CORE COURSE LIST**

- MATH 2E03
- MATH 2ET3\* - Theory and Practice of Teaching Mathematics
- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II
- MATH 2S03
- MATH 2T03
- MATH 3B03 - Geometry
- MATH 3E03
- MATH 3EE3
- MATH 3F03 - Ordinary Differential Equations
- MATH 3FF3 - Partial Differential Equations
- MATH 3GR3 - Abstract Algebra
- MATH 3MB3 - Introduction to Modelling
- MATH 3NA3 - Numerical Linear Algebra
- MATH 3Q03
- MATH 3T03 - Inquiry in Topology
- STATS 2MB3 - Statistical Methods and Applications
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3CI3
- STATS 3D03 - Mathematical Statistics
- STATS 3F03



- STATS 3S03\* - Survey Sampling
- STATS 3U03\* - Stochastic Processes

**SCIENTIFIC COMMUNICATION COURSE LIST**

- MATH 3CY3 - Cryptography
- MATH 3DC3 - Discrete Dynamical Systems and Chaos
- MATH 3ET3 A/B S - Mathematics Teaching Placement
- MATH 3G03 - Problem Solving
- MATH 3MB3 - Introduction to Modelling
- MATH 3QC3 - Introduction to Quantum Computing
- MATH 3TP3 - Truth and Provability
- MATH 3U03 - Combinatorics
- MATH 3V03 - Graph Theory
- MATH 3Z03 - Inquiry: History of Mathematics
- MATH 4FM3 - Financial Markets and Derivatives
- MATH 4MB3 - Mathematical Biology
- MATH 4P06 A/B S - Senior Research Project
- MATH 4W03 - Reading in Mathematics
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3DS3 - Introduction to Data Science Theory
- STATS 3PG3 - Probability and Games of Chance
- STATS 4A03 - Time Series
- STATS 4M03 - Multivariate Analysis
- STATS 4P03 - Advanced Applied Statistics
- STATS 4T06 A/B - Senior Research Project
- STATS 4W03 - Reading in Statistics

**REQUIREMENTS**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)

**LEVELS II-IV: 90 UNITS**

18 units

- MATH 2C03 - Introduction to Differential Equations
- MATH 2R03 - Linear Algebra II
- MATH 2X03 - Advanced Calculus I
- MATH 2XX3 - Advanced Calculus II
- MATH 3A03 - Real Analysis I
- MATH 3X03 - Complex Analysis I

3 units

- STATS 2D03 - Introduction to Probability

15 units

from the *Core Course List*, which must include six units from:

- MATH 3E03
- MATH 3EE3
- MATH 3F03 - Ordinary Differential Equations
- MATH 3FF3 - Partial Differential Equations
- MATH 3GR3 - Abstract Algebra
- MATH 3T03 - Inquiry in Topology

3 units

- MATH 4A03 - Real Analysis II

3 units

from

- MATH 4B03\* - Calculus on Manifolds
- MATH 4E03 - Galois Theory
- MATH 4GR3 - Groups and Rings
- MATH 4L03\* - Introduction to Mathematical Logic
- MATH 4NA3 - Numerical Methods for Differential Equations
- MATH 4Q03
- MATH 4V03
- MATH 4X03\* - Complex Analysis II

15 units

from

- Levels III, IV, V Mathematics or Statistics courses including one course selected from the *Scientific Communication Course List*

0-3 units

from

- COMPSCI 1MD3 - Introduction to Programming
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 2G03 - Scientific Computing

(See *Program Note 1* above.)

0-3 units

- MATH 1C03 - Introduction to Mathematical Reasoning (if not completed in Level I)

27-33 units

- Electives

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2019**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)

**LEVELS II-IV: 90 UNITS**

18 units

- MATH 2C03 - Introduction to Differential Equations
- MATH 2R03 - Linear Algebra II
- MATH 2X03 - Advanced Calculus I
- MATH 2XX3 - Advanced Calculus II
- MATH 3A03 - Real Analysis I
- MATH 3X03 - Complex Analysis I

3 units

- STATS 2D03 - Introduction to Probability

15 units

from the *Core Course List*, which must include six units from:

- MATH 3E03
- MATH 3EE3
- MATH 3F03 - Ordinary Differential Equations
- MATH 3FF3 - Partial Differential Equations
- MATH 3GR3 - Abstract Algebra
- MATH 3T03 - Inquiry in Topology

3 units

- MATH 4A03 - Real Analysis II

3 units

from

- MATH 4B03\* - Calculus on Manifolds
- MATH 4E03 - Galois Theory
- MATH 4GR3 - Groups and Rings
- MATH 4L03\* - Introduction to Mathematical Logic
- MATH 4NA3 - Numerical Methods for Differential Equations
- MATH 4Q03
- MATH 4V03
- MATH 4X03\* - Complex Analysis II

15 units

from

- Levels III, IV, V Mathematics or Statistics courses

0-3 units

from

- COMPSCI 1MD3 - Introduction to Programming
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 2G03 - Scientific Computing

(See *Program Note 1* above.)

30-33 units

- Electives

## HONOURS MATHEMATICS AND STATISTICS - MATHEMATICS SUB-PLAN CO-OP (B.SC.)

### HONOURS MATHEMATICS AND STATISTICS CO-OP PROGRAMS

Co-op opportunities in Mathematics and Statistics are available in combination with the sub-plans. Enrolment in these programs is limited. Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline, and completion of a Level II Honours Mathematics and Statistics program with a Grade Point Average of at least 5.0. Information about the program and the selection procedure may be obtained from Science Career and Cooperative Education.

#### NOTES

- These are five-level (year) co-op programs which include two eight-month work terms which must be spent in mathematics or statistics related placements.
- Students must be registered in a full-load and take a full academic program as prescribed, by Level and Term.
- Students are required to complete SCIENCE 2C00 and SCIENCE 3C00 before the first work placement and are strongly recommended to complete SCIENCE 2C00 in Level II.
- Students must satisfy a Scientific Computing requirement, by completing one of: COMPSCI 1MD3, MATH 1MP3, PHYSICS 2G03. It is recommended that students in Mathematics Sub-Plan (Co-op) complete this requirement prior to their first work term.

#### ADMISSION

**Enrolment in this program is limited.** Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline, and completion of Level II Honours Mathematics and Statistics (Mathematics Sub-Plan) with a Grade Point Average of at least 5.0.

#### CORE COURSE LIST

- MATH 2E03
- MATH 2ET3\* - Theory and Practice of Teaching Mathematics
- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II
- MATH 2S03
- MATH 2T03
- MATH 3B03 - Geometry
- MATH 3E03
- MATH 3EE3
- MATH 3F03 - Ordinary Differential Equations
- MATH 3FF3 - Partial Differential Equations
- MATH 3GR3 - Abstract Algebra
- MATH 3MB3 - Introduction to Modelling
- MATH 3NA3 - Numerical Linear Algebra
- MATH 3Q03
- MATH 3T03 - Inquiry in Topology
- STATS 2MB3 - Statistical Methods and Applications
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3CI3
- STATS 3D03 - Mathematical Statistics
- STATS 3F03
- STATS 3S03\* - Survey Sampling
- STATS 3U03\* - Stochastic Processes

#### SCIENTIFIC COMMUNICATION COURSE LIST

- MATH 3CY3 - Cryptography
- MATH 3DC3 - Discrete Dynamical Systems and Chaos
- MATH 3ET3 A/B S - Mathematics Teaching Placement

- MATH 3G03 - Problem Solving
- MATH 3MB3 - Introduction to Modelling
- MATH 3QC3 - Introduction to Quantum Computing
- MATH 3TP3 - Truth and Provability
- MATH 3U03 - Combinatorics
- MATH 3V03 - Graph Theory
- MATH 3Z03 - Inquiry: History of Mathematics
- MATH 4FM3 - Financial Markets and Derivatives
- MATH 4MB3 - Mathematical Biology
- MATH 4P06 A/B S - Senior Research Project
- MATH 4W03 - Reading in Mathematics
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3DS3 - Introduction to Data Science Theory
- STATS 3PG3 - Probability and Games of Chance
- STATS 4A03 - Time Series
- STATS 4M03 - Multivariate Analysis
- STATS 4P03 - Advanced Applied Statistics
- STATS 4T06 A/B - Senior Research Project
- STATS 4W03 - Reading in Statistics

#### REQUIREMENTS

*120 units total (Levels I to IV), of which no more than 48 units may be Level I*

#### LEVEL I: 30 UNITS

Completed prior to admission to the program

#### LEVEL II: 30 UNITS

30 units

- Completion of Level II Honours Mathematics and Statistics (Mathematics Sub-Plan)

1 course

- SCIENCE 2C00 - Skills for Career Success in Science

#### LEVEL III

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:

**3 units**

- MATH 3A03 - Real Analysis I

**3 units**

from

- MATH 3E03
- MATH 3F03 - Ordinary Differential Equations
- MATH 3GR3 - Abstract Algebra

**6 units**

from

- *Core Course List*

**3 units**

- Electives (See *Note 4* above.)

**2 courses**

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

#### LEVEL IV

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:

**3 units**

- MATH 3X03 - Complex Analysis I

**3 units**

- MATH 4A03 - Real Analysis II

**3 units**

from

- MATH 3EE3
- MATH 3FF3 - Partial Differential Equations
- MATH 3NA3 - Numerical Linear Algebra
- MATH 3T03 - Inquiry in Topology

**9 units**

from

- Levels III, IV, V Mathematics or Statistics courses including one course selected from the *Scientific Communication Course List*

**0-3 units**

from the following courses, if not already completed for another requirement:

- COMPSCI 1MD3 - Introduction to Programming
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 2G03 - Scientific Computing

(See *Note 4* above.)**9-12 units**

- Electives

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 4WTO - Science Co-op Work Term

**LEVEL V**

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

**1 course**

- SCIENCE 5WTO - Science Co-op Work Term

Winter Term: 15 units:**6 units**

from

- Levels III, IV, V Mathematics or Statistics courses

**3 units**

from

- Level IV Mathematics courses

**6 units**

- Electives

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2019***120 units total (Levels I to IV), of which no more than 48 units may be Level I***LEVEL I: 30 UNITS**

Completed prior to admission to the program

**LEVEL II: 30 UNITS**30 units

- Completion of Level II Honours Mathematics and Statistics (Mathematics Sub-Plan)

1 course

- SCIENCE 2C00 - Skills for Career Success in Science

**LEVEL III**

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:**3 units**

- MATH 3A03 - Real Analysis I

**3 units**

from

- MATH 3E03

- MATH 3F03 - Ordinary Differential Equations

- MATH 3GR3 - Abstract Algebra

**6 units**

from

- *Core Course List*

**3 units**

- Electives (See *Note 4* above.)

**2 courses**

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

**1 course**

- SCIENCE 3WTO - Science Co-op Work Term

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 3WTO - Science Co-op Work Term

**LEVEL IV**

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:**3 units**

- MATH 3X03 - Complex Analysis I

**3 units**

- MATH 4A03 - Real Analysis II

**3 units**

from

- MATH 3EE3
- MATH 3FF3 - Partial Differential Equations
- MATH 3NA3 - Numerical Linear Algebra
- MATH 3T03 - Inquiry in Topology

**9 units**

from

- Levels III, IV, V Mathematics or Statistics courses

**0-3 units**

from the following courses, if not already completed for another requirement:

- COMPSCI 1MD3 - Introduction to Programming
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 2G03 - Scientific Computing

(See *Note 4* above.)**9-12 units**

- Electives

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 4WTO - Science Co-op Work Term

**LEVEL V**

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

**1 course**

- SCIENCE 5WTO - Science Co-op Work Term

Winter Term: 15 units:**6 units**

from

- Levels III, IV, V Mathematics or Statistics courses

**3 units**

from

- Level IV Mathematics courses

6 units

- Electives

**CO-OP PROGRAM CHART**

	<b>FALL TERM (September to December)</b>	<b>WINTER TERM (January to April)</b>	<b>SPRING/SUMMER TERM (May to August)</b>
<b>Level III</b>	15 units from Academic Level III + SCIENCE 2C00 (if not completed) and SCIENCE 3C00	Work Term SCIENCE 3WTO	Work Term SCIENCE 3WTO
<b>Level IV</b>	15 units from Academic Levels III, IV	15 units from Academic Levels III, IV	Work Term SCIENCE 4WTO
<b>Level V</b>	Work Term SCIENCE 5WTO	15 units from Academic Level IV	

**HONOURS MATHEMATICS AND STATISTICS - STATISTICS SUB-PLAN (B.SC.)****ADMISSION NOTES**

- For students entering the program as of September 2019, completion of MATH 1C03 is required by the end of Level II.
- Students seeking admission to the program are strongly discouraged from taking MATH 1LS3 and 1LT3 as they do not cover all content needed for MATH 2X03.

**ADMISSION**

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Admission is by selection but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

**3 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1X03 - Calculus for Math and Stats I
- MATH 1ZA3 - Engineering Mathematics I

(See *Admission Note 2* above.)**3 UNITS**

from the following courses, with a grade of at least C+

- MATH 1AA3 - Calculus For Science II
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1XX3 - Calculus for Math and Stats II
- MATH 1ZB3 - Engineering Mathematics II-A

(See *Admission Note 2* above.)**3 UNITS**

from

- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

**PROGRAM NOTES**

- Students must satisfy a Scientific Computing requirement, by completing one of: COMPSCI 1MD3, MATH 1MP3, PHYSICS 2G03.
- For students entering the program as of September 2019, completion of MATH 1C03 is required by the end of Level II.

**CORE COURSE LIST**

- MATH 2E03
- MATH 2ET3\* - Theory and Practice of Teaching Mathematics

- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II
- MATH 2S03
- MATH 2T03
- MATH 3B03 - Geometry
- MATH 3E03
- MATH 3EE3
- MATH 3F03 - Ordinary Differential Equations
- MATH 3FF3 - Partial Differential Equations
- MATH 3GR3 - Abstract Algebra
- MATH 3MB3 - Introduction to Modelling
- MATH 3NA3 - Numerical Linear Algebra
- MATH 3Q03
- MATH 3T03 - Inquiry in Topology
- STATS 2MB3 - Statistical Methods and Applications
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3CI3
- STATS 3D03 - Mathematical Statistics
- STATS 3F03
- STATS 3S03\* - Survey Sampling
- STATS 3U03\* - Stochastic Processes

**SCIENTIFIC COMMUNICATION COURSE LIST**

- MATH 3CY3 - Cryptography
- MATH 3DC3 - Discrete Dynamical Systems and Chaos
- MATH 3ET3 A/B S - Mathematics Teaching Placement
- MATH 3G03 - Problem Solving
- MATH 3MB3 - Introduction to Modelling
- MATH 3QC3 - Introduction to Quantum Computing
- MATH 3TP3 - Truth and Provability
- MATH 3U03 - Combinatorics
- MATH 3V03 - Graph Theory
- MATH 3Z03 - Inquiry: History of Mathematics
- MATH 4FM3 - Financial Markets and Derivatives
- MATH 4MB3 - Mathematical Biology
- MATH 4P06 A/B S - Senior Research Project
- MATH 4W03 - Reading in Mathematics
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3DS3 - Introduction to Data Science Theory
- STATS 3PG3 - Probability and Games of Chance
- STATS 4A03 - Time Series
- STATS 4M03 - Multivariate Analysis
- STATS 4P03 - Advanced Applied Statistics
- STATS 4T06 A/B - Senior Research Project
- STATS 4W03 - Reading in Statistics

**REQUIREMENTS**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**30 units(See *Admission* above.)**LEVEL II-IV: 90 UNITS**12 units

- MATH 2C03 - Introduction to Differential Equations
- MATH 2X03 - Advanced Calculus I
- MATH 2XX3 - Advanced Calculus II
- MATH 3X03 - Complex Analysis I

3 units

from

- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II

3 units

from



- MATH 3A03 - Real Analysis I
- MATH 3IA3 - Introduction to Analysis

12 units

- STATS 2D03 - Introduction to Probability
- STATS 2MB3 - Statistical Methods and Applications
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3D03 - Mathematical Statistics

3 units

from

- STATS 3F03
- STATS 3S03\* - Survey Sampling
- STATS 3U03\* - Stochastic Processes

9 units

from

- the *Core Course List*

9 units

- Levels III, IV, V Mathematics or Statistics courses including one course selected from the *Scientific Communication Course List*

6 units

- Level IV Statistics

0-3 units

from

- COMPSCI 1MD3 - Introduction to Programming
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 2G03 - Scientific Computing

(See *Program Note 1* above.)0-3 units

- MATH 1C03 - Introduction to Mathematical Reasoning (if not completed in Level I)

27-33 units

- Electives

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2019***120 units total (Levels I to IV), of which no more than 48 units may be Level I***LEVEL I: 30 UNITS**30 units(See *Admission* above.)**LEVELS II-IV: 90 UNITS**18 units

- MATH 2C03 - Introduction to Differential Equations
- MATH 2R03 - Linear Algebra II
- MATH 2X03 - Advanced Calculus I
- MATH 2XX3 - Advanced Calculus II
- MATH 3A03 - Real Analysis I
- MATH 3X03 - Complex Analysis I

12 units

- STATS 2D03 - Introduction to Probability
- STATS 2MB3 - Statistical Methods and Applications
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3D03 - Mathematical Statistics

3 units

from

- STATS 3F03
- STATS 3S03\* - Survey Sampling
- STATS 3U03\* - Stochastic Processes

9 units

from

- the *Core Course List*

9 units

- Levels III, IV, V Mathematics or Statistics courses

6 units

- Level IV Statistics

0-3 units

from

- COMPSCI 1MD3 - Introduction to Programming
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 2G03 - Scientific Computing

(See *Program Note 1* above.)30-33 units

- Electives

**HONOURS MATHEMATICS AND STATISTICS - STATISTICS SUB-PLAN CO-OP (B.SC.)****HONOURS MATHEMATICS AND STATISTICS CO-OP PROGRAMS**

Co-op opportunities in Mathematics and Statistics are available in combination with the sub-plans. Enrolment in these programs is limited. Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline, and completion of a Level II Honours Mathematics and Statistics program with a Grade Point Average of at least 5.0. Information about the program and the selection procedure may be obtained from Science Career and Cooperative Education.

**NOTES**

- These are five-level (year) co-op programs which include two eight-month work terms which must be spent in mathematics or statistics related placements.
- Students must be registered in a full-load and take a full academic program as prescribed, by Level and Term.
- Students are required to complete SCIENCE 2C00 and SCIENCE 3C00 before the first work placement and are strongly recommended to complete SCIENCE 2C00 in Level II.
- Students must satisfy a Scientific Computing requirement, by completing one of: COMPSCI 1MD3, MATH 1MP3, PHYSICS 2G03. It is recommended that students in Mathematics Sub-Plan (Co-op) complete this requirement prior to their first work term.

**ADMISSION**

**Enrolment in this program is limited.** Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline, and completion of Level II Honours Mathematics and Statistics (Statistics Sub-Plan) with a Grade Point Average of at least 5.0.

**CORE COURSE LIST**

- MATH 2E03
- MATH 2ET3\* - Theory and Practice of Teaching Mathematics
- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II
- MATH 2S03
- MATH 2T03
- MATH 3B03 - Geometry
- MATH 3E03
- MATH 3EE3
- MATH 3F03 - Ordinary Differential Equations
- MATH 3FF3 - Partial Differential Equations
- MATH 3GR3 - Abstract Algebra
- MATH 3MB3 - Introduction to Modelling
- MATH 3NA3 - Numerical Linear Algebra
- MATH 3Q03
- MATH 3T03 - Inquiry in Topology
- STATS 3S03\* - Survey Sampling

- STATS 3U03\* - Stochastic Processes

### SCIENTIFIC COMMUNICATION COURSE LIST

- MATH 3CY3 - Cryptography
- MATH 3DC3 - Discrete Dynamical Systems and Chaos
- MATH 3ET3 A/B S - Mathematics Teaching Placement
- MATH 3G03 - Problem Solving
- MATH 3MB3 - Introduction to Modelling
- MATH 3QC3 - Introduction to Quantum Computing
- MATH 3TP3 - Truth and Provability
- MATH 3U03 - Combinatorics
- MATH 3V03 - Graph Theory
- MATH 3Z03 - Inquiry: History of Mathematics
- MATH 4FM3 - Financial Markets and Derivatives
- MATH 4MB3 - Mathematical Biology
- MATH 4P06 A/B S - Senior Research Project
- MATH 4W03 - Reading in Mathematics
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3DS3 - Introduction to Data Science Theory
- STATS 3PG3 - Probability and Games of Chance
- STATS 4A03 - Time Series
- STATS 4M03 - Multivariate Analysis
- STATS 4P03 - Advanced Applied Statistics
- STATS 4T06 A/B - Senior Research Project
- STATS 4W03 - Reading in Statistics

### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

Completed prior to admission to the program

#### LEVEL II: 30 UNITS

30 units

- Completion of Level II Honours Mathematics and Statistics (Statistics Sub-Plan)

1 course

- SCIENCE 2C00 - Skills for Career Success in Science

#### LEVEL III

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:

**6 units**

- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3D03 - Mathematical Statistics

**3 units**

from

- MATH 3A03 - Real Analysis I
- MATH 3IA3 - Introduction to Analysis

**6 units**

from

- the *Core Course List*

**2 courses**

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

#### LEVEL IV

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:

**3 units**

- MATH 3X03 - Complex Analysis I

**3 units**

from the following courses, if not completed in Level III

- STATS 3CI3
- STATS 3F03
- STATS 3S03\* - Survey Sampling
- STATS 3U03\* - Stochastic Processes

**3 units**

from

- Level IV Statistics courses

**9 units**

from

- Levels III, IV, V Mathematics or Statistics courses including one course selected from the *Scientific Communication Course List*

**0-3 units**

from the following courses, if not already completed for another requirement:

- COMPSCI 1MD3 - Introduction to Programming
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 2G03 - Scientific Computing

(See *Note 4* above.)

**9-12 units**

- Electives

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 4WT0 - Science Co-op Work Term

#### LEVEL V

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

**1 course**

- SCIENCE 5WT0 - Science Co-op Work Term

Winter Term: 15 units:

**3 units**

from

- Levels III, IV, V Mathematics or Statistics courses

**3 units**

from

- Level IV Statistics courses

**9 units**

- Electives

### REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2019

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

Completed prior to admission to the program

#### LEVEL II: 30 UNITS

30 units

- Completion of Level II Honours Mathematics and Statistics (Statistics Sub-Plan)

1 course

- SCIENCE 2C00 - Skills for Career Success in Science

#### LEVEL III

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:

**6 units**

- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3D03 - Mathematical Statistics

**3 units**

- MATH 3A03 - Real Analysis I

**6 units**

from

- the *Core Course List*

**2 courses**

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

**1 course**

- SCIENCE 3WTO - Science Co-op Work Term

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 3WTO - Science Co-op Work Term

**LEVEL IV**

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:**3 units**

- MATH 3X03 - Complex Analysis I

**3 units**

from the following courses, if not completed in Level III

- STATS 3CI3
- STATS 3F03
- STATS 3S03\* - Survey Sampling
- STATS 3U03\* - Stochastic Processes

**3 units**

from

- Level IV Statistics courses

**9 units**

from

- Levels III, IV, V Mathematics or Statistics courses

**0-3 units**

from the following courses, if not already completed for another requirement:

- COMPSCI 1MD3 - Introduction to Programming
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 2G03 - Scientific Computing

(See *Note 4* above.)**9-12 units**

- Electives

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 4WTO - Science Co-op Work Term

**LEVEL V**

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

**1 course**

- SCIENCE 5WTO - Science Co-op Work Term

Winter Term: 15 units:**3 units**

from

- Levels III, IV, V Mathematics or Statistics courses

**3 units**

from

- Level IV Statistics courses

**9 units**

- Electives

**CO-OP PROGRAM CHART**

	<b>FALL TERM (September to December)</b>	<b>WINTER TERM (January to April)</b>	<b>SPRING/SUMMER TERM (May to August)</b>
<b>Level III</b>	15 units from Academic Level III + SCIENCE 2C00 (if not completed) and SCIENCE 3C00	Work Term SCIENCE 3WTO	Work Term SCIENCE 3WTO
<b>Level IV</b>	15 units from Academic Levels III, IV	15 units from Academic Levels III, IV	Work Term SCIENCE 4WTO
<b>Level V</b>	Work Term SCIENCE 5WTO	15 units from Academic Level IV	

**HONOURS MATHEMATICS AND STATISTICS CO-OP (B.SC.)****HONOURS MATHEMATICS AND STATISTICS CO-OP PROGRAMS**

Co-op opportunities in Mathematics and Statistics are available in combination with the sub-plans. Enrolment in these programs is limited. Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline, and completion of a Level II Honours Mathematics and Statistics program with a Grade Point Average of at least 5.0. Information about the program and the selection procedure may be obtained from Science Career and Cooperative Education.

**NOTES**

- These are five-level (year) co-op programs which include two eight-month work terms which must be spent in mathematics or statistics related placements.
- Students must be registered in a full-load and take a full academic program as prescribed, by Level and Term.
- Students are required to complete SCIENCE 2C00 and SCIENCE 3C00 before the first work placement and are strongly recommended to complete SCIENCE 2C00 in Level II.
- Students must satisfy a Scientific Computing requirement, by completing one of: COMPSCI 1MD3, MATH 1MP3, PHYSICS 2G03. It is recommended that students in Mathematics Sub-Plan (Co-op) complete this requirement prior to their first work term.

**ADMISSION**

**Enrolment in this program is limited.** Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline, and completion of Level II Honours Mathematics and Statistics with a Grade Point Average of at least 5.0.

**CORE COURSE LIST**

- MATH 2E03
- MATH 2ET3\* - Theory and Practice of Teaching Mathematics
- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II
- MATH 2S03
- MATH 2T03

- MATH 3B03 - Geometry
- MATH 3E03
- MATH 3EE3
- MATH 3F03 - Ordinary Differential Equations
- MATH 3FF3 - Partial Differential Equations
- MATH 3GR3 - Abstract Algebra
- MATH 3MB3 - Introduction to Modelling
- MATH 3NA3 - Numerical Linear Algebra
- MATH 3Q03
- MATH 3T03 - Inquiry in Topology
- STATS 2MB3 - Statistical Methods and Applications
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3C13
- STATS 3D03 - Mathematical Statistics
- STATS 3F03
- STATS 3S03\* - Survey Sampling
- STATS 3U03\* - Stochastic Processes

### SCIENTIFIC COMMUNICATION COURSE LIST

- MATH 3CY3 - Cryptography
- MATH 3DC3 - Discrete Dynamical Systems and Chaos
- MATH 3ET3 A/B S - Mathematics Teaching Placement
- MATH 3G03 - Problem Solving
- MATH 3MB3 - Introduction to Modelling
- MATH 3QC3 - Introduction to Quantum Computing
- MATH 3TP3 - Truth and Provability
- MATH 3U03 - Combinatorics
- MATH 3V03 - Graph Theory
- MATH 3Z03 - Inquiry: History of Mathematics
- MATH 4FM3 - Financial Markets and Derivatives
- MATH 4MB3 - Mathematical Biology
- MATH 4P06 A/B S - Senior Research Project
- MATH 4W03 - Reading in Mathematics
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3DS3 - Introduction to Data Science Theory
- STATS 3PG3 - Probability and Games of Chance
- STATS 4A03 - Time Series
- STATS 4M03 - Multivariate Analysis
- STATS 4P03 - Advanced Applied Statistics
- STATS 4T06 A/B - Senior Research Project
- STATS 4W03 - Reading in Statistics

### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

Completed prior to admission to the program

#### LEVEL II: 30 UNITS

30 units

- Completion of Level II Honours Mathematics and Statistics

1 course

- SCIENCE 2C00 - Skills for Career Success in Science

#### LEVEL III

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:

3 units

from

- MATH 3A03 - Real Analysis I
- MATH 3IA3 - Introduction to Analysis

6 units

from

- the *Core Course List*

6 units

- Electives

2 courses

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

1 course

- SCIENCE 3WT0 - Science Co-op Work Term

Spring/Summer Term:

Work Term

1 course

- SCIENCE 3WT0 - Science Co-op Work Term

#### LEVEL IV

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:

3 units

- MATH 3X03 - Complex Analysis I

0-3 units

from the following courses, if not already completed for another requirement:

- COMPSCI 1MD3 - Introduction to Programming
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 2G03 - Scientific Computing

(See *Note 4* above.)

9 units

from

- Levels III, IV, V Mathematics or Statistics courses including one course selected from the *Scientific Communication Course List*

15-18 units

- Electives

Spring/Summer Term:

Work Term

1 course

- SCIENCE 4WT0 - Science Co-op Work Term

#### LEVEL V

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

1 course

- SCIENCE 5WT0 - Science Co-op Work Term

Winter Term: 15 units:

6 units

from

- Levels III, IV, V Mathematics or Statistics courses

9 units

- Electives

### REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2019

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

Completed prior to admission to the program

#### LEVEL II: 30 UNITS

30 units

- Completion of Level II Honours Mathematics and Statistics

1 course

- SCIENCE 2C00 - Skills for Career Success in Science

#### LEVEL III

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:



**3 units**

- MATH 3A03 - Real Analysis I

**6 units**

from

- the *Core Course List*

**6 units**

- Electives

**2 courses**

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

**LEVEL IV**

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:**3 units**

- MATH 3X03 - Complex Analysis I

**0-3 units**

from the following courses, if not already completed for another requirement:

- COMPSCI 1MD3 - Introduction to Programming
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- PHYSICS 2G03 - Scientific Computing

(See *Note 4* above.)**9 units**

from

- Levels III, IV, V Mathematics or Statistics courses

**15-18 units**

- Electives

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 4WT0 - Science Co-op Work Term

**LEVEL V**

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

**1 course**

- SCIENCE 5WT0 - Science Co-op Work Term

Winter Term: 15 units:**6 units**

from

- Levels III, IV, V Mathematics or Statistics courses

**9 units**

- Electives

**CO-OP PROGRAM CHART**

	<b>FALL TERM (September to December)</b>	<b>WINTER TERM (January to April)</b>	<b>SPRING/SUMMER TERM (May to August)</b>
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<b>Level III</b>	15 units from Academic Level III + SCIENCE 2C00 (if not completed) and SCIENCE 3C00	Work Term SCIENCE 3WT0	Work Term SCIENCE 3WT0
<b>Level IV</b>	15 units from Academic Levels III, IV	15 units from Academic Levels III, IV	Work Term SCIENCE 4WT0
<b>Level V</b>	Work Term SCIENCE 5WT0	15 units from Academic Level IV	

## Bachelor of Science

### MATHEMATICAL SCIENCE (B.SC.)

**ADMISSION NOTE**

Students should be aware that MATH 1B03 may be a prerequisite for upper level Computer Science and Mathematics courses.

**ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 3.5 including:

**6 UNITS**

from the following courses, where an average of at least 4.0 (between the courses) is required

- MATH 1A03 - Calculus For Science I
- MATH 1AA3 - Calculus For Science II
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1X03 - Calculus for Math and Stats I
- MATH 1XX3 - Calculus for Math and Stats II
- MATH 1ZA3 - Engineering Mathematics I
- MATH 1ZB3 - Engineering Mathematics II-A

**3 UNITS**

from

- COMP SCI 1FC3
- COMPSCI 1MD3 - Introduction to Programming
- MATH 1B03 - Linear Algebra I
- MATH 1MP3 - Introduction to Mathematical Scientific Computation
- MATH 1ZC3 - Engineering Mathematics II-B

(See *Admission Note* above.)**6 UNITS**

from

- *Faculty of Science* courses

**PROGRAM NOTE**

Students are responsible for ensuring that prerequisites for anticipated courses for Level III are completed in Level II.

**MATHEMATICAL SCIENCE COURSE LIST**

- All Level II, III, IV Computer Science courses
- MATH 2A03
- MATH 2C03 - Introduction to Differential Equations
- MATH 2E03
- MATH 2K03
- MATH 2R03 - Linear Algebra II
- MATH 2S03
- MATH 2T03
- MATH 2X03 - Advanced Calculus I
- MATH 2XX3 - Advanced Calculus II

- STATS 2D03 - Introduction to Probability
- STATS 2MB3 - Statistical Methods and Applications
- All Level III and IV Mathematics or Statistics courses

**REQUIREMENTS**

90 units total (Levels I to III), of which no more than 42 units may be Level I

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)

**LEVEL II: 30 UNITS**

12 units

from

- Level II courses from the *Mathematical Science Course List*

6 units

from

- Faculty of Science courses

12 units

- Electives (See *Admission Note* above.)

**LEVEL III: 30 UNITS**

12 units

from

- Level III courses from the *Mathematical Science Course List*

3 units

from

- Faculty of Science courses

15 units

- Electives

**Minor(s):****MINOR IN MATHEMATICS****NOTES**

- ISCI 1A24 A/B or ARTSSCI 1D06 A/B is a substitution for 6 units from MATH 1A03, 1AA3, 1LS3, 1LT3, 1X03, 1XX3.
- MATH 2L03 cannot be used for credit towards this Minor.
- ISCI 2A18 A/B or ARTSSCI 2R03 is a substitution for 3 units of Level II Mathematics toward the Minor in Mathematics.
- In order to complete a Minor in Mathematics, at least 12 units (above Level I) must be elective to degree.
- A Minor in Mathematics cannot be declared together with a Minor in Statistics.

**REQUIREMENTS**

27 units total

**3 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1X03 - Calculus for Math and Stats I
- MATH 1ZA3 - Engineering Mathematics I
- MATH 1M03 - Calculus for Business, Humanities and the Social Sciences (with a grade of at least B-)

**3 UNITS**

from

- MATH 1AA3 - Calculus For Science II
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1XX3 - Calculus for Math and Stats II
- MATH 1ZB3 - Engineering Mathematics II-A

**3 UNITS**

from

- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

**18 UNITS**

from

- Levels II, III, IV Mathematics or Statistics courses, including at least six units from Levels III, IV Mathematics or Statistics (See *Note 2* above.)

**MINOR IN STATISTICS****NOTES**

- ISCI 1A24 A/B or ARTSSCI 1D06 A/B is a substitution for 6 units from MATH 1A03, 1AA3, 1LS3, 1LT3, 1X03, 1XX3.
- MATH 2L03 cannot be used for credit towards this Minor.
- ISCI 2A18 A/B or ARTSSCI 2R03 is a substitution for 3 units of Level II Mathematics toward the Minor in Statistics.
- In order to complete a Minor in Statistics, at least 12 units (above Level I) must be elective to degree.
- A Minor in Statistics cannot be declared together with a Minor in Mathematics.

**REQUIREMENTS**

27 units total

**3 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1X03 - Calculus for Math and Stats I
- MATH 1ZA3 - Engineering Mathematics I
- MATH 1M03 - Calculus for Business, Humanities and the Social Sciences (with a grade of at least B-)

**3 UNITS**

from

- MATH 1AA3 - Calculus For Science II
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1XX3 - Calculus for Math and Stats II
- MATH 1ZB3 - Engineering Mathematics II-A

**3 UNITS**

from

- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

**9 UNITS**

from

- STATS 2D03 - Introduction to Probability
- STATS 2MB3 - Statistical Methods and Applications
- STATS 3A03 - Applied Regression Analysis with SAS
- STATS 3D03 - Mathematical Statistics
- STATS 3S03\* - Survey Sampling
- STATS 3U03\* - Stochastic Processes

**9 UNITS**

from

- ARTSSCI 2R03 - Applied Statistical Inference
- PNB 3XE3 - Inferential Statistics and Research Methods
- Levels II, III, IV Mathematics or Statistics

(See *Note 2* above.)

**Department of Physics and Astronomy**

<http://www.physics.mcmaster.ca/#undergrads>

**Faculty as of January 15, 2020**

CHAIR

**Graeme M. Luke**

ASSOCIATE CHAIR (GRADUATE)

**Maikel Rheinstädter**

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**Christine D. Wilson**/B.Sc. (*Toronto*), Ph.D. (*California Institute of Technology*)  
UNIVERSITY SCHOLAR

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**David R. Chettle**/B.Sc., M.Sc., Ph.D. (*Birmingham*)

**Hugh M. Couchman**/B.A., M.A., Ph.D. (*Cambridge*)

**Kari Dalnoki-Veress**/B.Sc., M.Sc., Ph.D. (*Guelph*)

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**Harold K. Haugen**/(*Engineering Physics*) B.Sc. (*Acadia*), M.Eng. (*McMaster*), Ph.D. (*Aarhus*)

**Paul G. Higgs**/B.Sc., Ph.D. (*Cambridge*), Senior Canada Research Chair

**Takashi Imai**/B.Sc., M.Sc., Ph.D. (*Tokyo*)

**Catherine Kallin**/B.Sc. (*British Columbia*), A.M., Ph.D. (*Harvard*), Senior Canada Research Chair

**Sung-Sik Lee**/B.Sc. (*Korea Advanced Institute of Science and Technology*), M.Sc., Ph.D. (*Pohang*)

**Graeme M. Luke**/B.Sc. (*Queen's*), Ph.D. (*British Columbia*)

**Fiona E. McNeill**/B.Sc. (*Edinburgh*), Ph.D. (*Birmingham*)

**Duncan O'Dell**/B.Sc. (*Imperial*), Ph.D. (*Bristol*)

**Laura C. Parker**/B.Sc. (*Mount Allison*), Ph.D. (*Waterloo*)

**Ralph E. Pudritz**/B.Sc. (*British Columbia*), M.Sc. (*Toronto*), Ph.D. (*British Columbia*)

**Maikel Rheinstädter**/B.Sc., M.Sc., Ph.D. (*Universität des Saarlandes*)

**An-Chang Shi**/B.Sc. (*Fudan*), M.Sc., Ph.D. (*Illinois*)

**Alison Sills**/B.Sc. (*Western Ontario*), Ph.D. (*Yale*)

**Erik S. Sorensen**/B.Sc., M.Sc. (*Århus*), Ph.D. (*California-Santa Cruz*)

**David E. Venus**/B.Sc. (*Queen's*), Ph.D. (*Toronto*)

**James Wadsley**/B.Sc. (*Monash*), M.Sc., Ph.D. (*Toronto*)

**Douglas L. Welch**/B.Sc., Ph.D. (*Toronto*)

ADJUNCT PROFESSORS

**James Forrest**/B.Sc. (*British Columbia*), M.Sc., Ph.D. (*Guelph*)

**Glenn Paquette**/B.A. (*St. Olaf College*), Ph.D. (*Illinois*)

**Wytse Van Dijk**/B.Sc., Ph.D. (*McMaster*)

**Christopher R. Wiebe**/B.Sc. (*Winnipeg*), M.Sc., Ph.D. (*McMaster*)

ASSISTANT PROFESSORS

**Janos Juhasz**/B.Sc. (*Babes-Bolyai*), Ph.D. (*Guelph*)

**Reza Nejat**/B.Sc. (*Tehran*), M.Sc., Ph.D. (*Missouri-Rolla*)

**Miranda Schmidt**/B.Sc., M.Sc., Ph.D. (*Guelph*)

ADJUNCT ASSISTANT PROFESSORS

**Jovica Atanackovic**/B.Sc., M.Sc., Ph.D. (*McMaster*)

**Davide Gaiotto**/Laurea (*Pisa*), Ph.D. (*Princeton*)

**Andrei R. Hanu**/B.Sc., M.Sc., Ph.D. (*McMaster*)

**Annika Lennarz**/(*TRIUMF*) B.Sc., Diploma, Ph.D. (*Münster*)

ASSOCIATE MEMBERS

**Michael Farquharson**/(*Interdisciplinary Science*) B.Sc. (*Sussex*), M.Sc. (*Surrey*), Ph.D. (*University College, London*)

**Adam Hitchcock**/(*Chemistry and Chemical Biology*) B.Sc. (*McMaster*), Ph.D. (*British Columbia*)

**Jose M. Moran-Mirabal**/(*Chemistry and Chemical Biology*) B.Sc., M.Sc. (*ITESM-Monterrey, Mexico*), Ph.D. (*Cornell*)

**Sumanth Shankar**/(*Mechanical Engineering*) B.Tech., Ph.D. (*Worcester Polytechnic Institute*)

**Sarah Symons**/(*Interdisciplinary Science*) B.Sc., Ph.D. (*Leicester*)

**NOTES APPLICABLE TO ALL PROGRAMS OFFERED BY THE DEPARTMENT OF PHYSICS AND ASTRONOMY**

- The Department offers the following programs:
- Honours Astrophysics
- Honours Medical and Biological Physics
- Honours Physics
- These programs consist of a specified set of basic requirements and a wide choice of electives (including those from outside the Faculty of Science), allowing for interdisciplinary studies or the opportunity to complete a Minor in another subject. Students are encouraged to read the Program Notes of each program for a list of additional sets of courses which are appropriate preparation for graduate studies in Physics, Astronomy, Medical Physics or Biophysics.
- Transfer between options may be possible at any time, subject to satisfying the admission requirements.
- Admission to Honours Medical and Biological Physics Co-op and Honours Physics Co-op is in Level III.
- A Minor in Astronomy is not permitted in the Honours Medical and Biological Physics or Honours Physics programs.
- Students wishing to take additional Level III, IV Mathematics courses should consider MATH 2XX3.

**B.SC. THREE-LEVEL DEGREE**

A three-level program with a Physics orientation is available through the B.Sc. in Chemical and Physical Sciences.

**Bachelor of Science (Honours)****HONOURS ASTROPHYSICS (B.SC.)****ADMISSION NOTES**

- Completion of ASTRON 1F03 is required by the end of Level II and is strongly recommended in Level I.
- Completion of MATH 1B03 is required by the end of Level II and is strongly recommended in Level I.
- Completion of PHYSICS 1C03 and 1CC3 is recommended in Level I.

**ADMISSION**

**Enrolment in this program is limited** and possession of the published minimum admission requirements does not guarantee admission. Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

**6 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1AA3 - Calculus For Science II
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1X03 - Calculus for Math and Stats I
- MATH 1XX3 - Calculus for Math and Stats II
- MATH 1ZA3 - Engineering Mathematics I
- MATH 1ZB3 - Engineering Mathematics II-A

**3 UNITS**

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1D03 - Introductory Mechanics

**3 UNITS**

from

- PHYSICS 1AA3 - Introduction To Modern Physics
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences
- PHYSICS 1E03 - Waves, Electricity and Magnetic Fields

**3 UNITS**

from

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1E03 - General Chemistry for Engineering I

**9 UNITS**

from

- the Science I Course List (See *Admission Notes 1 and 2* above.)

**PROGRAM NOTES**

- BIOPHYS 3D03 is recommended.
- PHYSICS 4G03 is recommended.
- Completion of PHYSICS 2G03 is required by the end of Level III and is recommended in Level II.

**REQUIREMENTS**

120-121 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)**LEVEL II: 30-31 UNITS**

15-16 units

from

- PHYSICS 2B03 - Electricity and Magnetism I
- PHYSICS 2BB3 - Electricity and Magnetism II (or PHYSICS 2B06)
- PHYSICS 2C03 - Modern Physics
- PHYSICS 2E03 - Mechanics
- PHYSICS 2P03 - Introductory Laboratory
- PHYSICS 2H04

3 units

from

- MATH 2A03
- MATH 2X03 - Advanced Calculus I

3 units

- MATH 2C03 - Introduction to Differential Equations

3 units

- ASTRON 2E03 - Planetary Astronomy

0-3 units

- ASTRON 1F03 - Introduction to Astronomy and Astrophysics (if not completed in Level I)

(See *Admission Note 1* above.)

0-3 units

- MATH 1B03 - Linear Algebra I (if not completed in Level I)

(See *Admission Note 2* above.)

0-6 units

- Electives (See *Program Note 3* above.)

**LEVEL III: 30 UNITS**

15 units

- ASTRON 3X03 - Galaxies and Cosmology
- PHYSICS 2G03 - Scientific Computing
- PHYSICS 3D03 A/B - Inquiry in Physics
- PHYSICS 3K03 - Thermodynamics and Statistical Mechanics
- PHYSICS 3MM3 - Quantum Mechanics I

3 units

from

- PHYSICS 3H03 A/B - Intermediate Laboratory
- PHYSICS 3P03 A/B - Advanced Laboratory

6 units

- MATH 3C03 - Mathematical Physics I
- MATH 3D03 - Mathematical Physics II

6 units

- Electives (See *Program Note 1* above.)

**LEVEL IV: 30 UNITS**

3 units

- ASTRON 3Y03 - Stellar Structure

6 units

from

- Level IV, V Astronomy, Physics courses

12 units

from

- Levels III, IV, V Astronomy, Biophysics, Mathematics, Physics courses
- EARTHSC 3V03 - Environmental Geophysics
- EARTHSCI 4VV3
- MEDPHYS 4F03 - Fundamentals of Health Physics

including, one of

- PHYSICS 3ET3 A/B S - Physics Teaching Placement
- PHYSICS 4L03 A/B - Literature Review
- PHYSICS 4P06 A/B - Senior Research Project

9 units

- Electives (See *Program Note 2* above.)

**HONOURS MEDICAL AND BIOLOGICAL PHYSICS (B.SC.)****ADMISSION NOTES**

- Completion of BIOLOGY 1A03, CHEM 1AA3 and MATH 1B03 is required by the end of Level II. Completion in Level I is strongly recommended. BIOLOGY 1M03 is also recommended.
- Completion of BIOPHYS 1S03, LIFESCI 1D03, PHYSICS 1CC3 is recommended in Level I.

**ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 5.0 including:

**6 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1AA3 - Calculus For Science II
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1X03 - Calculus for Math and Stats I
- MATH 1XX3 - Calculus for Math and Stats II
- MATH 1ZA3 - Engineering Mathematics I
- MATH 1ZB3 - Engineering Mathematics II-A

**3 UNITS**

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1D03 - Introductory Mechanics

**3 UNITS**

from

- BIOPHYS 1S03 - Biophysics of Movement and the Senses: From Microbes to Moose
- LIFESCI 1D03 - Medical Imaging Physics
- PHYSICS 1AA3 - Introduction To Modern Physics
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences
- PHYSICS 1E03 - Waves, Electricity and Magnetic Fields

**3 UNITS**

from

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1E03 - General Chemistry for Engineering I

**3 UNITS**

from

- BIOLOGY 1A03 - Cellular and Molecular Biology
- CHEM 1AA3 - Introductory Chemistry II



- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

**6 UNITS**

from

- the *Science I Course List* (See *Admission Notes 1 and 2* above.)

**PROGRAM NOTES**

- Students interested in medical physics or health physics, especially those considering postgraduate studies in these areas, should take 12 units from *Course List A - Medical Physics Focus*. These courses also contribute to the core knowledge and learning objectives required by the Commission on Accreditation of Medical Physics Education Programs.
- Students interested in biochemistry, in particular those interested in postgraduate studies in this area, should take 12 units from the *Course List B - Biological Physics Focus*.
- Students interested in physics and soft matter physics, especially those considering postgraduate studies in these areas, should take 12 units from *Course List C - Physics of Soft Matter Focus*.
- Completion of either BIOCHEM 2B03 and 2BB3 or BIOCHEM 2EE3 and 3G03 is required, however, BIOCHEM 2EE3 and 3G03 are recommended.

**COURSE LIST A - MEDICAL PHYSICS FOCUS**

- KINESIOL 2YY3 - Human Anatomy and Physiology II
- MEDPHYS 3C03 - Operational Health Physics: Laboratory & Communication
- MEDPHYS 4D03 - Imaging in Medicine and Biology
- MEDPHYS 4F03 - Fundamentals of Health Physics
- MEDPHYS 4I03 - Introduction to Biophotonics
- MEDPHYS 4RB3 - Radiation and Radioisotope Methodology II
- MEDPHYS 4U03 - Radiation Biology
- MEDPHYS 4Y06 A/B - Senior Thesis

**COURSE LIST B - BIOLOGICAL PHYSICS FOCUS**

- BIOCHEM 2L06 A/B - Inquiry in Biochemical Techniques
- BIOCHEM 3BP3 - Practical Bioinformatics in the Genomics Era
- BIOCHEM 3D03 - Metabolism and Regulation
- BIOCHEM 3MI3 - Microbial Interactions
- BIOCHEM 3Z03 - Structural Determination and Analysis of Macromolecules
- BIOCHEM 4E03 - Gene Regulation in Stem Cells and Development
- BIOCHEM 4H03 - Biotechnology and Drug Discovery
- BIOCHEM 4LL3
- BIOCHEM 4M03 - Cellular and Integrated Metabolism
- BIOCHEM 4N03 - Molecular Membrane Biology
- BIOCHEM 4Q03 - Biochemical Pharmacology
- BIOLOGY 2B03 - Cell Biology
- BIOPHYS 3D03 - Origin of Life

**COURSE LIST C - PHYSICS OF SOFT MATTER FOCUS**

- BIOPHYS 4P06 A/B - Senior Research Project
- PHYSICS 2BB3 - Electricity and Magnetism II
- PHYSICS 3D03 A/B - Inquiry in Physics
- PHYSICS 3N04 - Physical Optics
- PHYSICS 3P03 A/B - Advanced Laboratory
- PHYSICS 4F03 - Quantum Mechanics II
- PHYSICS 4G03 - Computational Physics
- PHYSICS 4K03 - Solid State Physics

**REQUIREMENTS**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)**LEVEL II: 30 UNITS**

12 units

- PHYSICS 2B03 - Electricity and Magnetism I

- PHYSICS 2C03 - Modern Physics
- PHYSICS 2G03 - Scientific Computing
- PHYSICS 2P03 - Introductory Laboratory

6 units

- MATH 2C03 - Introduction to Differential Equations
- MATH 2X03 - Advanced Calculus I

3 units

- BIOPHYS 2S03 - Explorations in Medical and Biological Physics

3 units

- KINESIOL 2Y03 - Human Anatomy and Physiology I

3 units

from

- BIOCHEM 2B03 - Nucleic Acid Structure and Function
- BIOCHEM 2BB3 - Protein Structure and Enzyme Function
- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- BIOCHEM 3G03 - Proteins and Nucleic Acids

(See *Program Note 4* above.)

0-3 units

from the following courses, if not completed in Level I

- BIOLOGY 1A03 - Cellular and Molecular Biology
- CHEM 1AA3 - Introductory Chemistry II
- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

0-3 units

- Electives

**LEVEL III: 30 UNITS**

6 units

- PHYSICS 3K03 - Thermodynamics and Statistical Mechanics
- PHYSICS 3MM3 - Quantum Mechanics I

3 units

- MATH 3C03 - Mathematical Physics I

3 units

- BIOPHYS 3S03 - Soft Condensed Matter Physics

3 units

- MEDPHYS 4B03 - Radioactivity and Radiation Interactions

3 units

from

- BIOCHEM 2B03 - Nucleic Acid Structure and Function
- BIOCHEM 2BB3 - Protein Structure and Enzyme Function
- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- BIOCHEM 3G03 - Proteins and Nucleic Acids

(See *Program Note 4* above.)

3 units

from

- *Course List A, Course List B, Course List C*

6 units

- Electives

**LEVEL IV: 30 UNITS**

9 units

- BIOPHYS 4S03 - Introduction to Molecular Biophysics
- MEDPHYS 4RA3 - Radiation and Radioisotope Methodology I
- MEDPHYS 4T03 - Clinical Applications of Physics in Medicine

9 units

from

- *Course List A, Course List B, Course List C*

12 units

- Electives

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2020**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)**LEVEL II: 30 UNITS**

9 units

- PHYSICS 2B03 - Electricity and Magnetism I
- PHYSICS 2C03 - Modern Physics
- PHYSICS 2G03 - Scientific Computing

6 units

- MATH 2C03 - Introduction to Differential Equations
- MATH 2X03 - Advanced Calculus I

3 units

- BIOPHYS 2S03 - Explorations in Medical and Biological Physics

3 units

- KINESIOL 2Y03 - Human Anatomy and Physiology I

3 units

from

- BIOCHEM 2B03 - Nucleic Acid Structure and Function
- BIOCHEM 2BB3 - Protein Structure and Enzyme Function
- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- BIOCHEM 3G03 - Proteins and Nucleic Acids

(See *Program Note 4* above.)

0-6 units

from the following courses, if not completed in Level I

- BIOLOGY 1A03 - Cellular and Molecular Biology
- CHEM 1AA3 - Introductory Chemistry II
- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

0-6 units

- Electives

**LEVEL III: 30 UNITS**

6 units

- PHYSICS 3K03 - Thermodynamics and Statistical Mechanics
- PHYSICS 3MM3 - Quantum Mechanics I

3 units

- MATH 3C03 - Mathematical Physics I

3 units

- BIOPHYS 3S03 - Soft Condensed Matter Physics

3 units

from

- PHYSICS 3D03 A/B - Inquiry in Physics
- PHYSICS 3H03 A/B - Intermediate Laboratory
- PHYSICS 3P03 A/B - Advanced Laboratory

3 units

from

- BIOCHEM 2B03 - Nucleic Acid Structure and Function
- BIOCHEM 2BB3 - Protein Structure and Enzyme Function
- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- BIOCHEM 3G03 - Proteins and Nucleic Acids

(See *Program Note 4* above.)

3 units

from

- *Course List A, Course List B, Course List C*

3 units

- MEDPHYS 4B03 - Radioactivity and Radiation Interactions

6 units

- Electives

**LEVEL IV: 30 UNITS**

9 units

- BIOPHYS 4S03 - Introduction to Molecular Biophysics
- MEDPHYS 4RA3 - Radiation and Radioisotope Methodology I

- MEDPHYS 4T03 - Clinical Applications of Physics in Medicine

9 units

from

- *Course List A, Course List B, Course List C*

12 units

- Electives

**HONOURS MEDICAL AND BIOLOGICAL PHYSICS CO-OP (B.SC.)****ADMISSION**

**Enrolment in this program is limited.** Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline, and completion of Level II Honours Medical and Biological Physics with a Grade Point Average of at least 5.0 including:

**12 UNITS**

- PHYSICS 2B03 - Electricity and Magnetism I
- PHYSICS 2C03 - Modern Physics
- PHYSICS 2G03 - Scientific Computing
- PHYSICS 2P03 - Introductory Laboratory

**6 UNITS**

- MATH 2C03 - Introduction to Differential Equations
- MATH 2X03 - Advanced Calculus I

**3 UNITS**

- BIOPHYS 2S03 - Explorations in Medical and Biological Physics

**3 UNITS**

- KINESIOL 2Y03 - Human Anatomy and Physiology I

**3 UNITS**

from

- BIOCHEM 2B03 - Nucleic Acid Structure and Function
- BIOCHEM 2BB3 - Protein Structure and Enzyme Function
- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- BIOCHEM 3G03 - Proteins and Nucleic Acids

(See *Program Note 7* below.)**0-3 UNITS**

from the following courses, if not completed in Level I

- BIOLOGY 1A03 - Cellular and Molecular Biology
- CHEM 1AA3 - Introductory Chemistry II
- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

**NOTE:**

Information about the program and the selection procedure may be obtained from Science Career and Cooperative Education and the Chair of the Committee of Instruction.

**ADMISSION (EFFECTIVE SEPTEMBER 2021)**

**Enrolment in this program is limited.** Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline, and completion of Level II Honours Medical and Biological Physics with a Grade Point Average of at least 5.0 including:

**24 UNITS**

- BIOPHYS 2S03 - Explorations in Medical and Biological Physics
- KINESIOL 2Y03 - Human Anatomy and Physiology I
- MATH 2C03 - Introduction to Differential Equations
- MATH 2X03 - Advanced Calculus I
- PHYSICS 2B03 - Electricity and Magnetism I
- PHYSICS 2C03 - Modern Physics
- PHYSICS 2G03 - Scientific Computing
- PHYSICS 2P03 - Introductory Laboratory

**3 UNITS**

from

- BIOCHEM 2B03 - Nucleic Acid Structure and Function
- BIOCHEM 2BB3 - Protein Structure and Enzyme Function
- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- BIOCHEM 3G03 - Proteins and Nucleic Acids

(See *Program Note 7* below.)

**0-3 UNITS**

from the following courses, if not completed in Level I

- BIOLOGY 1A03 - Cellular and Molecular Biology
- CHEM 1AA3 - Introductory Chemistry II
- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

**NOTE:**

Information about the program and the selection procedure may be obtained from Science Career and Cooperative Education and the Chair of the Committee of Instruction.

**PROGRAM NOTES**

- This is a five-level (year) co-op program which includes two eight-month work terms which must be spent in biophysics related placements.
- Students must be registered full-time and take a full academic work load as prescribed by Level and Term.
- Students are required to complete SCIENCE 2C00 and SCIENCE 3C00 before the first work placement and are strongly recommended to complete SCIENCE 2C00 in Level II.
- Students interested in medical physics or health physics, especially those considering postgraduate studies in these areas, should take 12 units from *Course List A - Medical Physics Focus*. These courses also contribute to the core knowledge and learning objectives required by the Commission on Accreditation of Medical Physics Education Programs.
- Students interested in biochemistry, in particular those interested in postgraduate studies in this area, should take 12 units from *Course List B - Biological Physics Focus*.
- Students interested in physics and soft matter physics, especially those considering postgraduate studies in these areas, should take 12 units from *Course List C - Physics of Soft Matter Focus*.
- Completion of either BIOCHEM 2B03 and 2BB3 or BIOCHEM 2EE3 and 3G03 is required, however, BIOCHEM 2EE3 and 3G03 are recommended.

**COURSE LIST A - MEDICAL PHYSICS FOCUS**

- KINESIOL 2YY3 - Human Anatomy and Physiology II
- MEDPHYS 3C03 - Operational Health Physics: Laboratory & Communication
- MEDPHYS 4D03 - Imaging in Medicine and Biology
- MEDPHYS 4F03 - Fundamentals of Health Physics
- MEDPHYS 4I03 - Introduction to Biophotonics
- MEDPHYS 4RB3 - Radiation and Radioisotope Methodology II
- MEDPHYS 4U03 - Radiation Biology
- MEDPHYS 4Y06 A/B - Senior Thesis

**COURSE LIST B - BIOLOGICAL PHYSICS FOCUS**

- BIOCHEM 2L06 A/B - Inquiry in Biochemical Techniques
- BIOCHEM 3BP3 - Practical Bioinformatics in the Genomics Era
- BIOCHEM 3D03 - Metabolism and Regulation
- BIOCHEM 3MI3 - Microbial Interactions
- BIOCHEM 3Z03 - Structural Determination and Analysis of Macromolecules
- BIOCHEM 4E03 - Gene Regulation in Stem Cells and Development
- BIOCHEM 4H03 - Biotechnology and Drug Discovery
- BIOCHEM 4LL3
- BIOCHEM 4M03 - Cellular and Integrated Metabolism
- BIOCHEM 4N03 - Molecular Membrane Biology
- BIOCHEM 4Q03 - Biochemical Pharmacology

- BIOLOGY 2B03 - Cell Biology
- BIOPHYS 3D03 - Origin of Life

**COURSE LIST C - PHYSICS OF SOFT MATTER FOCUS**

- BIOPHYS 4P06 A/B - Senior Research Project
- PHYSICS 2BB3 - Electricity and Magnetism II
- PHYSICS 3D03 A/B - Inquiry in Physics
- PHYSICS 3N04 - Physical Optics
- PHYSICS 3P03 A/B - Advanced Laboratory
- PHYSICS 4F03 - Quantum Mechanics II
- PHYSICS 4G03 - Computational Physics
- PHYSICS 4K03 - Solid State Physics

**REQUIREMENTS**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

Completed prior to admission to the program.

**LEVEL II: 30 UNITS**

- Completion of Level II Honours Medical and Biological Physics

1 course

- SCIENCE 2C00 - Skills for Career Success in Science

**LEVEL III**

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 16 units:

12 units

- BIOPHYS 3S03 - Soft Condensed Matter Physics
- MATH 3C03 - Mathematical Physics I
- MEDPHYS 4B03 - Radioactivity and Radiation Interactions
- PHYSICS 3MM3 - Quantum Mechanics I

1 unit

from

- PHYSICS 3DA1 - Inquiry in Physics (I)
- PHYSICS 3HC1 - Advanced Laboratory (I)

3 units

- Electives (See *Program Notes* above.)

2 courses

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

1 course

- SCIENCE 3WTO - Science Co-op Work Term

Spring/Summer Term:

Work Term

1 course

- SCIENCE 3WTO - Science Co-op Work Term

**LEVEL IV**

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:

3 units

- PHYSICS 3K03 - Thermodynamics and Statistical Mechanics

3 units

from

- BIOCHEM 2B03 - Nucleic Acid Structure and Function
- BIOCHEM 2BB3 - Protein Structure and Enzyme Function
- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- BIOCHEM 3G03 - Proteins and Nucleic Acids

(See *Program Note 7* above.)

3 units

- BIOPHYS 4S03 - Introduction to Molecular Biophysics

**6 units**

- MEDPHYS 4RA3 - Radiation and Radioisotope Methodology I
- MEDPHYS 4T03 - Clinical Applications of Physics in Medicine

**6 units**

from

- *Course List A, Course List B, Course List C*

**9 units**

- Electives

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 4WT0 - Science Co-op Work Term

**LEVEL V**

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

**1 course**

- SCIENCE 5WT0 - Science Co-op Work Term

Winter Term: 14 units:**2 units**

from

- PHYSICS 3DB2 - Inquiry in Physics (II)
- PHYSICS 3HD2 - Advanced Laboratory (II)

**6 units**

from

- *Course List A, Course List B, Course List C*

**6 units**

- Electives (See *Program Notes 4, 5 and 6* above.)

**CO-OP PROGRAM CHART**

	<b>FALL TERM (September to December)</b>	<b>WINTER TERM (January to April)</b>	<b>SPRING/ SUMMER TERM (May to August)</b>
Level III	16 units from Academic Level III + SCIENCE 2C00 (if not already completed) and SCIENCE 3C00	Work Term SCIENCE 3WT0	Work Term SCIENCE 3WT0
Level IV	15 units from Academic Level III	15 units from Academic Level IV	Work Term SCIENCE 4WT0
Level V	Work Term SCIENCE 5WT0	14 units from Academic Level IV	

**REQUIREMENTS FOR STUDENTS WHO ENTER IN SEPTEMBER 2021**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

Completed prior to admission to the program

**LEVEL II: 30 UNITS**

- Completion of Level II Honours Medical and Biological Physics

1 course

- SCIENCE 2C00 - Skills for Career Success in Science

**LEVEL III**

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:**12 units**

- BIOPHYS 3S03 - Soft Condensed Matter Physics
- MATH 3C03 - Mathematical Physics I
- MEDPHYS 4B03 - Radioactivity and Radiation Interactions
- PHYSICS 3MM3 - Quantum Mechanics I

**3 units**

- Electives (See *Program Notes* above.)

**2 courses**

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 3WT0 - Science Co-op Work Term

**LEVEL IV**

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:**3 units**

- PHYSICS 3K03 - Thermodynamics and Statistical Mechanics

**3 units**

from

- BIOCHEM 2B03 - Nucleic Acid Structure and Function
- BIOCHEM 2BB3 - Protein Structure and Enzyme Function
- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry
- BIOCHEM 3G03 - Proteins and Nucleic Acids

(See *Program Note 7* above.)**3 units**

- BIOPHYS 4S03 - Introduction to Molecular Biophysics

**6 units**

- MEDPHYS 4RA3 - Radiation and Radioisotope Methodology I
- MEDPHYS 4T03 - Clinical Applications of Physics in Medicine

**6 units**

from

- *Course List A, Course List B, Course List C*

**9 units**

- Electives

Spring/Summer Term:

Work Term

**1 course**

- SCIENCE 4WT0 - Science Co-op Work Term

**LEVEL V**

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

**1 course**

- SCIENCE 5WT0 - Science Co-op Work Term

Winter Term: 15 units:**6 units**

from

- *Course List A, Course List B, Course List C*

**9 units**

- Electives (See *Program Notes 4, 5, and 6* above.)



## CO-OP PROGRAM CHART

	<b>FALL TERM (September to December)</b>	<b>WINTER TERM (January to April)</b>	<b>SPRING/ SUMMER TERM (May to August)</b>
Level III	15 units from Academic Level III + SCIENCE 2C00 (if not already completed) and SCIENCE 3C00	Work Term SCIENCE 3WTO	Work Term SCIENCE 3WTO
Level IV	15 units from Academic Level III	15 units from Academic Level IV	Work Term SCIENCE 4WTO
Level V	Work Term SCIENCE 5WTO	15 units from Academic Level IV	

**HONOURS PHYSICS (B.SC.)****ADMISSION NOTES**

- Completion of MATH 1B03 or 1ZC3 is required by the end of Level II and is strongly recommended in Level I.
- Completion of PHYSICS 1C03 and 1CC3 is recommended in Level I.

**ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 5.0 including:

**6 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1AA3 - Calculus For Science II
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1X03 - Calculus for Math and Stats I
- MATH 1XX3 - Calculus for Math and Stats II
- MATH 1ZA3 - Engineering Mathematics I
- MATH 1ZB3 - Engineering Mathematics II-A

**3 UNITS**

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1D03 - Introductory Mechanics

**3 UNITS**

from

- PHYSICS 1AA3 - Introduction To Modern Physics
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences
- PHYSICS 1E03 - Waves, Electricity and Magnetic Fields

**3 UNITS**

from

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1E03 - General Chemistry for Engineering I

**9 UNITS**

from

- the Science I Course List (See *Admission Note* above.)

**PROGRAM NOTES**

- Students interested in computational and theoretical physics and especially those considering postgraduate studies in this area should take the following courses: MATH 2R03, 2T03, PHYSICS 3A03, 3C03, 3N04, 4B03, 4F03, 4G03, plus six additional units from Levels III, IV, V Astronomy, Mathematics, Physics.
- Students interested in experimental physics and especially those considering postgraduate studies in this area should take the following courses: ENGPYHS 3BA3, 3BB3, 3E04, 4B03, 4E03, 4F03, 4K03.
- Students interested in geophysics should consider taking EARTHSC 2E03 and 3V03.

**REQUIREMENTS**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)

**LEVEL II: 30 UNITS**

18 units

- PHYSICS 2B03 - Electricity and Magnetism I
- PHYSICS 2BB3 - Electricity and Magnetism II (or PHYSICS 2B06)
- PHYSICS 2C03 - Modern Physics
- PHYSICS 2E03 - Mechanics
- PHYSICS 2G03 - Scientific Computing
- PHYSICS 2P03 - Introductory Laboratory

3 units

- MATH 2X03 - Advanced Calculus I (or 2A03)

3 units

- MATH 2C03 - Introduction to Differential Equations

0-3 units

from the following courses, if not completed in Level I

- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

(See *Admission Note* above.)

3-6 units

- Electives (See *Program Notes* above.)

**LEVEL III: 30 UNITS**

12 units

- PHYSICS 3D03 A/B - Inquiry in Physics
- PHYSICS 3K03 - Thermodynamics and Statistical Mechanics
- PHYSICS 3MM3 - Quantum Mechanics I
- PHYSICS 3P03 A/B - Advanced Laboratory

6 units

- MATH 3C03 - Mathematical Physics I
- MATH 3D03 - Mathematical Physics II

12 units

- Electives (See *Program Notes* above.)

**LEVEL IV: 30 UNITS**

6 units

from

- Level IV Astronomy, Biophysics, Physics

9 units

from

- Levels III, IV, V Astronomy, Biophysics, Mathematics, Medical Physics, Physics courses
- EARTHSC 2E03 - Earth History
- EARTHSC 3V03 - Environmental Geophysics

including one of

- PHYSICS 3ET3 A/B S - Physics Teaching Placement
- PHYSICS 4L03 A/B - Literature Review
- PHYSICS 4P06 A/B - Senior Research Project

15 units

- Electives (See *Program Notes* above.)

### REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2020

120-121 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

#### LEVEL II: 30-31 UNITS

15 units

- PHYSICS 2B03 - Electricity and Magnetism I
- PHYSICS 2BB3 - Electricity and Magnetism II (or PHYSICS 2B06)
- PHYSICS 2C03 - Modern Physics
- PHYSICS 2E03 - Mechanics
- PHYSICS 2G03 - Scientific Computing

3-4 units

from

- PHYSICS 2H04
- PHYSICS 2P03 - Introductory Laboratory

3 units

- MATH 2X03 - Advanced Calculus I (or 2A03)

3 units

- MATH 2C03 - Introduction to Differential Equations

0-3 units

from the following courses, if not completed in Level I

- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

(See *Admission Note* above.)

3-6 units

- Electives (See *Program Notes* above.)

#### LEVEL III: 30 UNITS

12 units

- PHYSICS 3D03 A/B - Inquiry in Physics
- PHYSICS 3H03 A/B - Intermediate Laboratory
- PHYSICS 3K03 - Thermodynamics and Statistical Mechanics
- PHYSICS 3MM3 - Quantum Mechanics I

6 units

- MATH 3C03 - Mathematical Physics I
- MATH 3D03 - Mathematical Physics II

12 units

- Electives (See *Program Notes* above.)

#### LEVEL IV: 30 UNITS

6 units

from

- Level IV Astronomy, Biophysics, Physics

9 units

from

- Levels III, IV, V Astronomy, Biophysics, Mathematics, Medical Physics, Physics courses
- EARTHSC 2E03 - Earth History
- EARTHSC 3V03 - Environmental Geophysics
- MEDPHYS 4F03 - Fundamentals of Health Physics

including one of

- PHYSICS 3ET3 A/B S - Physics Teaching Placement
- PHYSICS 4L03 A/B - Literature Review
- PHYSICS 4P06 A/B - Senior Research Project

15 units

- Electives (See *Program Notes* above.)

## HONOURS PHYSICS CO-OP (B.SC.)

### ADMISSION

**Enrolment in this program is limited.** Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline, and completion of Level II of an Honours program offered by the Department of Physics and Astronomy with a Grade Point Average of at least 5.0 including:

#### 19 UNITS

- PHYSICS 2B03 - Electricity and Magnetism I
- PHYSICS 2BB3 - Electricity and Magnetism II (or PHYSICS 2B06)
- PHYSICS 2C03 - Modern Physics
- PHYSICS 2E03 - Mechanics
- PHYSICS 2G03 - Scientific Computing
- PHYSICS 2H04

#### 3 UNITS

- MATH 2X03 - Advanced Calculus I (or 2A03)

#### 3 UNITS

- MATH 2C03 - Introduction to Differential Equations

#### 0-3 UNITS

from the following courses, if not completed in Level I

- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

#### NOTE:

Information about the program and the selection procedure may be obtained from Science Career and Cooperative Education and the Chair of the Committee of Instruction.

### ADMISSION (EFFECTIVE SEPTEMBER 2021)

**Enrolment in this program is limited.** Selection is based on academic achievement and an interview but requires, as a minimum, submission of the on-line application by the stated deadline, and completion of Level II of an Honours program offered by the Department of Physics and Astronomy with a Grade Point Average of at least 5.0 including:

#### 18 UNITS

- PHYSICS 2B03 - Electricity and Magnetism I
- PHYSICS 2BB3 - Electricity and Magnetism II (or PHYSICS 2B06)
- PHYSICS 2C03 - Modern Physics
- PHYSICS 2E03 - Mechanics
- PHYSICS 2G03 - Scientific Computing
- PHYSICS 2P03 - Introductory Laboratory

#### 3 UNITS

- MATH 2X03 - Advanced Calculus I (or 2A03)

#### 3 UNITS

- MATH 2C03 - Introduction to Differential Equations

#### 0-3 UNITS

from the following courses, if not completed in Level I

- MATH 1B03 - Linear Algebra I
- MATH 1ZC3 - Engineering Mathematics II-B

#### NOTE:

Information about the program and the selection procedure may be obtained from Science Career and Cooperative Education and the Chair of the Committee of Instruction.

### PROGRAM NOTES

- This is a five-level (year) co-op program which includes two eight-month work terms which must be spent in physics related placements.
- Students must be registered full-time and take a full academic work load as prescribed by Level and Term.
- Students are required to complete SCIENCE 2C00 and SCIENCE 3C00 before the first work placement and are strongly recommended to complete SCIENCE 2C00 in Level II.
- Students interested in computational and theoretical physics and

especially those considering postgraduate studies in this area should take the following courses: ENGPYS 3H04 A/B S, MATH 2R03, 2T03, PHYSICS 3A03, 3C03, 3N04, 4B03, 4G03, plus six additional units from Levels III, IV, V Astronomy, Mathematics, Physics.

- Students interested in experimental physics and especially those considering postgraduate studies in this area should take the following courses: ENGPYS 3BA3, 3BB3, 3H04 A/B S, 4B03, 4E03, 4F03, 4K03.

### REQUIREMENTS FOR STUDENTS WHO ENTER IN SEPTEMBER 2020 OR PRIOR

121 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

Completed prior to admission to the program

#### LEVEL II: 31 UNITS

- Completion of any Level II Honours Physics program

#### 1 course

- SCIENCE 2C00 - Skills for Career Success in Science

#### LEVEL III

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 17 units:

#### 3 units

- MATH 3C03 - Mathematical Physics I

#### 5 units

- PHYSICS 3DA1 - Inquiry in Physics (I)
- PHYSICS 3HC1 - Advanced Laboratory (I)
- PHYSICS 3MM3 - Quantum Mechanics I

#### 0-3 units

- PHYSICS 2G03 - Scientific Computing (if not completed in Level II)

#### 6-9 units

- Electives (See *Program Notes 4 and 5* above.)

#### 2 courses

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)
- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

#### 1 course

- SCIENCE 3WT0 - Science Co-op Work Term

Spring/Summer Term:

Work Term

#### 1 course

- SCIENCE 3WT0 - Science Co-op Work Term

#### LEVEL IV

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:

#### 3 units

- MATH 3D03 - Mathematical Physics II

#### 3 units

- PHYSICS 3K03 - Thermodynamics and Statistical Mechanics

#### 15 units

from

- EARTHSC 3V03 - Environmental Geophysics
- EARTHSC 4V03
- EARTHSC 4Z03
- Levels III, IV, V Astronomy, Biophysics, Mathematics, Medical Physics, Physics courses

including one of

- PHYSICS 3ET3 A/B S - Physics Teaching Placement
- PHYSICS 4L03 A/B - Literature Review
- PHYSICS 4P06 A/B - Senior Research Project

#### 9 units

- Electives (See *Program Notes 4 and 5* above.)

Spring/Summer Term:

Work Term

#### 1 course

- SCIENCE 4WT0 - Science Co-op Work Term

#### LEVEL V

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

#### 1 course

- SCIENCE 5WT0 - Science Co-op Work Term

Winter Term: 13 units:

#### 4 units

- PHYSICS 3DB2 - Inquiry in Physics (II)
- PHYSICS 3HD2 - Advanced Laboratory (II)

#### 9 units

- Electives (See *Program Notes 4 and 5* above.)

### CO-OP PROGRAM CHART

	FALL TERM (September to December)	WINTER TERM (January to April)	SPRING/ SUMMER TERM (May to August)
<b>Level III</b>	17 units from Academic Level III + SCIENCE 2C00 (if not already completed) and SCIENCE 3C00	Work Term SCIENCE 3WT0	Work Term SCIENCE 3WT0
<b>Level IV</b>	15 units from Academic Level III	15 units from Academic Level IV	Work Term SCIENCE 4WT0
<b>Level V</b>	Work Term SCIENCE 5WT0	13 units from Academic Level IV	

### REQUIREMENTS FOR STUDENTS WHO ENTER IN SEPTEMBER 2021

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

Completed prior to admission to the program

#### LEVEL II: 30 UNITS

- Completion of any Level II Honours Physics program

#### 1 course

- SCIENCE 2C00 - Skills for Career Success in Science

#### LEVEL III

Consists of academic studies (Fall Term), Co-op Work Term (Winter Term), and Co-op Work Term (Spring/Summer Term)

Fall Term: 15 units:

#### 3 units

- MATH 3C03 - Mathematical Physics I

#### 3 units

- PHYSICS 3MM3 - Quantum Mechanics I

#### 0-3 units

- PHYSICS 2G03 - Scientific Computing (if not completed in Level II)

#### 6-9 units

- Electives (See *Program Notes 4 and 5* above.)

#### 2 courses

- SCIENCE 2C00 - Skills for Career Success in Science (if not already completed)

- SCIENCE 3C00 - Advanced Job Search Skills For Science Co-op Students

Winter Term:

Work Term

1 course

- SCIENCE 3WT0 - Science Co-op Work Term

Spring/Summer Term:

Work Term

1 course

- SCIENCE 3WT0 - Science Co-op Work Term

#### LEVEL IV

Consists of academic studies (Fall and Winter Terms) and Co-op Work Term (Spring/Summer Term)

Fall and Winter Terms: 30 units:

3 units

- MATH 3D03 - Mathematical Physics II

9 units

- PHYSICS 3D03 A/B - Inquiry in Physics
- PHYSICS 3H03 A/B - Intermediate Laboratory
- PHYSICS 3K03 - Thermodynamics and Statistical Mechanics

9 units

from

- EARTHSC 3V03 - Environmental Geophysics
- EARTHSC 4V03
- EARTHSC 4Z03
- Levels III, IV, V Astronomy, Biophysics, Mathematics, Medical Physics, Physics courses

including one of

- PHYSICS 3ET3 A/B S - Physics Teaching Placement
- PHYSICS 4L03 A/B - Literature Review
- PHYSICS 4P06 A/B - Senior Research Project

9 units

- Electives (See *Program Notes 4 and 5* above.)

Spring/Summer Term:

Work Term

1 course

- SCIENCE 4WT0 - Science Co-op Work Term

#### LEVEL V

Consists of Co-op Work Term (Fall Term) and academic studies (Winter Term)

Fall Term:

Work Term

1 course

- SCIENCE 5WT0 - Science Co-op Work Term

Winter Term: 15 units:

15 units

- Electives (See *Program Notes 4 and 5* above.)

#### CO-OP PROGRAM CHART

	<b>FALL TERM (September to December)</b>	<b>WINTER TERM (January to April)</b>	<b>SPRING/ SUMMER TERM (May to August)</b>
<b>Level III</b>	15 units from Academic Level III + SCIENCE 2C00 (if not already completed) and SCIENCE 3C00	Work Term SCIENCE 3WT0	Work Term SCIENCE 3WT0

<b>Level IV</b>	15 units from Academic Level III	15 units from Academic Level IV	Work Term SCIENCE 4WT0
<b>Level V</b>	Work Term SCIENCE 5WT0	15 units from Academic Level IV	

## Bachelor of Science

### CHEMICAL AND PHYSICAL SCIENCES (B.SC.)

*Formerly B.Sc. in Physical Sciences*

**This program is administered by the Department of Physics and Astronomy.**

#### ADMISSION NOTE

Prior to registration, students should carefully review the prerequisites of courses they anticipate taking in subsequent sessions as well as the admission requirements of programs they may seek transfer to.

#### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 3.5 including:

#### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

#### 9 UNITS

from the following courses, where an average of at least 4.0 (between the courses) is required:

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II
- CHEM 1E03 - General Chemistry for Engineering I
- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1AA3 - Introduction To Modern Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences
- PHYSICS 1D03 - Introductory Mechanics
- PHYSICS 1E03 - Waves, Electricity and Magnetic Fields

#### 12 UNITS

from

- the Science I Course List (See *Admission Note* above.)

#### PROGRAM NOTES

- Registration in the *B.Sc. Chemical and Physical Sciences* program does not guarantee access to all courses. Students are responsible for ensuring that prerequisites for anticipated courses for Level III are completed in Level II.
- Students should seek academic advising to ensure that their choices are appropriate, especially if transfer to a program offered by the following Departments is being considered: Chemistry and Chemical Biology, School of Interdisciplinary Science, Physics and Astronomy.

#### B.SC. CHEMICAL AND PHYSICAL SCIENCES COURSE LIST

- Levels II, III, IV Astronomy, Biophysics, Chemical Biology, Chemistry, Medical Physics and Physics courses
- EARTHSC 2E03 - Earth History
- EARTHSC 3V03 - Environmental Geophysics
- ENVIRSC 2Q03 - Introduction to Environmental Geochemistry
- ENVIRSC 2W03 - Physical Hydrology
- MATH 3C03 - Mathematical Physics I
- MATH 3D03 - Mathematical Physics II



**REQUIREMENTS**

90 units total (Levels I to III), of which no more than 42 units may be Level I

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)

**LEVELS II-III: 60 UNITS**

24 units

- Levels II, III, IV courses from *B.Sc. Chemical and Physical Sciences Course List*, of which at least 12 units must be Levels III, IV (See *Program Notes* above.)

36 units

- Electives, of which at least nine units must be selected from the Faculty of Science

**Minor(s):****MINOR IN ASTRONOMY****NOTES**

- ISCI 1A24 A/B is a substitution for PHYSICS 1C03 (or 1A03 or 1B03) and PHYSICS 1CC3 (or 1AA3 or 1BA3 or 1BB3).
- ISCI 2A18 A/B is a substitution for 3 units of Level II Physics toward the Minor in Astronomy.
- In order to complete a Minor in Astronomy, at least 12 units (above Level I) must be elective to degree.
- A Minor in Astronomy is not permitted for students enrolled in the Honours Biophysics, Honours Medical and Biological Physics or Honours Physics program.

**REQUIREMENTS**

24 units total

**3 UNITS**

- ASTRON 1F03 - Introduction to Astronomy and Astrophysics

**3 UNITS**

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1B03
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1D03 - Introductory Mechanics

**9 UNITS**

- ASTRON 2E03 - Planetary Astronomy
- ASTRON 3X03 - Galaxies and Cosmology
- ASTRON 3Y03 - Stellar Structure

**9 UNITS**

from

- Levels II, III, IV Biophysics, Physics

**MINOR IN PHYSICS****NOTES**

- MATH 2X03 (or 2A03) is the minimum mathematics required in order to complete a Minor in Physics. However, more flexibility is possible if MATH 2C03 is also completed.
- ISCI 1A24 A/B is a substitution for PHYSICS 1C03 (or 1A03 or 1B03) and PHYSICS 1CC3 (or 1AA3 or 1BA3 or 1BB3).
- ISCI 2A18 A/B is a substitution for 3 units of Level II Physics toward the Minor in Physics.
- In order to complete a Minor in Physics, at least 12 units (above Level I) must be elective to degree.

**REQUIREMENTS**

24 units total

**6 UNITS**

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1AA3 - Introduction To Modern Physics
- PHYSICS 1B03
- PHYSICS 1BB3 (or PHYSICS 1BA3)
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences

**18 UNITS**

from

- EARTHSC 2E03 - Earth History
- EARTHSC 3V03 - Environmental Geophysics
- ENVIRSC 2Q03 - Introduction to Environmental Geochemistry
- ENVIRSC 2W03 - Physical Hydrology
- Levels II, III, IV Astronomy, Biophysics, Medical Physics, Physics including at least six units from Levels III, IV Astronomy, Biophysics, Medical Physics, Physics

**Department of Psychology,  
Neuroscience & Behaviour (Faculty  
of Science)**

<http://www.science.mcmaster.ca/pnb/>

**Faculty as of January 15, 2020**

**CHAIR**

**Bruce Milliken**

**ASSOCIATE CHAIRS**

**Judith M. Shedden**/Graduate Studies

**Nicholas A. Bock**/Undergraduate Studies

**PROFESSORS**

**Sigal Balshine**/B.Sc. (Toronto), Ph.D. (Cambridge)/Canada Research Chair

**Suzanna Becker**/B.A., M.Sc. (Queen's), Ph.D. (Toronto)

**Patrick Bennett**/B.Sc. (Tufts), Ph.D. (California-Berkeley)/Senior Canada Research Chair

**Reuven Dukas**/B.Sc. (Hebrew University, Jerusalem), Ph.D. (North Carolina State)

**Paul A. Faure**/B.Sc., M.Sc. (Calgary), Ph.D. (Cornell)

**Geoff Hall**/B.Sc., M.Sc. (Guelph), Ph.D. (McMaster)

**Bruce Milliken**/B.A., Ph.D. (Waterloo)

**Kathryn M. Murphy**/B.A. (Western Ontario), M.A., Ph.D. (Dalhousie)

**Sukhvinder S. Obhi**/B.Sc. (Loughborough), M.Sc. (Manchester), Ph.D. (University College, London)

**Mel D. Rutherford**/B.A. (Yale), Ph.D. (California-Santa Barbara)/Canada Research Chair

**Louis A. Schmidt**/B.A. (Maryland), M.S. (Baltimore), Ph.D. (Maryland)

**Judith M. Shedden**/B.Sc. (Alberta), M.S., Ph.D. (Pittsburgh)

**David I. Shore**/B.Sc. (McMaster), M.A., Ph.D. (British Columbia)

**Laurel J. Trainor**/B.Mus., M.A., Ph.D. (Toronto)

**ADJUNCT PROFESSORS**

**Mertice M. Clark**/B.A., Ph.D. (McMaster)

**Ivan Kiss**/B.Sc. (Toronto), M.A., Ph.D. (Concordia)

**Allison Sekuler**/B.A. (Pomona), Ph.D. (California-Berkeley)

**Tracy Vaillancourt**/B.A., M.A., Ph.D. (British Columbia)

**ASSOCIATE PROFESSORS**

**Paul Andrews**/B.Sc. (Arizona), J.D. (Illinois-Urbana-Champaign), Ph.D. (New Mexico)

**Nicholas A. Bock**/B.Sc. (Western Ontario), Ph.D. (Toronto)

**Steven Brown**/B.A. (California-San Jose), M.A., M.Phil., Ph.D. (Columbia)

**Richard B. Day**/B.A. (Massachusetts), M.A. (Iowa), Ph.D. (McMaster)

**David Feinberg**/B.Sc. (Rutgers), Ph.D. (St. Andrews)

**Deda C. Gillespie**/B.Sc. (Yale), Ph.D. (California-San Francisco)  
**Daniel Goldreich**/B.Sc. (California-San Diego), Ph.D. (California-San Francisco)  
**Karin Humphreys**/B.A. (Queensland), A.M., Ph.D. (Illinois)  
**Ayesha Khan**/B.Sc., Ph.D. (McMaster)  
**Joseph Kim**/B.Sc., Ph.D. (McMaster)  
**Jonathan N. Pruitt**/B.A. (South Florida), Ph.D. (Tennessee)/Canada 150 Research Chair  
**Hongjin Sun**/B.Sc., M.Sc. (Peking), M.A. (Western Ontario), Ph.D. (Queen's)  
**Scott Watter**/B.Med.Sc., M.B.B.S. (Queensland), A.M., Ph.D. (Illinois)  
ADJUNCT ASSOCIATE PROFESSORS  
**Bruce A. Linder**/B.E.S. (Minnesota), Ph.D. (McMaster)  
**Faria Sana**/B.A., Ph.D. (McMaster)  
ASSISTANT PROFESSORS  
**Jennifer Ostovich**/B.Sc. (Toronto), M.A., Ph.D. (Pennsylvania)  
**Nikol Piskuric**/B.Sc., Ph.D. (McMaster)  
**Gabriel (Naiqi) Xiao**/BMgmt (Zhejiang Sci-Tech), Ph.D. (Toronto)  
ADJUNCT ASSISTANT PROFESSOR  
**Marten Koops**/B.Sc., M.Sc. (Concordia), Ph.D. (Manitoba)  
ASSOCIATE MEMBERS  
**Michael Amlung**/(Psychiatry and Behavioural Neurosciences) B.S. (Indiana), M.S., Ph.D. (Georgia)  
**Peter Bieling**/(Psychiatry and Behavioural Neurosciences) B.Sc. (Victoria), M.A., Ph.D. (British Columbia)  
**Ben Bolker**/(Biology) B.Sc. (Yale), Ph.D. (Cambridge)  
**Ian C. Bruce**/(Electrical and Computer Engineering) B.Eng., Ph.D. (Melbourne)  
**John F. Connolly**/(Linguistics and Languages) A.B. (Holy Cross), M.A. (Saskatchewan), Ph.D. (London)  
**Charles E. Cunningham**/(Psychiatry and Behavioural Neurosciences) B.A. (California State), M.A. (San Diego State), Ph.D. (The American University)  
**Benecio Frey**/(Psychiatry and Behavioural Neurosciences) M.D. (FFFCM Porto Alegre, Brazil), M.Sc., Ph.D. (UF Rio Grande do Sul, Brazil)  
**Andrea Gonzalez**/(Psychiatry and Behavioural Neurosciences) B.Sc., M.A., Ph.D. (Toronto)  
**Sheryl Green**/(Psychiatry and Behavioural Neurosciences) M.A. (York), B.A., Ph.D. (Regina)  
**Eleni Hapidou**/(Psychiatry and Behavioural Neurosciences) B.A. (The American College of Greece), M.A. (New Brunswick), Ph.D. (McMaster)  
**Katherine Holshausen**/(Psychiatry and Behavioural Neurosciences) B.A. (McMaster), M.Sc., Ph.D. (Queen's)  
**Joel P. Hundert**/(Psychiatry and Behavioural Neurosciences) B.A., M.A. (McMaster), Ph.D. (Western Ontario)  
**Magdalena Janus**/(Psychiatry and Behavioural Neurosciences) M.Sc. (Jagiellonian, Poland), Ph.D. (Cambridge)  
**Karen Kidd**/(Biology) B.Sc. (Guelph), Ph.D. (Alberta)  
**Jelena King**/(Psychiatry and Behavioural Neurosciences) B.Sc. (Queen's), M.A., Ph.D. (Waterloo)  
**Victor Kuperman**/(Linguistics and Languages) B.A., M.A. (Hebrew University, Jerusalem), Ph.D. (Radboud)  
**Mary Laliberte**/(Psychiatry and Behavioural Neurosciences) B.A. (Queen's), M.A. (Maryland), Ph.D. (Queen's)  
**Ellen Lipman**/(Psychiatry and Behavioural Neurosciences) B.Sc. (Western Ontario), M.D., M.Sc. (McMaster)  
**Catherine L. Mancini**/(Psychiatry and Behavioural Neurosciences) B.Sc., M.Sc., M.D. (Western Ontario), F.R.C.P.C.  
**Bruno Losier**/(Psychiatry and Behavioural Neurosciences) B.Sc., M.Sc., Ph.D. (Dalhousie)  
**Randi McCabe**/(Psychiatry and Behavioural Neurosciences) B.Sc., M.A., Ph.D. (Toronto)  
**James McKillop**/(Psychiatry and Behavioural Neurosciences) B.A., M.A., Ph.D. (SUNY Binghamton)

**Margaret McKinnon**/(Psychiatry and Behavioural Neurosciences) B.A. (Windsor), M.A., Ph.D. (Toronto)  
**Heather McNeely**/(Psychiatry and Behavioural Neurosciences) B.A. (Lakehead), M.A. (Carleton), Ph.D. (Waterloo)  
**Sandra Monteiro**/(MERIT, Health Sciences) B.Sc., M.Sc., Ph.D. (McMaster)  
**Heather Moulden**/(Psychiatry and Behavioural Neurosciences) B.A. (Queen's), Ph.D. (Ottawa)  
**Alison G. Niccols**/(Psychiatry and Behavioural Neurosciences) B.A., M.A., Ph.D. (York)  
**Geoff R. Norman**/(Clinical Epidemiology and Biostatistics) B.Sc. (Manitoba), M.A. (Michigan State), Ph.D. (McMaster)  
**James Quinn**/(Biology) B.Sc. (Queen's), M.Sc. (Brock), Ph.D. (Oklahoma)  
**Karen Rowa**/(Psychiatry and Behavioural Neurosciences) B.A. (British Columbia), M.A. (Simon Fraser), Ph.D. (Waterloo)  
**Michael Schutz**/(School of the Arts, Music) B.M., B.Sc. (Penn State), M.M. (Northwestern), M.A., Ph.D. (Virginia)  
**Graham Scott**/(Biology) B.Sc. (McMaster), M.Sc., Ph.D. (British Columbia)  
**Elisabet Service**/(Linguistics and Languages) B.A., M.A., Ph.D. (Helsinki)  
**Alexandre Sévigny**/(Communication Studies and Multimedia; French) B.A. (York), M.A., Ph.D. (Toronto)  
**Ranil Sonnadara**/(Surgery) M.Sc. (Leeds), Ph.D. (McMaster)  
**William Sulis**/(Psychiatry and Behavioural Neurosciences) B.Sc. (Carleton), M.D., M.A., Ph.D. (Western Ontario), F.R.C.P.C.  
**Henry Szechtman**/(Biomedical Sciences) B.Sc., Ph.D. (Pittsburgh)  
**Sherry Van Blyderveen**/(Pediatrics) B.A. (Waterloo), Ph.D. (Simon Fraser)  
**Matthew Woolhouse**/(School of the Arts, Music) M.Phil., Ph.D. (Cambridge)

## Mohawk College of Applied Arts and Technology

DEAN, SCHOOL OF COMMUNITY, JUSTICE AND LIBERAL STUDIES (ACTING)

**Wayne Ostermaier**

DEAN, SCHOOL OF HEALTH

**Wendy Lawson**/B.Sc. (Waterloo), M.App.Sc. (Charles Sturt), CRGS, CRVS, FSC

ASSOCIATE DEAN, DEPARTMENT OF COMMUNITY STUDIES

**Kim Ann Laush**/Dipl. CYW (Mohawk), B.A. (Waterloo), B.Ed. (York), M.Ed. (Nipissing)

ASSOCIATE DEAN, DEPARTMENT OF HEALTH STUDIES

**Nair Lacruz**/B.A. (York), M.Ed. (University of Ontario Institute of Technology)

COORDINATOR, AUTISM & BEHAVIOURAL SCIENCES GRADUATE CERTIFICATE PROGRAM

**Emily Comegna**/B.A. (Western), M.Ed. (Toronto-OISE)

COORDINATOR, EARLY CHILDHOOD EDUCATION ACADEMIC PROGRAM

**Karen Davis**/B.A. (Waterloo), Dipl. R ECE (Mohawk)

### B.SC. DEGREE

A three-level program with a general Life Sciences orientation is available through the B.Sc. in Life Sciences.

### B.A. DEGREES IN PSYCHOLOGY, NEUROSCIENCE & BEHAVIOUR

For B.A. Degrees in Psychology, Neuroscience & Behaviour, see the Department of Psychology, Neuroscience & Behaviour (Faculty of Social Sciences).

### BIOLOGY AND PSYCHOLOGY

For the Honours Biology and Psychology program (B.Sc.), see Honours Biology and Psychology, Neuroscience & Behaviour (B.Sc.).

## Bachelor of Applied Science

### HONOURS HUMAN BEHAVIOUR (B.A.SC.)

*Program offered by the Department of Psychology, Neuroscience & Behaviour.*

**ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 5.0 including:

**6 UNITS**

from the following courses, where an average of at least 5.0 (between the courses) is required:

- PSYCH 1F03 - Survey of Psychology

or

- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

**AND**

- PSYCH 1FF3 - Survey of Biological Basis of Psychology

or

- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour

**0-3 UNITS**

- BIOLOGY 1P03 - Introductory Biology

(or SBI4U - Biology)

**0-3 UNITS**

from

- MATH 1F03 - Introduction to Calculus and Analytic Geometry
- MATH 1K03 - Advanced Functions & Introductory Calculus for Humanities and the Social Sciences
- STATS 1L03 - Probability and Linear Algebra

(or one of MHF4U - Advanced Functions, MCV4U - Calculus and Vectors, MDM4U - Data Management)

**PROGRAM NOTES**

- Students who entered prior to September 2019, may use PNB 3Q03 A/B S towards the units required from the *Human Behaviour Course List* and PNB 4Q03 A/B S towards the Level IV requirements.
- Students interested in pursuing post-graduate studies are encouraged to take HUMBEHV 3MD3 in Level III or IV.
- The Bachelor of Arts in Psychology is considered the equivalent of the three-level degree in the same subject for students wishing to pursue Honours Human Behaviour (B.A.Sc.) as a second degree.

**HUMAN BEHAVIOUR COURSE LIST**

- HUMBEHV 3IP3 A/B S - Inquiry Project
- HUMBEHV 4HB3 - Seminar I for Honours Human Behaviour (B.A.Sc.)
- HUMBEHV 4HC3 - Seminar II for Honours Human Behaviour (B.A.Sc.)
- HUMBEHV 4IP3 A/B S - Senior Inquiry Project
- LINGUIST 3C03 - Child Language Acquisition
- MUSICCOG 2MP3 - Introduction to Music Cognition
- MUSICCOG 3SP3 - The Science of Performance
- MUSICCOG 4MP3 - Neuroscience of Music
- PSYCH 2B03 - Personality
- PSYCH 2C03 - Social Psychology
- PSYCH 2E03 - Sensory Processes
- PSYCH 2MP3 - Introduction to Music Cognition
- PSYCH 2NF3 - Clinical Neuropsychology
- PSYCH 3A03 - Audition
- PSYCH 3AB3 - Adolescent Psychology
- PSYCH 3AC3 - Human Sexuality
- PSYCH 3AG3 - Aging
- PSYCH 3B03 - Special Populations
- PSYCH 3BA3 - Positive Psychology
- PSYCH 3BN3 - Cognitive Neuroscience I
- PSYCH 3C03 - Child Language Acquisition
- PSYCH 3CB3 - Attitudes and Persuasion
- PSYCH 3CC3 - Forensic Psychology
- PSYCH 3CD3
- PSYCH 3D03 - The Multisensory Mind
- PSYCH 3EV3 - Evolution and Mental Health
- PSYCH 3F03 - Evolution and Human Behaviour

- PSYCH 3FA3 - The Neurobiology of Learning and Memory
- PSYCH 3H03 - The Arts and The Brain
- PSYCH 3JJ3 - Socio-Emotional Development
- PSYCH 3M03 - Motivation and Emotion
- PSYCH 3MT3 - Psychometrics
- PSYCH 3SP3 - The Science of Performance
- PSYCH 3T03 - Behavioural Ecology
- PSYCH 3UU3 - Psychology of Language
- PSYCH 3VV3 - Human Memory
- PSYCH 3WA3 - The Mind as a Work of Art
- PSYCH 4MP3 - Neuroscience of Music

**REQUIREMENTS**

*120 units total (Levels I to IV), of which no more than 48 units may be Level I*

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)

**LEVEL II: 30 UNITS**

18 units

- PSYCH 2AA3 - Child Development
- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 2C03 - Social Psychology
- PSYCH 2GG3 - Learning, Measuring, and Shaping Behaviour
- PSYCH 2H03 - Human Learning and Cognition
- PSYCH 2NF3 - Clinical Neuropsychology

12 units

- Electives

1 course

- HUMBEHV 2HB0 - Human Behaviour Professional Development

**LEVEL III: 30 UNITS**

3 units

- HUMBEHV 3MD3 - Research Methods for Human Behaviour

3 units

from

- HUMBEHV 3HB3
- HUMBEHV 3ST3 - Statistics for Human Behaviour
- STATS 2B03 - Statistical Methods for Science

9 units

from

- the *Human Behaviour Course List*

15 units

- Electives

**LEVEL IV: 30 UNITS**

9 units

from

- the *Human Behaviour Course List*, which must be Level III, IV

6 units

from

- HUMBEHV 4HB3 - Seminar I for Honours Human Behaviour (B.A.Sc.)
- HUMBEHV 4HC3 - Seminar II for Honours Human Behaviour (B.A.Sc.)
- HUMBEHV 4IP3 A/B S - Senior Inquiry Project
- HUMBEHV 4RP6 A/B - Independent Research Project
- HUMBEHV 4SC6 A/B - Science Communication in the Behavioural Sciences

15 units

- Electives

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2019**

*120 units total (Levels I to IV), of which no more than 48 units may be Level I*

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)

**LEVEL II: 30 UNITS**18 units

- PSYCH 2AA3 - Child Development
- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 2C03 - Social Psychology
- PSYCH 2GG3 - Learning, Measuring, and Shaping Behaviour
- PSYCH 2H03 - Human Learning and Cognition
- PSYCH 2NF3 - Clinical Neuropsychology

12 units

- Electives

1 course

- HUMBEHV 2HB0 - Human Behaviour Professional Development

**LEVEL III: 30 UNITS**6 units

- PSYCH 3B03 - Special Populations
- PSYCH 3JJ3 - Socio-Emotional Development

3 units

from

- HUMBEHV 3ST3 - Statistics for Human Behaviour
- STATS 2B03 - Statistical Methods for Science

9 units

from

- the *Human Behaviour Course List* (See *Program Notes 1 and 2* above.)

12 units

- Electives

**LEVEL IV: 30 UNITS**9 units

from

- the *Human Behaviour Course List*, which must be Level III, IV (See *Program Notes 1 and 2* above.)

6 units

from

- HUMBEHV 4HB3 - Seminar I for Honours Human Behaviour (B.A.Sc.)
- HUMBEHV 4HC3 - Seminar II for Honours Human Behaviour (B.A.Sc.)
- HUMBEHV 4IP3 A/B S - Senior Inquiry Project
- HUMBEHV 4RP6 A/B - Independent Research Project
- HUMBEHV 4SC6 A/B - Science Communication in the Behavioural Sciences

(See *Program Note 1* above.)15 units

- Electives

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## HONOURS HUMAN BEHAVIOUR - AUTISM AND BEHAVIOURAL SCIENCE SPECIALIZATION (B.A.SC.)

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The program is offered jointly in partnership by Mohawk College of Applied Arts and Technology and the Department of Psychology, Neuroscience & Behaviour, McMaster University. Students pursue two qualifications simultaneously, and graduates receive the Ontario College Graduate Certificate from Mohawk and the McMaster Honours Bachelor of Applied Science degree.

**ADMISSION**

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

**6 UNITS**

from the following courses, where an average of at least 5.0 (between the courses) is required:

- PSYCH 1F03 - Survey of Psychology

or

- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

**AND**

- PSYCH 1FF3 - Survey of Biological Basis of Psychology

or

- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour

**0-3 UNITS**

- BIOLOGY 1P03 - Introductory Biology

(or SBI4U - Biology)

**0-3 UNITS**

from

- MATH 1F03 - Introduction to Calculus and Analytic Geometry
- MATH 1K03 - Advanced Functions & Introductory Calculus for Humanities and the Social Sciences
- STATS 1L03 - Probability and Linear Algebra

(or one of MHF4U - Advanced Functions, MCV4U - Calculus and Vectors, MDM4U - Data Management)

**PROGRAM NOTES**

- The timing of the Spring/Summer sessions may not adhere to the Sessional Dates as published in this Calendar.
- Students who enrolled in this program prior to September 2019, may use PNB 3Q03 A/B S towards the units required from the Human Behaviour (Autism and Behavioural Science) Course List.
- Students interested in pursuing post-graduate studies are encouraged to take HUMBEHV 3MD3 in Level III or IV.

**FIELD PLACEMENT NOTES**

- Applying for Placements - Prior to the start date of a placement, students are required to submit a completed Field Placement Request Form to the Program Coordinator.
- Placements will be with agencies that have contracted in advance with Mohawk College. The College cannot accommodate any student requests for special consideration.
- Students are responsible for arranging their own travel to and from assigned placements.
- Eligibility for Placements - All students must meet academic, social, and health requirements before they can attend a site for field placement.
- Non-Violent Crisis Intervention - All Level II students are required to have obtained a current certificate in Non-Violent Crisis Intervention in order to attend their placements. Failure to meet this requirement will result in loss of placement. Additionally, students will be required to complete a refresher half-day workshop in Non-Violent Crisis Intervention prior to their Spring/Summer placement between Levels III and IV.
- Health Requirements - In the interest of the student and the placement, students are required to submit documentation (e.g., Health Record Form) that they have had a satisfactory physical examination including many routine vaccinations. All students must submit this documentation prior to placement or the student will not start the placement. Students should refer to their field placement coordinator to determine health requirements specific to their college and placement agency.
- Police Reference Check - All students are required to have a Police Reference Check prior to the commencement of their field placement.
- All costs associated with pre-placement requirements are the responsibility of the student.

**STUDENT CONDUCT IN THE PROGRAM**

The University reserves the right to cancel the academic privileges of a student at any time should the student's scholastic record or conduct warrant so doing. The Honours Human Behaviour - Autism and Behavioural Science Specialization (B.A.Sc.) program reserves the right to remove a student from a placement at any point during the term if the student exhibits unsafe practice or behaviour that places others at risk or is deemed a serious breach of professional behaviour. Such removal may result in the student receiving a grade of F in the course and may result in dismissal from the program.



## HUMAN BEHAVIOUR (AUTISM AND BEHAVIOURAL SCIENCE) COURSE LIST

- HUMBEHV 3IP3 A/B S - Inquiry Project
- HUMBEHV 3MD3 - Research Methods for Human Behaviour
- HUMBEHV 4HB3 - Seminar I for Honours Human Behaviour (B.A.Sc.)
- HUMBEHV 4HC3 - Seminar II for Honours Human Behaviour (B.A.Sc.)
- HUMBEHV 4IP3 A/B S - Senior Inquiry Project
- HUMBEHV 4RP6 A/B - Independent Research Project
- HUMBEHV 4SC6 A/B - Science Communication in the Behavioural Sciences
- LINGUIST 3C03 - Child Language Acquisition
- MUSICCOG 2MP3 - Introduction to Music Cognition
- MUSICCOG 3SP3 - The Science of Performance
- MUSICCOG 4MP3 - Neuroscience of Music
- PSYCH 2B03 - Personality
- PSYCH 2C03 - Social Psychology
- PSYCH 2E03 - Sensory Processes
- PSYCH 2MP3 - Introduction to Music Cognition
- PSYCH 2NF3 - Clinical Neuropsychology
- PSYCH 3A03 - Audition
- PSYCH 3AB3 - Adolescent Psychology
- PSYCH 3AC3 - Human Sexuality
- PSYCH 3AG3 - Aging
- PSYCH 3BA3 - Positive Psychology
- PSYCH 3C03 - Child Language Acquisition
- PSYCH 3CB3 - Attitudes and Persuasion
- PSYCH 3CC3 - Forensic Psychology
- PSYCH 3CD3
- PSYCH 3D03 - The Multisensory Mind
- PSYCH 3EV3 - Evolution and Mental Health
- PSYCH 3F03 - Evolution and Human Behaviour
- PSYCH 3FA3 - The Neurobiology of Learning and Memory
- PSYCH 3H03 - The Arts and The Brain
- PSYCH 3JJ3 - Socio-Emotional Development
- PSYCH 3M03 - Motivation and Emotion
- PSYCH 3MT3 - Psychometrics
- PSYCH 3SP3 - The Science of Performance
- PSYCH 3T03 - Behavioural Ecology
- PSYCH 3UU3 - Psychology of Language
- PSYCH 3VV3 - Human Memory
- PSYCH 3WA3 - The Mind as a Work of Art
- PSYCH 4MP3 - Neuroscience of Music

### REQUIREMENTS

150 units total (Levels I to IV), of which no more than 48 units may be Level I, plus two Field Placements in Spring/Summer Term between Level II and III and Level III and IV

#### LEVEL I: 30 UNITS

30 units

(See Admission above.)

#### LEVEL II

Fall and Winter Terms: 30 units:

12 units

- PSYCH 2AA3 - Child Development
- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 2GG3 - Learning, Measuring, and Shaping Behaviour
- PSYCH 2H03 - Human Learning and Cognition

15 units

- HUMBEHV 2A06 A/B - Introduction to Autism Spectrum Disorder (ASD)
- HUMBEHV 2B06 A/B - Introduction to Applied Behaviour Analysis (ABA) I
- HUMBEHV 2C03 - Specialized Instructional Strategies (SIS) I

3 units

- Electives

1 course

- HUMBEHV 2HB0 - Human Behaviour Professional Development

Spring/Summer Term: 15 units:

(See Field Placement Note 4 above.)

12 units

- HUMBEHV 2FP6 - Field Placement I
- HUMBEHV 2FS3 - Field Placement I Seminar
- HUMBEHV 3F03 - Ethics and Professionalism

3 units

- Electives

#### LEVEL III

Fall and Winter Terms: 30 units:

3 units

- PSYCH 3B03 - Special Populations

6 units

from

- the Human Behaviour (Autism and Behavioural Science) Course List

(See Program Note 2 above.)

3 units

from

- HUMBEHV 3ST3 - Statistics for Human Behaviour
- STATS 2B03 - Statistical Methods for Science

15 units

- HUMBEHV 3CB3 - Treating Challenging Behaviour I
- HUMBEHV 3E06 A/B - Behavioural Skill Building
- HUMBEHV 3G03 - Specialized Instructional Strategies (SIS) II
- HUMBEHV 3RS3 - ABA Research Designs

3 units

- Electives

Spring/Summer Term: 15 units:

(See Field Placement Note 4 above.)

12 units

- HUMBEHV 3FP9 - Field Placement II
- HUMBEHV 3FS3 - Field Placement II Seminar

3 units

- Electives

#### LEVEL IV: 30 UNITS

15 units

- HUMBEHV 3D03 - Applied Behavioural Analysis (ABA) II
- HUMBEHV 3H03 - Working with Families and Teams
- HUMBEHV 4CB3 - Treating Challenging Behaviour II
- HUMBEHV 4I03 - Parent and Staff Training
- HUMBEHV 4J03 - Transition Planning and Implementation

9 units

from

- the Human Behaviour (Autism and Behavioural Science) Course List

(See Program Note 2 above.)

6 units

- Electives

#### REQUIREMENTS FOR STUDENTS WHO ENTERED IN SEPTEMBER 2018

150 units total (Levels I to IV), of which no more than 48 units may be Level I, plus two Field Placements in Spring/Summer Term between Level II and III and Level III and IV

#### LEVEL I: 30 UNITS

30 units

(See Admission above.)

#### LEVEL II

Fall and Winter Terms: 30 units:

12 units

- PSYCH 2AA3 - Child Development
- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 2GG3 - Learning, Measuring, and Shaping Behaviour
- PSYCH 2H03 - Human Learning and Cognition

**18 units**

- HUMBEHV 2A06 A/B - Introduction to Autism Spectrum Disorder (ASD)
- HUMBEHV 2B06 A/B - Introduction to Applied Behaviour Analysis (ABA) I
- HUMBEHV 2C03 - Specialized Instructional Strategies (SIS) I
- HUMBEHV 2NV3

**1 course**

- HUMBEHV 2HB0 - Human Behaviour Professional Development

Spring/Summer Term: 15 units:

**12 units**

- HUMBEHV 2FP6 - Field Placement I
- HUMBEHV 2FS3 - Field Placement I Seminar
- HUMBEHV 3F03 - Ethics and Professionalism

**3 units**

- Electives

**LEVEL III**

Fall and Winter Terms: 30 units:

**3 units**

- PSYCH 3B03 - Special Populations

**6 units**

from

- the *Human Behaviour (Autism and Behavioural Science) Course List*

(See *Program Notes 2 and 3* above.)

**3 units**

from

- HUMBEHV 3HB3
- HUMBEHV 3ST3 - Statistics for Human Behaviour
- STATS 2B03 - Statistical Methods for Science

**12 units**

- HUMBEHV 3CB3 - Treating Challenging Behaviour I
- HUMBEHV 3E06 A/B - Behavioural Skill Building
- HUMBEHV 3G03 - Specialized Instructional Strategies (SIS) II

**6 units**

- Electives

Spring/Summer Term: 15 units:

(See *Field Placement Note 4* above.)

**12 units**

- HUMBEHV 3FP9 - Field Placement II
- HUMBEHV 3FS3 - Field Placement II Seminar

**3 units**

- Electives

**LEVEL IV: 30 UNITS**

15 units

- HUMBEHV 3D03 - Applied Behavioural Analysis (ABA) II
- HUMBEHV 3H03 - Working with Families and Teams
- HUMBEHV 4CB3 - Treating Challenging Behaviour II
- HUMBEHV 4I03 - Parent and Staff Training
- HUMBEHV 4J03 - Transition Planning and Implementation

9 units

from

- the *Human Behaviour (Autism and Behavioural Science) Course List*

(See *Program Notes 2 and 3* above.)

6 units

- Electives

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2018**

*150 units total (Levels I to IV), of which no more than 48 units may be Level I, plus two Field Placements in Spring/Summer Term between Level II and III and Level III and IV*

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)

**LEVEL II**

Fall and Winter Terms: 30 units:

**12 units**

- PSYCH 2AA3 - Child Development
- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 2GG3 - Learning, Measuring, and Shaping Behaviour
- PSYCH 2H03 - Human Learning and Cognition

**18 units**

- HUMBEHV 2A06 A/B - Introduction to Autism Spectrum Disorder (ASD)
- HUMBEHV 2B06 A/B - Introduction to Applied Behaviour Analysis (ABA) I
- HUMBEHV 2C03 - Specialized Instructional Strategies (SIS) I
- HUMBEHV 2NV3

**1 course**

- HUMBEHV 2HB0 - Human Behaviour Professional Development

Spring/Summer Term: 15 units:

**12 units**

- HUMBEHV 2FP6 - Field Placement I
- HUMBEHV 2FS3 - Field Placement I Seminar
- HUMBEHV 3F03 - Ethics and Professionalism

**3 units**

- Electives

**LEVEL III**

Fall and Winter Terms: 30 units:

**3 units**

- PSYCH 3B03 - Special Populations

**3 units**

from

- the *Human Behaviour (Autism and Behavioural Science) Course List*

(See *Program Notes 2 and 3* above.)

**3 units**

from

- HUMBEHV 3HB3
- HUMBEHV 3ST3 - Statistics for Human Behaviour
- STATS 2B03 - Statistical Methods for Science

**15 units**

- HUMBEHV 3D03 - Applied Behavioural Analysis (ABA) II
- HUMBEHV 3E06 A/B - Behavioural Skill Building
- HUMBEHV 3G03 - Specialized Instructional Strategies (SIS) II
- HUMBEHV 3H03 - Working with Families and Teams

**6 units**

- Electives

Spring/Summer Term: 15 units:

(See *Field Placement Note 4* above.)

**12 units**

- HUMBEHV 3FP9 - Field Placement II
- HUMBEHV 3FS3 - Field Placement II Seminar

**3 units**

- Electives

**LEVEL IV: 30 UNITS:**

12 units

- HUMBEHV 4I03 - Parent and Staff Training
- HUMBEHV 4J03 - Transition Planning and Implementation

- HUMBEHV 4K06 A/B

12 units

from

- the *Human Behaviour (Autism and Behavioural Science) Course List*

(See *Program Notes 2 and 3* above.)

6 units

- Electives

#### PROGRAM CHART

	FALL TERM (September to December)	WINTER TERM (January to April)	SPRING/ SUMMER TERM (May to August)
<b>Level II</b>	30 units from Academic Level II		15 units Field Placement I
<b>Level III</b>	30 units from Academic Level III		15 units Field Placement II
<b>Level IV</b>	30 units from Academic Level IV		

### HONOURS HUMAN BEHAVIOUR - EARLY CHILDHOOD EDUCATION SPECIALIZATION (B.A.SC.)

The program is offered jointly in partnership by Mohawk College of Applied Arts and Technology and the Department of Psychology, Neuroscience & Behaviour, McMaster University. Students pursue two qualifications simultaneously, and graduates receive the Ontario College Diploma from Mohawk and the McMaster Honours Bachelor of Applied Science degree.

#### ADMISSION

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

#### 6 UNITS

from the following courses, where an average of at least 5.0 (between the courses) is required:

- PSYCH 1F03 - Survey of Psychology

or

- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

#### AND

- PSYCH 1FF3 - Survey of Biological Basis of Psychology

or

- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour

#### 0-3 UNITS

- BIOLOGY 1P03 - Introductory Biology

(or SBI4U - Biology)

#### 0-3 UNITS

from

- MATH 1F03 - Introduction to Calculus and Analytic Geometry
- MATH 1K03 - Advanced Functions & Introductory Calculus for Humanities and the Social Sciences
- STATS 1L03 - Probability and Linear Algebra

(or one of MHF4U - Advanced Functions, MCV4U - Calculus and Vectors, MDM4U - Data Management)

#### PROGRAM NOTES

- The timing of the Spring/Summer sessions may not adhere to the Sessional Dates as published in this Calendar.
- Students who enrolled in this program prior to September 2019, may use PNB 3Q03 A/B S towards the units required from the Human Behaviour (Early Childhood Education) Course List.
- Students interested in pursuing post-graduate studies are encouraged to

take HUMBEHV 3MD3 in Level III or IV.

#### EARLY CHILDHOOD EDUCATION (ECE) FIELD PLACEMENT NOTES

- Applying for Placements - Prior to the start date of a placement, students are required to submit a completed Field Placement Request Form to the Program Coordinator.
- Placements will be with agencies that have contracted in advance with Mohawk College. The College cannot accommodate any student requests for special consideration.
- Students are responsible for arranging their own travel to and from assigned placements.
- Eligibility for Placements - All students must meet academic, social, and health requirements before they can attend a site for field placement.
- Health Requirements - In the interest of the student and the placement, students are required to submit documentation (e.g., Health Record Form) that they have had a satisfactory physical examination including many routine vaccinations. All students must submit this documentation prior to placement or the student will not start the placement. Students should refer to their professional practice coordinator to determine health requirements specific to their college and placement agency.
- Police Reference Check - All students are required to have a Police Reference Check prior to the commencement of their placement.
- All costs associated with pre-placement requirements are the responsibility of the student.

#### STUDENT CONDUCT IN THE PROGRAM

The University reserves the right to cancel the academic privileges of a student at any time should the student's scholastic record or conduct warrant so doing. The Honours Human Behaviour - Early Childhood Education Specialization (B.A.Sc.) program reserves the right to remove a student from a placement at any point during the term if the student exhibits unsafe practice or behaviour that places others at risk or is deemed a serious breach of professional behaviour. Such removal may result in the student receiving a grade of F in the course and may result in dismissal from this program.

#### HUMAN BEHAVIOUR (EARLY CHILDHOOD EDUCATION) COURSE LIST

- HUMBEHV 3IP3 A/B S - Inquiry Project
- HUMBEHV 3MD3 - Research Methods for Human Behaviour
- HUMBEHV 4HB3 - Seminar I for Honours Human Behaviour (B.A.Sc.)
- HUMBEHV 4HC3 - Seminar II for Honours Human Behaviour (B.A.Sc.)
- HUMBEHV 4IP3 A/B S - Senior Inquiry Project
- HUMBEHV 4RP6 A/B - Independent Research Project
- HUMBEHV 4SC6 A/B - Science Communication in the Behavioural Sciences
- LINGUIST 3C03 - Child Language Acquisition
- MUSICCOG 2MP3 - Introduction to Music Cognition
- MUSICCOG 3SP3 - The Science of Performance
- MUSICCOG 4MP3 - Neuroscience of Music
- PSYCH 2B03 - Personality
- PSYCH 2C03 - Social Psychology
- PSYCH 2E03 - Sensory Processes
- PSYCH 2MP3 - Introduction to Music Cognition
- PSYCH 2NF3 - Clinical Neuropsychology
- PSYCH 3A03 - Audition
- PSYCH 3AB3 - Adolescent Psychology
- PSYCH 3AC3 - Human Sexuality
- PSYCH 3AG3 - Aging
- PSYCH 3BA3 - Positive Psychology
- PSYCH 3C03 - Child Language Acquisition
- PSYCH 3CB3 - Attitudes and Persuasion
- PSYCH 3CC3 - Forensic Psychology
- PSYCH 3CD3
- PSYCH 3D03 - The Multisensory Mind
- PSYCH 3EV3 - Evolution and Mental Health

- PSYCH 3F03 - Evolution and Human Behaviour
- PSYCH 3FA3 - The Neurobiology of Learning and Memory
- PSYCH 3H03 - The Arts and The Brain
- PSYCH 3JJ3 - Socio-Emotional Development
- PSYCH 3M03 - Motivation and Emotion
- PSYCH 3MT3 - Psychometrics
- PSYCH 3SP3 - The Science of Performance
- PSYCH 3T03 - Behavioural Ecology
- PSYCH 3UU3 - Psychology of Language
- PSYCH 3VV3 - Human Memory
- PSYCH 3WA3 - The Mind as a Work of Art
- PSYCH 4MP3 - Neuroscience of Music

**REQUIREMENTS**

150 units total (Levels I to IV), of which no more than 48 units may be Level I, plus three Professional Practices in Spring/Summer Term between Level II and III and Level III and IV

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)

**LEVEL II**

Fall and Winter Terms: 30 units:

15 units

- PSYCH 2AA3 - Child Development
- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 2C03 - Social Psychology
- PSYCH 2GG3 - Learning, Measuring, and Shaping Behaviour
- PSYCH 2H03 - Human Learning and Cognition

9 units

- HUMBEHV 2L03 - ECE Curriculum I
- HUMBEHV 2M03 - Learning Environment I
- HUMBEHV 2TL3 - Responsive Care for Infants and Toddlers

6 units

- Electives

1 course

- HUMBEHV 2HB0 - Human Behaviour Professional Development

Spring/Summer Term: 15 units:

15 units

- HUMBEHV 2XP6 - ECE Field Placement I
- HUMBEHV 3XP6 - ECE Field Placement II
- HUMBEHV 3XS3 - Theory to Practice I and II

**LEVEL III**

Fall and Winter Terms: 30 units:

6 units

from

- PSYCH 3B03 - Special Populations
- PSYCH 3JJ3 - Socio-Emotional Development

3 units

from

- HUMBEHV 3HB3
- HUMBEHV 3ST3 - Statistics for Human Behaviour
- STATS 2B03 - Statistical Methods for Science

3 units

from

- the *Human Behaviour (Early Childhood Education) Course List*

(See *Program Notes 2 and 3* above.)

9 units

- HUMBEHV 3O03 - ECE Curriculum II
- HUMBEHV 3P03 - Learning Environment II
- HUMBEHV 3Q03 - Health, Safety & Nutrition

9 units

- Electives

Spring/Summer Term: 15 units:

15 units

- HUMBEHV 4V12 - ECE Field Placement III
- HUMBEHV 4VS3 - Theory to Practice III

**LEVEL IV: 30 UNITS**

9 units

- HUMBEHV 4N03 - Principles of Ethical Practice
- HUMBEHV 4U03 - Inclusion in the ECE Classroom
- HUMBEHV 4W03 - Supervising for Leadership and Quality

9 units

from

- the *Human Behaviour (Early Childhood Education) Course List*

(See *Program Notes 2 and 3* above.)

12 units

- Electives

**PROGRAM CHART**

	FALL TERM (September to December)	WINTER TERM (January to April)	SPRING/ SUMMER TERM (May to August)
<b>Level II</b>	30 units from Academic Level II		15 units ECE Field Placement I & II
<b>Level III</b>	30 units from Academic Level III		15 units ECE Field Placement III
<b>Level IV</b>	30 units from Academic Level IV		

## Bachelor of Science (Honours)

**HONOURS NEUROSCIENCE (B.SC.)**

Program offered jointly by the Departments of Biology and Psychology, Neuroscience & Behaviour.

**ADMISSION**

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

**6 UNITS**

- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity

**6 UNITS**

- CHEM 1A03 - Introductory Chemistry I
- CHEM 1AA3 - Introductory Chemistry II

**3 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

**3 UNITS**

from

- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

**3 UNITS**

from

- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour

**3 UNITS**

from



- COMPSCI 1MD3 - Introduction to Programming
- MATH 1AA3 - Calculus For Science II
- MATH 1B03 - Linear Algebra I
- MATH 1LT3 - Calculus for the Life Sciences II
- MATH 1MP3 - Introduction to Mathematical Scientific Computation

**6 UNITS**

- Electives (See *Program Note 2* below.)

**PROGRAM NOTES**

- This program is jointly administered by Biology and Psychology, Neuroscience & Behaviour; students may seek academic advising from either Department.
- While completion in Level I is recommended, the following courses must be complete by the end of Level II:
  - MATH 1AA3 or 1LT3
  - MATH 1B03
  - COMPSCI 1MD3 or MATH 1MP3 (Note: PHYSICS 2G03 serves as an appropriate substitute.)
- Advanced courses in Biochemistry, Biology, Biophysics, Chemical Biology, Chemistry, Computer Science, Mathematics, Medical Physics, Molecular Biology and Physics may be considered as units towards *Course Lists 2, 3 or 4* by petition to the Psychology, Neuroscience & Behaviour or Biology Undergraduate Chair.
- PNB 2XB3 and NEUROSCI 2XN0 A/B must be completed in Level II.
- PNB 3XE3 serves as an appropriate substitute for STATS 2B03.

**COURSE LIST 1 - OTHER FOUNDATIONAL COURSES**

- BIOCHEM 2B03 - Nucleic Acid Structure and Function
- BIOCHEM 2BB3 - Protein Structure and Enzyme Function
- BIOLOGY 2EE3 - Introduction to Microbiology and Biotechnology
- BIOPHYS 1S03 - Biophysics of Movement and the Senses: From Microbes to Moose
- BIOPHYS 2A03 - Biophysics of the Cell and Living Organisms
- BIOPHYS 3G03 - Modelling Life
- CHEMBIO 2P03 - Physical Chemistry Tools for Chemical Biology
- KINESIOL 2Y03 - Human Anatomy and Physiology I
- KINESIOL 2YY3 - Human Anatomy and Physiology II
- LIFESCI 2D03 - Behavioural Processes
- MATH 2C03 - Introduction to Differential Equations
- MATH 2X03 - Advanced Calculus I
- MEDPHYS 2B03
- MEDPHYS 2D03
- PHYSICS 1AA3 - Introduction To Modern Physics
- PHYSICS 1BA3
- PHYSICS 1CC3 - Modern Physics for the Chemical and Physical Sciences
- PNB 2XA3 - Human Perception & Cognition
- PNB 2XC3 - Animal Behaviour & Evolution
- PNB 2XD3 - Integrative PNB Through Scientific Writing
- PNB 2XE3 - Descriptive Statistics and Research Methods
- PSYCH 2H03 - Human Learning and Cognition
- STATS 2D03 - Introduction to Probability

**COURSE LIST 2 - CELLULAR/MOLECULAR COURSES**

- BIOCHEM 3G03 - Proteins and Nucleic Acids
- BIOCHEM 3H03 - Clinical Biochemistry
- BIOCHEM 4Q03 - Biochemical Pharmacology
- BIOLOGY 3AA3 - Fundamental Concepts of Pharmacology
- BIOLOGY 3VV3 - Laboratory Methods in Molecular Biology
- BIOLOGY 4T03 - Molecular and Cellular Neuroscience
- BIOPHYS 4S03 - Introduction to Molecular Biophysics
- HTHSCI 4BB3 - Neuroimmunology
- LIFESCI 4XX3 - The Synapse
- MOLBIOL 3B03 - Advanced Cell Biology
- MOLBIOL 3D03 - Experimental Approaches in Cell Biology

- MOLBIOL 3M03 - Fundamental Concepts of Development
- MOLBIOL 4RR3 - Human Genetics
- NEUROSCI 2BB3 A/B S - Research Practicum in Cellular/Molecular Neuroscience
- NEUROSCI 3BB3 A/B S - Individual Lab Study in Cellular/Molecular Neuroscience

**COURSE LIST 3 - SYSTEMS/CIRCUITS COURSES**

- BIOLOGY 3UU3 - Animal Physiology - Regulatory Systems
- KINESIOL 3E03 - Neural Control of Human Movement
- LIFESCI 3BB3 - Neurobiology of Disease
- LIFESCI 3K03 - Neural Control of Human Movement
- NEUROSCI 2CC3 A/B S - Research Practicum in Systems/Circuits Neuroscience
- NEUROSCI 3CC3 A/B S - Individual Lab Study in Systems/Circuits Neuroscience
- NEUROSCI 3J03 - Visual Neuroscience
- PHYSICS 3G03 - Introduction to Neural Networks and Machine Learning
- PNB 3L03 - Neurodevelopment & Plasticity Lab
- PSYCH 3A03 - Audition
- PSYCH 3FA3 - The Neurobiology of Learning and Memory
- PSYCH 3J03

**COURSE LIST 4 - BEHAVIOURAL/COGNITIVE COURSES**

- NEUROSCI 2DD3 A/B S - Research Practicum in Behavioural/Cognitive Neuroscience
- NEUROSCI 3DD3 A/B S - Individual Lab Study in Behavioural/Cognitive Neuroscience
- PNB 3MM3 - Cognitive Neuroscience Lab
- PSYCH 3BN3 - Cognitive Neuroscience I
- PSYCH 3D03 - The Multisensory Mind
- PSYCH 3H03 - The Arts and The Brain
- PSYCH 3M03 - Motivation and Emotion
- PSYCH 3NL3 - Cognitive Neuroscience of Language
- PSYCH 4BN3 - Cognitive Neuroscience II
- PSYCH 4KK3 - Bayesian Inference
- PSYCH 4MP3 - Neuroscience of Music
- PSYCH 4Y03

**REQUIREMENTS**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**30 units

(See *Admission* above.)

**LEVEL II: 30 UNITS**6 units

- BIOLOGY 2A03 - Integrative Physiology of Animals
- BIOLOGY 2B03 - Cell Biology

6 units

- CHEM 20A3 - Organic Chemistry I
- CHEM 20B3 - Organic Chemistry II

1 course

- NEUROSCI 2XN0 A/B - Neuroscience Tutorial

(See *Program Note 4* above.)

3 units

- PHYSICS 2B03 - Electricity and Magnetism I

3 units

- PNB 2XB3 - Neuroanatomy & Neurophysiology

(See *Program Note 4* above.)

0-3 units

from the following courses, if not completed in Level I

- MATH 1AA3 - Calculus For Science II
- MATH 1LT3 - Calculus for the Life Sciences II

0-3 units

- MATH 1B03 - Linear Algebra I (if not completed in Level I)

0-3 units

from the following courses, if not completed in Level I

- COMPSCI 1MD3 - Introduction to Programming
- MATH 1MP3 - Introduction to Mathematical Scientific Computation

3-12 units

- Electives

**LEVEL III: 30 UNITS**3 units

- BIOCHEM 2EE3 - Metabolism and Physiological Chemistry

6 units

- BIOLOGY 2C03 - Genetics
- BIOLOGY 3P03 - Cell Physiology

6 units

- NEUROSCI 3E03 - Neuroscience Lab
- NEUROSCI 3SN3 - Neural Circuits

3 units

- STATS 2B03 - Statistical Methods for Science (See *Program Note 5* above.)

6 units

from

- *Course Lists 1, 2, 3, 4* (See *Program Note 3* above.)

6 units

- Electives

**LEVEL IV: 30 UNITS**3 units

- NEUROSCI 4S03 A/B - Neuroscience Seminar

3 units

from

- *Course List 2* (See *Program Note 3* above.)

3 units

from

- *Course List 3* (See *Program Note 3* above.)

3 units

from

- *Course List 4* (See *Program Note 3* above.)

12 units

- NEUROSCI 4L12 A/B - Neuroscience Senior Thesis

OR

- NEUROSCI 4L09 A/B - Neuroscience Thesis and 3 units from *Course Lists 2, 3, 4*

OR

6 units from *Course Lists 2, 3, 4* and one of

- BIOLOGY 4F06 A/B S - Senior Project
- PNB 4SC6 A/B - Science Communication in the Behavioural Sciences

(See *Program Note 3* above.)

6 units

- Electives

## HONOURS PSYCHOLOGY, NEUROSCIENCE & BEHAVIOUR (B.SC.)

**ADMISSION NOTES**

- Completion of CHEM 1A03 and one of BIOPHYS 1S03, PHYSICS 1A03, 1C03 is required by the end of Level II, however, at least one of BIOPHYS 1S03, CHEM 1A03, PHYSICS 1A03, 1C03 is required for admission. It is recommended that both CHEM 1A03 and one of BIOPHYS 1S03, PHYSICS 1A03, 1C03 be completed in Level I. Concepts from PHYSICS 1CC3 are particularly useful for understanding neuroscience, mathematical modelling, and perception. Students interested in these areas are encouraged to take PHYSICS 1C03 and 1CC3.

- Either PSYCH 1FF3 or 1XX3 is required for admission, however, PSYCH 1XX3 is recommended. Completion of either PSYCH 1F03 or 1X03 is required by the end of Level II but PSYCH 1X03 is recommended in Level I.

**ADMISSION**

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

**3 UNITS**

from the following courses, with a grade of at least B-

- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour

(See *Admission Note 2* above.)

**3 UNITS**

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

**6 UNITS**

- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity

**3 UNITS**

from

- BIOPHYS 1S03 - Biophysics of Movement and the Senses: From Microbes to Moose
- CHEM 1A03 - Introductory Chemistry I
- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

(See *Admission Note 1* above.)

**9 UNITS**

from

- the Science I Course List (See *Admission Notes* above.)

**PROGRAM NOTES**

- The Department of Psychology, Neuroscience & Behaviour pre-registration ballot will include the thesis courses (PNB 4D06 A/B, PNB 4D09 A/B), and the Independent Research and Library courses (PNB 3Q03 A/B S, 3QQ3 A/B S, 4Q03 A/B S, 4QQ3 A/B S). Students wishing to take these courses must complete and submit a ballot by **mid February**. Students will be informed of the outcome by **mid March**. Specific dates will be announced during the fall term. Ballots can be obtained from the Department of Psychology, Neuroscience & Behaviour web site at <http://www.science.mcmaster.ca/pnb/>.
- PSYCH 3AB3, 3AC3, 3AG3, 3BA3, 3CB3, 3CD3 may only be used as electives.

**CAPSTONE COURSE LIST**

- PNB 4D06 A/B - Senior Thesis
- PNB 4J03 - Inquiry in Psychology, Neuroscience & Behaviour
- PNB 4Q03 A/B S - Senior Independent Library Study
- PNB 4QQ3 A/B S - Senior Independent Research
- PNB 4SC6 A/B - Science Communication in the Behavioural Sciences

**PSYCHOLOGY COURSE LIST**

- BIOLOGY 3P03 - Cell Physiology
- BIOLOGY 4T03 - Molecular and Cellular Neuroscience
- HTHSCI 4BB3 - Neuroimmunology
- HUMBEHV 3MD3 - Research Methods for Human Behaviour
- KINESIOL 3E03 - Neural Control of Human Movement
- LIFESCI 3BB3 - Neurobiology of Disease
- LIFESCI 3E03 - Reproductive Endocrinology
- LIFESCI 3K03 - Neural Control of Human Movement
- LINGUIST 2PS3 - Psycholinguistics
- LINGUIST 3C03 - Child Language Acquisition

- LINGUIST 3NL3 - Cognitive Neuroscience of Language
- MUSICCOG 2MP3 - Introduction to Music Cognition
- all Level III and IV MUSICCOG courses
- NEUROSCI 3J03 - Visual Neuroscience
- NEUROSCI 3SN3 - Neural Circuits
- PNB 2A03 - Python for PNB
- all Level III and IV PNB courses, **and**,

**ALL LEVEL III AND IV PSYCH COURSES EXCEPT:**

- PSYCH 3AB3 - Adolescent Psychology
- PSYCH 3AC3 - Human Sexuality
- PSYCH 3AG3 - Aging
- PSYCH 3BA3 - Positive Psychology
- PSYCH 3CB3 - Attitudes and Persuasion
- PSYCH 3CD3

**REQUIREMENTS**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)

**LEVEL II: 30 UNITS**

18 units

- PNB 2XA3 - Human Perception & Cognition
- PNB 2XB3 - Neuroanatomy & Neurophysiology
- PNB 2XC3 - Animal Behaviour & Evolution
- PNB 2XD3 - Integrative PNB Through Scientific Writing
- PNB 2XE3 - Descriptive Statistics and Research Methods
- PNB 2XF3 - Perspectives in PNB
- PNB 2XT0 - PNB Tutorial

0-3 units

from the following courses, if not completed in Level I

- BIOPHYS 1S03 - Biophysics of Movement and the Senses: From Microbes to Moose
- CHEM 1A03 - Introductory Chemistry I
- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1B03
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1L03

(See *Admission Note 1* above.)

0-3 units

from the following courses, if not completed in Level I

- PSYCH 1F03 - Survey of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

(See *Admission Note 2* above.)

6-12 units

- Electives

**LEVEL III: 30 UNITS**

3 units

- PNB 3XE3 - Inferential Statistics and Research Methods

3 units

from

- PNB 3EE3 - Perception Laboratory
- PNB 3EV3 - Evolutionary Psychology Lab
- PNB 3L03 - Neurodevelopment & Plasticity Lab
- PNB 3MM3 - Cognitive Neuroscience Lab
- PNB 3QQ3 A/B S - Intermediate Independent Research
- PNB 3S03 - Animal Behaviour Lab
- PNB 3V03 - Laboratory in Human Memory and Cognition

9 units

from

- the *Psychology Course List*

15 units

- Electives (See *Program Note 2* above.)

**LEVEL IV: 30 UNITS**

6 units

from

- the *Psychology Course List*

9 units

- 6 units from the *Capstone Course List* and 3 units from the *Psychology Course List*

or

- PNB 4D09 A/B - Senior Honours Thesis

(See *Program Note 1* above.)

15 units

- Electives (See *Program Note 2* above.)

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2020**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)

**LEVEL II: 30 UNITS**

18 units

- PNB 2XA3 - Human Perception & Cognition
- PNB 2XB3 - Neuroanatomy & Neurophysiology
- PNB 2XC3 - Animal Behaviour & Evolution
- PNB 2XD3 - Integrative PNB Through Scientific Writing
- PNB 2XE3 - Descriptive Statistics and Research Methods
- PNB 2XF3 - Perspectives in PNB
- PNB 2XT0 - PNB Tutorial

0-3 units

from the following courses, if not completed in Level I

- BIOPHYS 1S03 - Biophysics of Movement and the Senses: From Microbes to Moose
- CHEM 1A03 - Introductory Chemistry I
- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1B03
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1L03

(See *Admission Note 1* above.)

0-3 units

from the following courses, if not completed in Level I

- PSYCH 1F03 - Survey of Psychology or
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

(See *Admission Note 2* above.)

6-12 units

- Electives

**LEVEL III: 30 UNITS**

3 units

- PNB 3XE3 - Inferential Statistics and Research Methods

3 units

from

- HUMBEHV 3MD3 - Research Methods for Human Behaviour
- PNB 3EE3 - Perception Laboratory
- PNB 3EV3 - Evolutionary Psychology Lab
- PNB 3L03 - Neurodevelopment & Plasticity Lab
- PNB 3MM3 - Cognitive Neuroscience Lab
- PNB 3QQ3 A/B S - Intermediate Independent Research
- PNB 3RM3
- PNB 3S03 - Animal Behaviour Lab
- PNB 3V03 - Laboratory in Human Memory and Cognition

9 units

from

- the *Psychology Course List*

15 units

- Electives (See *Program Note 2* above.)

#### LEVEL IV: 30 UNITS

6 units

from

- the *Psychology Course List*

9 units

- 6 units from the *Capstone Course List* and 3 units from the *Psychology Course List*

or

- PNB 4D09 A/B - Senior Honours Thesis

(See *Program Note 1* above.)

15 units

- Electives (See *Program Note 2* above.)

## HONOURS PSYCHOLOGY, NEUROSCIENCE & BEHAVIOUR - MENTAL HEALTH SPECIALIZATION (B.SC.)

### ADMISSION NOTES

- Completion of CHEM 1A03 and one of BIOPHYS 1S03, PHYSICS 1A03, 1C03 is required by the end of Level II, however, at least one of BIOPHYS 1S03, CHEM 1A03, PHYSICS 1A03, 1C03 is required for admission. It is recommended that both CHEM 1A03 and one of BIOPHYS 1S03, PHYSICS 1A03, 1C03 be completed in Level I. Concepts from PHYSICS 1CC3 are particularly useful for understanding neuroscience, mathematical modelling, and perception. Students interested in these areas are encouraged to take PHYSICS 1C03 and 1CC3.
- Either PSYCH 1FF3 or 1XX3 is required for admission, however PSYCH 1XX3 is recommended. Completion of either PSYCH 1F03 or 1X03 is required by the end of Level II but PSYCH 1X03 is recommended in Level I.

### ADMISSION

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

#### 3 UNITS

from the following courses, with a grade of at least B-

- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour

(See *Admission Note 2* above.)

#### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

#### 6 UNITS

- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity

#### 3 UNITS

from

- BIOPHYS 1S03 - Biophysics of Movement and the Senses: From Microbes to Moose
- CHEM 1A03 - Introductory Chemistry I
- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

(See *Admission Note 1* above.)

#### 9 UNITS

from

- the Science I Course List (See *Admission Notes* above.)

### PROGRAM NOTE

The Department of Psychology, Neuroscience & Behaviour pre-registration ballot will include the thesis course (PNB 4D09 A/B), and the Independent Research and Library courses (PNB 3Q03 A/B S, 3QM3 A/B S, 3QQ3 A/B S, 4Q03 A/B S, 4QQ3 A/B S). Students wishing to take these courses must complete and submit a ballot by **mid February**. Students will be informed of the outcome by **mid March**. Specific dates will be announced during the fall term. Ballots can be obtained from the Department of Psychology, Neuroscience & Behaviour web site at <http://pnb.mcmaster.ca/>.

### MENTAL HEALTH COURSE LIST

- HUMBEHV 3MD3 - Research Methods for Human Behaviour
- PNB 2A03 - Python for PNB
- PNB 3EE3 - Perception Laboratory
- PNB 3EV3 - Evolutionary Psychology Lab
- PNB 3I06 A/B - Practica in Psychology
- PNB 3L03 - Neurodevelopment & Plasticity Lab
- PNB 3MM3 - Cognitive Neuroscience Lab
- PNB 3S03 - Animal Behaviour Lab
- PNB 3V03 - Laboratory in Human Memory and Cognition
- PSYCH 3AB3 - Adolescent Psychology
- PSYCH 3AC3 - Human Sexuality
- PSYCH 3AG3 - Aging
- PSYCH 3BA3 - Positive Psychology
- PSYCH 3CC3 - Forensic Psychology
- PSYCH 3D03 - The Multisensory Mind
- PSYCH 3EV3 - Evolution and Mental Health
- PSYCH 3F03 - Evolution and Human Behaviour
- PSYCH 3H03 - The Arts and The Brain
- PSYCH 3JJ3 - Socio-Emotional Development
- PSYCH 3M03 - Motivation and Emotion
- PSYCH 3T03 - Behavioural Ecology
- PSYCH 3UU3 - Psychology of Language
- PSYCH 3VV3 - Human Memory
- PSYCH 4S03
- PSYCH 4Y03

### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

#### LEVEL II: 30 UNITS

18 units

- PNB 2XA3 - Human Perception & Cognition
- PNB 2XB3 - Neuroanatomy & Neurophysiology
- PNB 2XC3 - Animal Behaviour & Evolution
- PNB 2XD3 - Integrative PNB Through Scientific Writing
- PNB 2XE3 - Descriptive Statistics and Research Methods
- PNB 2XF3 - Perspectives in PNB
- PNB 2XT0 - PNB Tutorial

6 units

- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 2B03 - Personality

0-3 units

from the following courses, if not completed in Level I

- BIOPHYS 1S03 - Biophysics of Movement and the Senses: From Microbes to Moose
- CHEM 1A03 - Introductory Chemistry I
- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1B03
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1L03



(See *Admission Note 1* above.)

0-3 units

from the following courses, if not completed in Level I

- PSYCH 1F03 - Survey of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

(See *Admission Note 2* above.)

0-6 units

- Electives

**LEVEL III: 30 UNITS**

9 units

- PNB 3HP3 - History of Psychology
- PNB 3XE3 - Inferential Statistics and Research Methods
- PSYCH 3GG3 - Essentials of Developmental Psychology

3 units

from

- PNB 3EE3 - Perception Laboratory
- PNB 3EV3 - Evolutionary Psychology Lab
- PNB 3L03 - Neurodevelopment & Plasticity Lab
- PNB 3MM3 - Cognitive Neuroscience Lab
- PNB 3QM3 A/B S - Independent Research in Mental Health
- PNB 3S03 - Animal Behaviour Lab
- PNB 3V03 - Laboratory in Human Memory and Cognition

9 units

from

- the *Mental Health Course List*

9 units

- Electives

**LEVEL IV: 30 UNITS**

9 units

- PNB 4A03 - Assessment in Children
- PSYCH 3B03 - Special Populations
- PSYCH 3MT3 - Psychometrics

3 units

from

- the *Mental Health Course List*

9 units

- PNB 4D09 A/B - Senior Honours Thesis

(See *Program Note* above.)

9 units

- Electives

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2020**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)

**LEVEL II: 30 UNITS**

18 units

- PNB 2XA3 - Human Perception & Cognition
- PNB 2XB3 - Neuroanatomy & Neurophysiology
- PNB 2XC3 - Animal Behaviour & Evolution
- PNB 2XD3 - Integrative PNB Through Scientific Writing
- PNB 2XE3 - Descriptive Statistics and Research Methods
- PNB 2XF3 - Perspectives in PNB
- PNB 2XT0 - PNB Tutorial

6 units

- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 2B03 - Personality

0-3 units

from the following courses, if not completed in Level I

- BIOPHYS 1S03 - Biophysics of Movement and the Senses: From

Microbes to Moose

- CHEM 1A03 - Introductory Chemistry I
- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1B03
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1L03

(See *Admission Note 1* above.)

0-3 units

from the following courses, if not completed in Level I

- PSYCH 1F03 - Survey of Psychology or
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

(See *Admission Note 2* above.)

0-6 units

- Electives

**LEVEL III: 30 UNITS**

9 units

- PNB 3HP3 - History of Psychology
- PNB 3XE3 - Inferential Statistics and Research Methods
- PSYCH 3GG3 - Essentials of Developmental Psychology

3 units

from

- HUMBEHV 3MD3 - Research Methods for Human Behaviour
- PNB 3EE3 - Perception Laboratory
- PNB 3EV3 - Evolutionary Psychology Lab
- PNB 3L03 - Neurodevelopment & Plasticity Lab
- PNB 3MM3 - Cognitive Neuroscience Lab
- PNB 3QM3 A/B S - Independent Research in Mental Health
- PNB 3RM3
- PNB 3S03 - Animal Behaviour Lab
- PNB 3V03 - Laboratory in Human Memory and Cognition

9 units

from

- the *Mental Health Course List*

9 units

- Electives

**LEVEL IV: 30 UNITS**

9 units

- PNB 4A03 - Assessment in Children
- PSYCH 3B03 - Special Populations
- PSYCH 3MT3 - Psychometrics

3 units

from

- the *Mental Health Course List*

9 units

- PNB 4D09 A/B - Senior Honours Thesis

(See *Program Note* above.)

9 units

- Electives

**HONOURS PSYCHOLOGY, NEUROSCIENCE & BEHAVIOUR - MUSIC COGNITION SPECIALIZATION (B.SC.)**

**ADMISSION NOTES**

- Completion of CHEM 1A03 and one of BIOPHYS 1S03, PHYSICS 1A03, 1C03 is required by the end of Level III, however, at least one of BIOPHYS 1S03, CHEM 1A03, PHYSICS 1A03, 1C03 is required for admission. It is recommended that both CHEM 1A03 and one of BIOPHYS 1S03, PHYSICS 1A03, 1C03 be completed in Level I. Concepts from PHYSICS 1CC3 are particularly useful for understanding neuroscience, mathematical modelling, and perception. Students interested in these areas are encouraged to take PHYSICS 1C03 and

1CC3.

- MUSIC 1A03 or 1AA3 is required for admission, however, both are required for degree completion.
- Students who have completed Grade 3 History (History 1) or Grade 5 History (History 3) from the Royal Conservatory of Music, with a grade of at least 70%, are not required to complete MUSIC 1AA3, and those students who have similarly obtained at least 70% on RCM Grade 4 History (History 2) are not required to complete MUSIC 1A03 either for admission to the Music Cognition Specialization or to fulfill their degree requirements.
- Either PSYCH 1FF3 or 1XX3 is required for admission, however PSYCH 1XX3 is recommended. Completion of either PSYCH 1F03 or 1X03 is required by the end of Level II but PSYCH 1X03 is recommended in Level I.

### ADMISSION

**Enrolment in this program is limited** and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including:

#### 3 UNITS

from the following courses, with a grade of at least B-

- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour

(See *Admission Note 4* above.)

#### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I

#### 6 UNITS

- BIOLOGY 1A03 - Cellular and Molecular Biology
- BIOLOGY 1M03 - Biodiversity, Evolution and Humanity

#### 3 UNITS

from

- BIOPHYS 1S03 - Biophysics of Movement and the Senses: From Microbes to Moose
- CHEM 1A03 - Introductory Chemistry I
- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences

(See *Admission Note 1* above.)

#### 9 UNITS

from

- the Science I Course List (See *Admission Notes 1*, and *4* above.)

#### 3 UNITS

from

- MUSIC 1A03 - Introduction to the History of Music I
- MUSIC 1AA3 - Introduction to the History of Music II

(See *Admission Notes 2* and *3* above.)

### PROGRAM NOTES

- Entrance into MUSIC 1CB3 requires Advanced Rudiments (or Grade 2 Rudiments) from the Royal Conservatory of Music (a grade of 80% or above, within the last two years) or a grade of 70% or above on a qualifying music theory exam administered by the School of the Arts (SOTA). Appointments can be made with SOTA to write the exam on specific dates between February and May. The content of the exam is summarized at: <https://sota.humanities.mcmaster.ca/>. Students not meeting these requirements will be required to take MUSIC 1CR3 prior to MUSIC 1CB3.
- The Department of Psychology, Neuroscience & Behaviour pre-registration ballot will include the thesis courses (PNB 4D06 A/B, 4D09 A/B), and the Independent Research Library courses (PNB 3Q03 A/B S, 3Q03 A/B S, 4Q03 A/B S, 4Q03 A/B S). Students wishing to take

these courses must complete and submit a ballot by **mid February**. Students will be informed of the outcome by **mid March**. Specific dates will be announced during the fall term. Ballots can be obtained from the Department of Psychology, Neuroscience & Behaviour web site at <http://www.science.mcmaster.ca/pnb/>.

- PSYCH 3AB3, 3AC3, 3AG3, 3BA3, 3CB3, 3CD3 may only be used as electives.
- Both MUSIC 1A03 and 1AA3 must be completed for degree completion.
- Students are encouraged to complete both PSYCH 3A03 and 3H03 as part of the *Psychology Course List* requirement.

### CAPSTONE COURSE LIST

- MUSICCOG 4D06 A/B - Thesis in Music Cognition
- MUSICCOG 4Q03 A/B S - Experimental Laboratory in Music Cognition II
- PNB 4D06 A/B - Senior Thesis
- PNB 4J03 - Inquiry in Psychology, Neuroscience & Behaviour
- PNB 4Q03 A/B S - Senior Independent Library Study
- PNB 4Q03 A/B S - Senior Independent Research
- PNB 4SC6 A/B - Science Communication in the Behavioural Sciences

### PSYCHOLOGY COURSE LIST

- BIOLOGY 3P03 - Cell Physiology
- BIOLOGY 4T03 - Molecular and Cellular Neuroscience
- HTHSCI 4BB3 - Neuroimmunology
- HUMBEHV 3MD3 - Research Methods for Human Behaviour
- KINESIOL 3E03 - Neural Control of Human Movement
- LIFESCI 3BB3 - Neurobiology of Disease
- LIFESCI 3E03 - Reproductive Endocrinology
- LIFESCI 3K03 - Neural Control of Human Movement
- LINGUIST 2PS3 - Psycholinguistics
- LINGUIST 3C03 - Child Language Acquisition
- LINGUIST 3NL3 - Cognitive Neuroscience of Language
- MUSIC 2CB3 - Theory and Analysis III
- MUSIC 2MT3 - Introduction to the Practice of Music Therapy
- MUSIC 3MT3
- MUSICCOG 3Q03 A/B S - Experimental Laboratory in Music Cognition I
- NEUROSCI 3J03 - Visual Neuroscience
- NEUROSCI 3SN3 - Neural Circuits
- PNB 2A03 - Python for PNB
- all Level III and IV PNB courses, **and**,

### ALL LEVEL III AND IV PSYCH COURSES EXCEPT:

- PSYCH 3AB3 - Adolescent Psychology
- PSYCH 3AC3 - Human Sexuality
- PSYCH 3AG3 - Aging
- PSYCH 3BA3 - Positive Psychology
- PSYCH 3CB3 - Attitudes and Persuasion
- PSYCH 3CD3

### REQUIREMENTS

120 units total (Levels I to IV), of which no more than 48 units may be Level I

#### LEVEL I: 30 UNITS

30 units

(See *Admission* above.)

#### LEVEL II: 30 UNITS

18 units

- PNB 2XA3 - Human Perception & Cognition
- PNB 2XB3 - Neuroanatomy & Neurophysiology
- PNB 2XC3 - Animal Behaviour & Evolution
- PNB 2XD3 - Integrative PNB Through Scientific Writing
- PNB 2XE3 - Descriptive Statistics and Research Methods
- PNB 2XF3 - Perspectives in PNB
- PNB 2XT0 - PNB Tutorial

3 units

- MUSIC 1CB3 - Theory and Analysis I

(See *Program Note 1* above.)

3 units

- MUSICCOG 2MP3 - Introduction to Music Cognition

0-3 units

from the following courses, if not completed in Level I

- PSYCH 1F03 - Survey of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

(See *Admission Note 4* above.)

3-6 units

- Electives (See *Program Notes 1 and 4* above.)

**LEVEL III: 30 UNITS**

3 units

- PNB 3XE3 - Inferential Statistics and Research Methods

3 units

from

- MUSICCOG 3QQ3 A/B S - Experimental Laboratory in Music Cognition I
- PNB 3EE3 - Perception Laboratory
- PNB 3EV3 - Evolutionary Psychology Lab
- PNB 3L03 - Neurodevelopment & Plasticity Lab
- PNB 3MM3 - Cognitive Neuroscience Lab
- PNB 3QQ3 A/B S - Intermediate Independent Research
- PNB 3S03 - Animal Behaviour Lab
- PNB 3V03 - Laboratory in Human Memory and Cognition

3 units

from

- the *Psychology Course List* (See *Program Note 5* above.)

3 units

- MUSIC 2CA3 - Theory and Analysis II

3-6 units

from

- MUSICCOG 3MP3
- MUSICCOG 3SP3 - The Science of Performance
- MUSICCOG 4MP3 - Neuroscience of Music

0-3 units

from the following courses, if not completed in Level I

- BIOPHYS 1S03 - Biophysics of Movement and the Senses: From Microbes to Moose
- CHEM 1A03 - Introductory Chemistry I
- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1B03
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1L03

(See *Admission Note 1* above.)

9-15 units

- Electives (See *Program Notes 3 and 4* above.)

**LEVEL IV: 30 UNITS**

6 units

from

- the *Psychology Course List* (See *Program Note 5* above.)

0-3 units

from

- MUSICCOG 3MP3
- MUSICCOG 3SP3 - The Science of Performance
- MUSICCOG 4MP3 - Neuroscience of Music

9 units

- 6 units from the *Capstone Course List* and 3 units from the *Psychology Course List*

OR

- PNB 4D09 A/B - Senior Honours Thesis

12-15 units

- Electives (See *Program Notes 3 and 4* above.)

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2020**

*120 units total (Levels I to IV), of which no more than 48 units may be Level I*

**LEVEL I: 30 UNITS**

30 units

(See *Admission* above.)

**LEVEL II: 30 UNITS**

18 units

- PNB 2XA3 - Human Perception & Cognition
- PNB 2XB3 - Neuroanatomy & Neurophysiology
- PNB 2XC3 - Animal Behaviour & Evolution
- PNB 2XD3 - Integrative PNB Through Scientific Writing
- PNB 2XE3 - Descriptive Statistics and Research Methods
- PNB 2XF3 - Perspectives in PNB
- PNB 2XT0 - PNB Tutorial

6 units

- MUSIC 1CA3
- MUSIC 1CB3 - Theory and Analysis I

3 units

- MUSICCOG 2MP3 - Introduction to Music Cognition

0-3 units

from the following courses, if not completed in Level I

- PSYCH 1F03 - Survey of Psychology or
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

(See *Admission Note 4* above.)

0-3 units

- Electives (See *Program Notes 1 and 4* above.)

**LEVEL III: 30 UNITS**

3 units

- PNB 3XE3 - Inferential Statistics and Research Methods

3 units

from

- HUMBEHV 3MD3 - Research Methods for Human Behaviour
- MUSICCOG 3QQ3 A/B S - Experimental Laboratory in Music Cognition I
- PNB 3EE3 - Perception Laboratory
- PNB 3EV3 - Evolutionary Psychology Lab
- PNB 3L03 - Neurodevelopment & Plasticity Lab
- PNB 3MM3 - Cognitive Neuroscience Lab
- PNB 3QQ3 A/B S - Intermediate Independent Research
- PNB 3RM3
- PNB 3S03 - Animal Behaviour Lab
- PNB 3V03 - Laboratory in Human Memory and Cognition

3 units

from

- the *Psychology Course List* (See *Program Note 5* above.)

3 units

- MUSIC 2CA3 - Theory and Analysis II

3-6 units

from

- MUSICCOG 3MP3
- MUSICCOG 3SP3 - The Science of Performance
- MUSICCOG 4MP3 - Neuroscience of Music

0-3 units

from the following courses, if not completed in Level I

- BIOPHYS 1S03 - Biophysics of Movement and the Senses: From Microbes to Moose
- CHEM 1A03 - Introductory Chemistry I
- PHYSICS 1A03 - Introductory Physics
- PHYSICS 1B03
- PHYSICS 1C03 - Physics for the Chemical and Physical Sciences
- PHYSICS 1L03

(See *Admission Note 1* above.)

9-15 units

- Electives (See *Program Notes 3* and *4* above.)

**LEVEL IV: 30 UNITS**

6 units

from

- the *Psychology Course List* (See *Program Note 5* above.)

0-3 units

from

- MUSICCOG 3MP3
- MUSICCOG 3SP3 - The Science of Performance
- MUSICCOG 4MP3 - Neuroscience of Music

9 units

- 6 units from the *Capstone Course List* and 3 units from the *Psychology Course List*

OR

- PNB 4D09 A/B - Senior Honours Thesis

12-15 units

- Electives (See *Program Notes 3* and *4* above.)

## Minor(s):

### MINOR IN PSYCHOLOGY

#### NOTES

- **As all courses have enrolment capacities, the Faculty cannot guarantee registration in courses, even when prerequisites have been met. Completion of the Minor in Psychology may not be possible.**
- When choosing Level II courses students should consider the prerequisites for Level III courses.
- ISCI 1A24 A/B is a substitution for three units of Level I PSYCH toward the Minor in Psychology.
- ISCI 2A18 A/B is a substitution for 3 units of Level II PSYCH toward the Minor in Psychology.
- In order to declare a Minor in Psychology, at least 12 units (above Level I) must be elective to degree.
- HTHSCI 1G03 is a substitution for PSYCH 1FF3 or 1XX3.

#### REQUIREMENTS

*24 units total*

#### 3 UNITS

from

- PSYCH 1F03 - Survey of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

#### 21 UNITS

- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour
- Levels II, III Psychology courses including at least six units from Level III Psychology courses

## Faculty of Social Sciences

Kenneth Taylor Hall, Room 129, ext. 23772

<http://socialsciences.mcmaster.ca/contact-us>

[socscfac@mcmaster.ca](mailto:socscfac@mcmaster.ca)

DEAN OF SOCIAL SCIENCES

**J. Hurley**/B.A., M.A., Ph.D.

ASSOCIATE DEAN (ACADEMIC)

**T. Prowse**/B.Sc., M.A., Ph.D.

ASSOCIATE DEAN, (GRADUATE STUDIES AND RESEARCH)

**J. Gillett**/B.A., M.A., Ph.D.

ASSISTANT DEAN (ACADEMIC)

**L. Giordano**/B.A.

ACADEMIC ADVISORS

**K. Cale**/B.A.

**T. Horton**

**T. Marrin**/B.A.

**W. Spencer**/B.A.

PROGRAM COORDINATOR

**M. Bregar**/BA

PROGRAMMING AND OUTREACH MANAGERS

**C. Foley**/B.A.

**K. Long**/B.A.

**R. Talbot**/B.A.

MANAGER OF RECRUITMENT

**E. Way**/B.A.

The Faculty offers a range of degree programs through the following Departments/Programs/Schools:

- Aging and Society
- Anthropology
- Economics
- Environment and Society
- Health and Society
- Indigenous Studies
- Labour Studies
- Political Science
- Psychology, Neuroscience and Behaviour
- Religious Studies/ Society, Culture & Religion
- Social Psychology
- Social Work
- Sociology

The social sciences are concerned with the study of human activities and relationships and their social, political, economic, cultural and spatial contexts.

Through the pre-industrial to the post-industrial eras, social scientists examine social, economic, cultural and political issues experienced by individuals, groups, and societies as well as the interactions between people and their environments, both natural and built.

There are various opportunities for students to link their academic goals with their career interests. These experiential education initiatives include, but are not limited to, inquiry, internships, academic placements, a career planning course, student project grants, and undergraduate summer research awards. Students are strongly advised to take advantage of the extensive advisory services provided by the Faculty. New students in particular should plan a program of study that will allow them a number of options for Level II.

The Faculty of Social Sciences encourages students to become engaged in a wide variety of learning opportunities. These experiences can enrich learning, open new fields of study, and build transferable skills that prepare you for further academic work and for a range of careers.



## Degree Programs

### HONOURS PROGRAMS (HONOURS BACHELOR OF ARTS)

Honours Bachelor of Arts programs consist of a total of 120 units of work normally completed over four years. Honours programs provide a concentration in the particular field, as well as an extended time of study, and are normally a requirement for those who contemplate proceeding to graduate studies.

### COMBINED HONOURS BACHELOR OF ARTS PROGRAMS

Subject to possible timetable restrictions, and provided that the student meets the requirements for entry into each of the relevant Honours programs, a student may combine work in any two departments and be graduated with a Combined Honours degree. These combinations are available within the Faculty, with programs in the Faculty of Humanities, and with the Arts and Science Program. All Combined Honours programs must be approved by both Departments concerned as well as by the Office of the Associate Dean(s) Studies. Students will normally complete approximately 36 units of work beyond Level I in each component of the program (normally 12 units per level in each subject). The Honours B.A. Social Psychology and Honours Bachelor of Social Work programs are not available in combination with another subject.

### HONOURS BACHELOR OF SOCIAL WORK (B.S.W.)

The Honours Bachelor of Social Work (Honours B.S.W.) program is a professional Honours program consisting of 120 units of work, typically completed over four years. Students who have already received one or more undergraduate degrees may apply to the Bachelor of Social Work (B.S.W.) program consisting of 60 units of work, typically completed over two years.

### BACHELOR OF ARTS PROGRAMS:

B.A. programs consist of a total of 90 units of work, normally completed over three years. Three-level Combined Bachelor's degree programs are available only in Indigenous Studies and Another Subject. The other subject may be from the Faculty of Social Sciences or the Faculty of Humanities.

## Options to Combine with a Degree

### MINOR

A Minor is an option available to students enrolled in a four- or five-level program. Normally students must complete a minimum of 24 units in the Minor subject. Students are responsible for ensuring that the courses taken meet the requirements for a Minor. Students who have the necessary requirements may apply for recognition of that Minor when they graduate. If granted, this recognition will be recorded on the student's transcript.

Within the Faculty of Social Sciences, Minors are available to students registered in an Honours program provided that the subject area of the Minor is not integral to the requirements of their degree program. At least 12 units (above Level 1) toward the Minor must be considered elective to the degree. Please see Minors in the General Academic Regulations section of this Calendar for further information. All courses have an enrolment capacity and the Faculty cannot guarantee registration in courses, even when all requisites have been met. Therefore, the completion of a Minor is not guaranteed.

Minors offered by the Faculty of Social Sciences include:

- Anthropology
- Asian Studies
- Economics
- Diversity and Equity
- Gender, Sexualities, and Families
- Health, Aging and Society
- Health, Well-Being and Religion
- Immigration, Race Relations, and Indigenous-Settler Relations
- Indigenous Studies
- Japanese Studies
- Justice, Law and Order
- Labour Studies
- Mental Health, Addiction and Society

- Political Science
- Public Leadership
- Religion and Diversity
- Society, Culture, Religion
- Sociology

Interdisciplinary Studies Minors administered by Departments in the Faculty of Social Sciences include:

- Archaeology
- Community Engagement
- Globalization Studies
- Jewish Studies
- Muslim Studies
- Social Justice and Inclusive Communities

Students may complete Minors offered by other Faculties as well and are encouraged to consider Minors that will complement their degree studies.

### AFFILIATED CERTIFICATES

Students enrolled in a three- or four-year undergraduate degree program in the Faculty of Social Sciences have the opportunity to take Social Sciences courses in the complementary fields of Business Studies, Leadership and Management in the Not-for-Profit Sector or Applied Behaviour Analysis (ABA). Students enrolled in a three-year degree program may take a maximum of six of these courses and students enrolled in a four-year degree program may take a maximum of eight of these courses. Students who have the necessary requirements (completed a prescribed set of 18 units) may apply to have their courses recognized by Mohawk College for the awarding of the applicable certificate when they graduate with their McMaster degree. If granted, this Certificate will be issued by Mohawk College.

In the final year of your program, when you complete your profile in the online Graduation Information Centre, you must indicate your desire to receive the affiliated certificate. The Faculty Reviewing Committee will verify that the requirements have been met. If you are successful, your transcript will confirm completion. In order to facilitate preparation of the Certificate by Mohawk College in time for Convocation, limited personal information and relevant course completions will be provided to Mohawk College for all eligible students prior to completion of the Graduation Profile. Students who do not want this information shared with Mohawk College should inform the University Registrar by email at [convctn@mcmaster.ca](mailto:convctn@mcmaster.ca). See *Sessional Dates* section for deadlines.

### CONCURRENT CERTIFICATES

Concurrent Certificates are open to undergraduate students at McMaster. These certificates are designed to fill a critical need for undergraduate students to learn about and develop professional skills that are highly desirable for the pursuit of graduate programs, professional programs, and employment opportunities following undergraduate studies. Normally students must complete a minimum of 15 to 18 units of course requirements. Concurrent certificates may include co-curricular activities to complement the academic requirements. Please see Concurrent Certificates in the Certificates and Diploma Programs section of this Calendar for further information.

### INTERNSHIP OPTIONS

The Faculty of Social Sciences offers paid internship opportunities during the academic year and summer. Internship placements provide students with intense work experiences and allow students to explore careers, develop employability skills and make important contacts for both now and after graduation.

Internships are recognized as non-credit course codes on the student transcript. Full-time internships are noted as SOCSCI 3IF0 A/B S and part-time internships are noted as SOCSCI 3IPO A/B S. Students do not receive academic credit for completing an internship placement. However, upon successful completion, a notation describing the placement is also recorded on the student's official transcript.

Further details of internship options may be obtained from:

### Programming and Outreach Manager

Kenneth Taylor Hall, Room 129  
(905) 525-9140, extension 21207  
email: exp.ed@mcmaster.ca

## Academic Regulations

### STUDENT ACADEMIC RESPONSIBILITY

You are responsible for adhering to the statement on student academic responsibility found in the General Academic Regulations of this calendar.

### ACCESS TO COURSES

All undergraduate courses at McMaster have an enrolment capacity. The University is committed to making every effort to accommodate students in required courses so that their program of study is not extended. Unless otherwise specified, registration is on a first-come basis and in some cases priority is given to students from particular programs or Faculties. Students will be informed of their enrolment periods and are encouraged to enroll as soon as online enrolment is available to them in the Student Centre in Mosaic.

### STUDENT COMMUNICATION RESPONSIBILITY

It is the student's responsibility to:

- maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- use the university provided e-mail address or maintain a valid forwarding e-mail address.
- regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.
- accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.

*Students enrolled in a program in the Faculty of Social Sciences, in addition to meeting the General Academic Regulations of the University, shall be subject to the following regulations of the Faculty of Social Sciences.*

### APPLYING FOR ADMISSION TO LEVEL II PROGRAMS

Any student seeking admission to a Level II program in the Faculty of Social Sciences for the following Fall/Winter session must submit an Application for Admission to Level II through the *Mosaic* Student Centre ("My Academics"; Program/Plan Selection application) no later than **April 30**. Students who have completed a minimum of 24 units in Level I will be eligible to apply for a Level II program (subject to meeting program requirements). The application allows students to rank four program choices, in order of preference. Students are advised to rank program choices carefully, especially when seeking admission to limited enrolment programs. If admitted to the first program choice, admission to other program choices will not be evaluated. If a student is not admitted for the first program, the second program choice will be evaluated, followed by third and then fourth choices. Students ineligible for an Honours-level program of choice will be considered for the corresponding B.A. program. Students must check the *Mosaic* Student Centre in late May to confirm their program for the following Fall and Winter terms.

Students applying to the Honours B.S.W. program must also apply directly to the School of Social Work **February 1**, and must refer to department admission notes.

### LIMITED ENROLMENT PROGRAMS

Admission at Level II (and above) is limited for the following programs. Possession of the published minimum requirements does not guarantee admission.

- All Honours Bachelor of Social Work and Bachelor of Social Work programs
- All Honours Aging and Society programs

- All Honours Health and Society programs
- All Honours Labour Studies programs
- All Honours Psychology, Neuroscience & Behaviour (B.A.) programs
- Honours Social Psychology
- Honours Political Science Specialization in Global Citizenship
- Honours Political Science Specialization in Public Law and Judicial Studies
- B.A. Health, Aging & Society

### MINIMUM REQUIREMENTS FOR ENTERING AND CONTINUING IN A PROGRAM BEYOND LEVEL I

#### HONOURS B.A. PROGRAMS:

You must have a Grade Point Average (GPA) of at least 5.0 to continue in an Honours B.A. program. If your GPA is 4.5 to 4.9, you may remain in the Honours program, but will be placed on program probation for one reviewing period. You may be on program probation only once. If your GPA is 3.0 to 4.4, you must transfer to another B.A. program for which you qualify. If your GPA is less than 3.0, you may not continue at the University.

#### HONOURS B.S.W., B.A./B.S.W. AND B.S.W. PROGRAMS:

To continue in an Honours B.S.W., or B.S.W program, you must have a Grade Point Average (GPA) of at least 6.0, and achieve **at least the minimum grade** in all Social Work courses as listed the program notes for *Progression Within Program* in the Honours Bachelor of Social Work (B.S.W.), or the Bachelor of Social Work (B.S.W.). If your GPA is 5.5 to 5.9, you may remain in the program, but will be placed on program probation for one reviewing period. You may be on program probation only once. If your GPA is 3.0 to 5.4, you must transfer to another program for which you qualify. If your GPA is less than 3.0, you may not continue at the University.

#### B.A. PROGRAMS:

You must have a Grade Point Average (GPA) of at least 3.5 to continue in, or graduate from, a three-level B.A. program. If your GPA is 3.0 to 3.4, you may remain in the program, but will be placed on academic probation. You may be on academic probation only once. If your GPA is less than 3.0, you may not continue at the University.

### TRANSFERRING TO HONOURS B.A. PROGRAMS BEYOND LEVEL II

Students who are not admissible to an Honours program from Level I to Level II, may request admission for the following Fall/Winter academic session. Program entry requirements and academic requirements for continuation at the level for which application is made, must be met. Transfer requests must be submitted through the *Mosaic* Student Centre (Service Request application) **by March 30**.

### GRADUATION

#### FROM HONOURS B.A. AND B.A. PROGRAMS

To graduate from a program, students must meet all course requirements for their degree program. The requirements for graduation from these programs are described under the heading Graduation in the General Academic Regulations section in this Calendar.

#### TRANSFERRING TO GRADUATE WITH A THREE-LEVEL B.A. DEGREE FROM AN HONOURS B.A. PROGRAM

Students who successfully complete at least 90 units including all expected course requirements up to the end of Level III of any Honours B.A. degree, with a minimum Grade Point Average of 3.5 may request permission from the Office of the Associate Dean of Social Sciences (Studies) to transfer to graduate with the corresponding three-level B.A. degree. Students enrolled in Honours Social Psychology may be given the option of either transferring to graduate with a B.A. in Psychology or a B.A. in Sociology based on the degree that is most relevant to the subject concentration and for which they meet all the degree requirements.

Students who do not qualify for a specific three-level B.A. degree may petition to the Office of the Associate Dean to be considered to graduate with a Social Sciences B.A. (General) exit degree.

All requests to transfer to graduate must be submitted to the Office of the

Associate Dean of Social Sciences by April 15th for the Spring Convocation and by September 1st for the Fall Convocation.

#### LETTER OF PERMISSION COURSES TO GRADUATE

Students taking the final courses for completion of their degree program on a Letter of Permission at another university must ensure that the official transcripts are sent to the Office of the Associate Dean of Social Sciences at McMaster University. For students expecting to graduate at the Spring Convocation, transcripts must be received by May 15 and for Fall convocation, by September 30.

#### TRANSFERS TO THE FACULTY OF SOCIAL SCIENCES

Students from other Faculties are able to transfer to degree programs offered by the Faculty of Social Sciences provided they have obtained a Grade Point Average of at least 3.5 and have completed the necessary program admission requirements. Students approved to transfer to the Faculty of Social Sciences may be required to fulfill additional requirements at the time of admission. Failure to comply with these conditions may result in an academic standing of *May Not Continue in Faculty* at the following reviewing period.

#### REINSTATEMENT

A student who may not continue at the University may apply for reinstatement. Application for reinstatement must be made to the Office of the Registrar using the Reinstatement Request Form by the application deadline for the session. See the *Application Procedures* section of this Calendar. Reinstatement forms will be carefully reviewed and the evidence considered will include the student's academic performance before and after admission to McMaster, a letter of explanation and documentation of any extenuating circumstances.

**Reinstatement is not automatic or guaranteed. Decisions are normally made after June 30 for September entry. The Grade Point Average for students who are reinstated is reset to 0.0 on zero units. Credit is retained for courses in which passing grades have been achieved.**

**NOTE: If at a review after reinstatement the Grade Point Average falls below 3.5, the student will be required to withdraw from the University for a period of at least 12 months.**

Failure to comply with the conditions outlined at the time of reinstatement may result in withdrawal from the university at the following reviewing period.

#### DEADLINES

The Faculty of Social Sciences will not consider applications for admission, admission to a second degree or continuing studies, reinstatement, registration, or dropping and adding of courses after the deadlines stated in this Calendar under Sessional Dates and Application Procedures, unless written documentation is provided showing good cause, as determined by the Faculty.

#### ACADEMIC BREADTH REQUIREMENT

The Faculty of Social Sciences encourages all of its students to embrace academic breadth in both knowledge and skills. Therefore, every Social Sciences student is required to successfully complete at least 6 units of course work outside of their department/discipline(s) of study to satisfy degree requirements. These course units must be over and above the 30 units required for Level I Social Sciences.

#### ACADEMIC ADVISING

The aim of academic advising is to help students tailor a program of studies to fit their interests. Advising also involves reviewing these interests from time to time to accommodate changing plans, needs and academic performance. Advising is available throughout the year from the Office of the Associate Dean of Social Sciences and the departments or academic units in the Faculty of Social Sciences. It is strongly recommended that students consult with a Departmental Undergraduate Advisor during March in conjunction with the Level II program application.

#### AWARDS

For conditions and terms of awards for full-time and part-time students, please refer to the Undergraduate Academic Awards section of this Calendar.

#### COURSE SELECTION AND COURSE CHANGES

Students are responsible for ensuring that their course selection meets the requirements of the degree program in which they are enrolled, that prerequisites have been met, and that, where necessary, permission to take courses has been obtained. They should review their personal academic advisement report on Mosaic each time they drop, cancel or add courses, and contact an Academic Advisor if they have questions, **particularly if the advisement report shows unused courses**. Students should also be aware that changes to their course load may affect their fees and their eligibility for scholarships or sources of financial aid such as OSAP

#### OVERLOAD

Normally students may not register in more than 30 units during the Fall/Winter Term. In the following circumstances an overload of up to six units may be taken:

- if a student has a Fall-Winter Average of at least 7.0 in the immediately preceding review period.
- if the student is registered in the final level of his/her program.

Students wishing to register in more than 12 units during the Spring/Summer term, or more than six units in either term of that term may do so only with permission. Requests to enroll in an overload of units should be directed to the Office the Associate Dean, Social Sciences.

#### WITHDRAWAL

Students who wish to withdraw from the University may cancel courses on *Mosaic* and must surrender their McMaster Identification Card validation sticker to the Financial Services Office to ensure the processing of any fee refunds. Students who fail to withdraw formally from any course(s) by the stated deadlines will remain registered whether or not they attend classes and will be assigned a grade.

#### LETTER OF PERMISSION

Students in good academic standing who wish to attend another university to take courses for credit toward a McMaster degree must first request a Letter of Permission from the Office of the Associate Dean. The request should be initiated through the *Student Centre* in *Mosaic*. Students should take note of any conditions on the Letter of Permission that might apply, including the requirement of a grade of at least C- for transfer credit. Courses taken at another university cannot be used to satisfy the university's minimum residence requirements, will not be included in the calculation of the Grade Point Average at McMaster average, and therefore cannot be used to raise standing. The transcript designations will read T, indicating *Transfer*, when a grade of C- or better is attained or NC indicating not complete if less than a C- grade is obtained.

Students must ensure that the official transcripts for completed courses are sent to the Office of the Associate Dean. Students expecting to graduate upon completion of a course on Letter of Permission should refer to the heading Letter of Permission Courses to Graduate.

Students who choose not to use the Letter of Permission or cancel the course(s), must supply the Associate Dean's Office with a transcript showing the cancelled course, or a certified letter from the host university, confirming that the student was not registered for the courses and session.

#### NON-ACADEMIC REQUIREMENTS

Some courses, and many important extra-curricular opportunities for students in the Faculty of Social Sciences, require students to have cleared police criminal checks which can be obtained through Hamilton-Wentworth Police Services. Additionally, students may be required to pass TB tests and have immunization for some contagious diseases. Costs related to these requirements are the responsibility of the student.

#### SOCIAL SCIENCES STUDY ABROAD

Formal Student Exchange Programs are those where McMaster University has an agreement with another institution involving a temporary exchange of students. Exchange students register at and pay tuition fees and supplementary fees to McMaster. No tuition is paid to the other institution. McMaster

University has an array of international partnerships with institutions in other countries including Australia, France and the United Kingdom to provide students the opportunity to participate in an exchange program for one year or a term. Exchanges allow students to gain a varied perspective on their course of study and enhance their professional and personal goals.

#### ELIGIBILITY FOR STUDY ABROAD

Students registered in any Honours or Combined Honours program in the Faculty of Social Sciences may apply to replace all or part of the work of their third year with an acceptable program of study taken at an approved university. To be eligible to take part in this program, students must have completed at least 60 units of work with a Grade Point Average of at least 7.0. All requirements must be satisfied by the end of the Fall/Winter session (September-April) preceding the commencement of study elsewhere. Students may receive up to 30 units of credit for a full year of study at another institution. The awarding of transfer credit for work completed elsewhere may be confirmed only after the Office of the Associate Dean (Studies) has received transcripts and reviewed students' academic achievements following their return.

#### APPLICATION FOR STUDY ABROAD

Students interested in applying for this program should consult the International Student Services Office and the Faculty of Social Sciences Exchange Advisor, approximately one year before they anticipate studying abroad. Application deadlines are usually in January, although applications for some exchanges may be due as early as December. Acceptance to the Ontario and University-wide Exchange Programs is by application and recommendation. For further information please see *International Study* in the *General Academic Regulations* section in this Calendar. Information concerning student exchanges can also be found in the *Academic Facilities, Student Services and Organizations* section of this Calendar under the heading International Student Services.

#### International Student Services (ISS)

Gilmour Hall, Room 110

Telephone: (905) 525-9140, extension 24748

Web Address: <https://iss.mcmaster.ca/>

## Level I Programs

The Faculty of Social Sciences offers the following Level I program leading to the Honours Bachelor of Arts and Bachelor of Arts degrees:

- Social Sciences I

Review of the Admission Requirements of Level II programs and successful completion of required courses in Level I will allow students a range of Level II program options including those from within their chosen program as well as the others.

Additionally, effective September 2019, the Faculty will offer the following direct-entry Level I programs leading to the Honours Bachelor of Arts and Bachelor of Arts degrees:

- Economics I
- Honours Health and Society I

## Bachelor of Arts (Honours)

### ECONOMICS I

#### REQUIREMENTS

30 units total

#### 6 UNITS

- ECON 1B03 - Introductory Microeconomics
- ECON 1BA3 - Introductory Macroeconomics for Economics students

#### 0-3 UNITS

- MATH 1F03 - Introduction to Calculus and Analytic Geometry (*if Grade 12 Calculus and Vectors U has not been completed*)

#### 0-3 UNITS

- STATS 1L03 - Probability and Linear Algebra (*if Grade 12 Mathematics of Data Management U has not been completed*)

#### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1M03 - Calculus for Business, Humanities and the Social Sciences

#### 6-9 UNITS

from

- *Course List*

#### 12 UNITS

Electives, which may include courses from the *Course List* below. See also the *Elective Courses Available To Level I Students* page.

#### COURSE LIST

- ANTHROP 1AA3 - Introduction to Anthropology: Sex, Food and Death
- ANTHROP 1AB3 - Introduction to Anthropology: Race, Religion, and Conflict
- CAYUGA 1Z03 - Introduction to Cayuga Language and Culture
- ENVSOCY 1HA3 - Society, Culture and Environment
- ENVSOCY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3
- GLOBALZN 1A03 - Global Citizenship
- HLTHAGE 1AA3 - Introduction to Health and Society
- HLTHAGE 1BB3 - Introduction to Aging and Society
- HLTHAGE 1CC3 - Introduction to Mental Health and Illness
- INDIGST 1A03 - Introduction to Indigenous Studies
- INDIGST 1AA3 - Introduction to Contemporary Indigenous Studies
- INUKTUT 1Z03 - Introduction to Inuit Language and Culture
- LABRST 1A03
- INDIGST 1B03 - Reconciling What? Indigenous Relations in Canada
- LABRST 1C03
- LABRST 1D03 - Will Robots Take All Our Jobs?
- LABRST 1E03 - Navigating the World of Work
- MOHAWK 1Z03 - Introduction to Mohawk Language and Culture
- OJIBWE 1Z03 - Introduction to Ojibwe Language and Culture
- POLSCI 1AA3 - Government, Politics, and Power
- POLSCI 1AB3 - Politics and Power in a Globalizing World
- PSYCH 1F03 - Survey of Psychology
- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour
- RECONCIL 1A03
- RELIGST 1J03
- RELIGST 1L03
- RELIGST 1R03
- SCAR 1B03 - What on Earth is Religion?
- SCAR 1R03 - Introduction to Anthropology: Race, Religion and Conflict
- SCAR 1SC3 - The Big Questions: Introduction to Society, Culture & Religion
- SOCPSY 1Z03 - An Introduction to Social Psychology
- SOCWORK 1AA3 - So You Think You Can Help? Introduction to Social Work I
- SOCWORK 1BB3 - Re-Imagining Help: Introduction to Social Work II
- SOCIOL 1C03 - Canadian Society: Social Problems, Social Policy, and the Law



- SOCIOL 1Z03 - An Introduction to Sociology
- SOCSCI 1RM3 - How do we Know? Doing Social Sciences Research
- SOCSCI 1SS3 - Inquiry in the Social Sciences
- SOCSCI 1T03 - Life, the University, and Everything

## HONOURS HEALTH AND SOCIETY I

### PROGRAM NOTE

#### Enrolment in this program is limited.

- As places in the Honours Health and Society I program are limited, admission is by selection, and possession of the minimum requirements does not guarantee admission.

### REQUIREMENTS

30 units total

#### 9 UNITS

- HLTHAGE 1BB3 - Introduction to Aging and Society
- HLTHAGE 1CC3 - Introduction to Mental Health and Illness
- HLTHAGE 1ZZ3 - Inquiry: Introduction to Health and Society

#### 9 UNITS

from

- *Course List*

#### 12 UNITS

Electives, which may include courses from the *Course List* below. Also see the *Elective Courses Available To Level I Students* page.

### COURSE LIST

- ANTHROP 1AA3 - Introduction to Anthropology: Sex, Food and Death
- ANTHROP 1AB3 - Introduction to Anthropology: Race, Religion, and Conflict
- CAYUGA 1Z03 - Introduction to Cayuga Language and Culture
- ENVSOCY 1HA3 - Society, Culture and Environment
- ENVSOCY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3
- GLOBALZN 1A03 - Global Citizenship
- INDIGST 1A03 - Introduction to Indigenous Studies
- INDIGST 1AA3 - Introduction to Contemporary Indigenous Studies
- INDIGST 1B03 - Reconciling What? Indigenous Relations in Canada
- INUKTUT 1Z03 - Introduction to Inuit Language and Culture
- LABRST 1A03
- LABRST 1C03
- LABRST 1D03 - Will Robots Take All Our Jobs?
- LABRST 1E03 - Navigating the World of Work
- MOHAWK 1Z03 - Introduction to Mohawk Language and Culture
- OJIBWE 1Z03 - Introduction to Ojibwe Language and Culture
- POLSCI 1AA3 - Government, Politics, and Power
- POLSCI 1AB3 - Politics and Power in a Globalizing World
- PSYCH 1F03 - Survey of Psychology
- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour
- RECONCIL 1A03
- RELIGST 1J03
- RELIGST 1L03
- REGLIST 1R03
- SCAR 1B03 - What on Earth is Religion?
- SCAR 1R03 - Introduction to Anthropology: Race, Religion and Conflict
- SCAR 1SC3 - The Big Questions: Introduction to Society, Culture & Religion
- SOCPSY 1Z03 - An Introduction to Social Psychology
- SOCWORK 1AA3 - So You Think You Can Help? Introduction to Social Work I

- SOCWORK 1BB3 - Re-Imagining Help: Introduction to Social Work II
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- SOCIOL 1Z03 - An Introduction to Sociology
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- SOCSCI 1SS3 - Inquiry in the Social Sciences
- SOCSCI 1T03 - Life, the University, and Everything

## SOCIAL SCIENCES I

### PROGRAM NOTES

- A full course load for Social Sciences I is 30 units. (The unit value of a course is determined by the last number of the course code. 3-unit courses are normally one term in duration and offered either September to December or January to April. 6-unit A/B courses are typically taught over two terms, from September to April.)
- Students who have completed a minimum of 24 units in Social Sciences I will be eligible to apply for a Level II program (subject to program requirements).
- Students should select courses based on their academic interests and anticipated Level II program of study. Elective courses may be taken from other Faculties, where requisites are met. Admission to a Level II program typically requires completion of three to six units of the subject in Level I, with an applicable Grade Point Average. Students should consult the admission statements for relevant Level II programs when selecting their Level I courses.
- Social Sciences I students are permitted to take up to 9 units of course work in any single subject.

### COURSE LIST 1

The following Social Sciences courses provide entry into a Level II program.

- ANTHROP 1AA3 - Introduction to Anthropology: Sex, Food and Death
- ANTHROP 1AB3 - Introduction to Anthropology: Race, Religion, and Conflict
- ECON 1B03 - Introductory Microeconomics
- ECON 1BB3 - Introductory Macroeconomics
- ENVSOCY 1HA3 - Society, Culture and Environment
- ENVSOCY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3
- HLTHAGE 1AA3 - Introduction to Health and Society
- HLTHAGE 1BB3 - Introduction to Aging and Society
- HLTHAGE 1CC3 - Introduction to Mental Health and Illness
- INDIGST 1A03 - Introduction to Indigenous Studies
- INDIGST 1AA3 - Introduction to Contemporary Indigenous Studies
- INDIGST 1B03 - Reconciling What? Indigenous Relations in Canada
- LABRST 1A03
- LABRST 1C03
- LABRST 1D03 - Will Robots Take All Our Jobs?
- LABRST 1E03 - Navigating the World of Work
- POLSCI 1AA3 - Government, Politics, and Power
- POLSCI 1AB3 - Politics and Power in a Globalizing World
- PSYCH 1F03 - Survey of Psychology
- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour
- RECONCIL 1A03
- RELIGST 1J03
- RELIGST 1L03
- REGLIST 1R03
- SCAR 1B03 - What on Earth is Religion?
- SCAR 1R03 - Introduction to Anthropology: Race, Religion and Conflict

- SCAR 1SC3 - The Big Questions: Introduction to Society, Culture & Religion
- SOCPSY 1Z03 - An Introduction to Social Psychology
- SOCWORK 1AA3 - So You Think You Can Help? Introduction to Social Work I
- SOCWORK 1BB3 - Re-Imagining Help: Introduction to Social Work II
- SOCIOL 1Z03 - An Introduction to Sociology

**COURSE LIST 2**

The following Social Sciences courses are also available but do not provide entry into a Level II program.

- CAYUGA 1Z03 - Introduction to Cayuga Language and Culture
- GLOBALZN 1A03 - Global Citizenship
- INUKTUT 1Z03 - Introduction to Inuit Language and Culture
- MOHAWK 1Z03 - Introduction to Mohawk Language and Culture
- OJIBWE 1Z03 - Introduction to Ojibwe Language and Culture
- SOCIOL 1C03 - Canadian Society: Social Problems, Social Policy, and the Law
- SOCSCI 1RM3 - How do we Know? Doing Social Sciences Research
- SOCSCI 1SS3 - Inquiry in the Social Sciences
- SOCSCI 1T03 - Life, the University, and Everything

**REQUIREMENTS: 30 UNITS****18 UNITS**

from

- *Course List 1* and *Course List 2*

**12 UNITS**

Electives, which may include courses from *Course List 1* and *2*. (See the Degrees and Programs: Duration in Years section of this Calendar for a list of elective courses available to Level I students)

## Department of Anthropology

<http://www.anthropology.mcmaster.ca>

**Faculty as of January 15, 2020**CHAIR**Tina Moffat**PROFESSORS

**Ellen Badone**/(*Religious Studies*)B.A., M.A. (*Toronto*), Ph.D. (*California-Berkeley*)

**Megan Brickley**/B.A. (*Birmingham*), M.Sc. (*Univ. College London*), Ph.D. (*Birmingham*)/ Canada Research Chair in Bioarchaeology of Human Disease

**Aubrey Cannon**/B.A. (*Simon Fraser*), Ph.D. (*Cambridge*)

**John J. Colarusso**/(*Linguistics and Languages*)B.A. (*Cornell*), M.A. (*Northwestern*), Ph.D. (*Harvard*)

**Hendrik Poinar**/(*Biochemistry & Biomedical Sciences*)B.Sc., M.Sc. (*California*), Ph.D. (*Munich*)

**Petra Rethmann**/B.A. (*Vienna*), M.A. (*Munich*), Ph.D. (*McGill*)

ASSOCIATE PROFESSORS

**Crystal Biruk**/B.A. (*Bryn Mawr College, Bryn Mawr*), Ph.D. (*Pennsylvania*)

**Tristan Carter**/ B.A. (*Nottingham*), Ph.D. (*University College London*)

**Karen McGarry**/B.A., M.A. (*Trent*), Ph.D. (*York*)

**Dawn Martin-Hill**/B.A., M.A., Ph.D. (*McMaster*)

**Tina Moffat**/B.Sc. (*Toronto*), M.A., Ph.D. (*McMaster*)

**Tracy Prowse**/B.Sc., M.A. (*Alberta*), Ph.D. (*McMaster*)

**Andrew Roddick**/B.A. (*British Columbia*), M.A., Ph.D. (*California-Berkeley*)

**Kee Howe Yong**/M.Phil., Ph.D. (*CUNY*)

ASSISTANT PROFESSORS

**Shanti Morell-Hart**/B.A. (*UTSA*), M.A., Ph.D. (*California-Berkeley*)

**Yana Stainova**/B.A. (*Mount Holyoke College, South Hadley*), M.A., Ph.D. (*Brown University*)

ASSOCIATE MEMBERS

**Ellen Amster**/(*Religious Studies and the Department of Family Medicine*)B.A.

(*Chicago*), M.A., Ph.D. (*Pennsylvania*)

**Eduard Reinhardt**/B.A., Ph.D. (*Carleton*)

**Celia Rothenberg**/(*Religious Studies*)B.A. (*Wellesley, Massachusetts*), M.A. (*Oxford*), Ph.D. (*Toronto*)

**Henry Schwarcz**/B.A. (*Chicago*), M.Sc., Ph.D. (*California Institute of Technology*)

ADJUNCT ASSISTANT PROFESSORS

**James Conolly**/B.A. (*Toronto*), M.A., Ph.D. (*University College London*)

**Kathryn Goldfarb**/B.A. (*Rice University*), M.A., Ph.D. (*Chicago*)

**Peter Ramsden**/B.A. (*Toronto*), M.A. (*Calgary*), Ph.D. (*Toronto*)

**Gary Warrick**/B.A. (*McMaster*), M.A. (*Simon Fraser*), Ph.D. (*McGill*)

## Anthropology Subfields

**(Applicable to all Anthropology programs)**

Anthropology includes the three major subfields of Social/Cultural Anthropology, Biological Anthropology, and Archaeology. It should be noted that each subfield has its own sequence of courses and prerequisites.

**Note**

- Students are **strongly encouraged to consult the Anthropology web site** to determine sessional course offerings, as not all Level II, III, and IV courses are offered each year:  
<http://anthropology.mcmaster.ca/programs>

## Cultural/Social Anthropology

- ANTHROP 2CE3
- ANTHROP 2DA3 - Traditional Indigenous Ecological Knowledge
- ANTHROP 2EE3 - Sport and/as Religion
- ANTHROP 2F03 - Listening across Difference: An Introduction to Cultural Anthropology
- ANTHROP 2G03 - Readings in Indo-European Myth
- ANTHROP 2HE3 - Heritage, Economy, and Ethics
- ANTHROP 2MA3 - Media, Art and Anthropology
- ANTHROP 2R03 - Religion, Magic and Witchcraft
- ANTHROP 3AR3 - Culture and Religion
- ANTHROP 3F03 - Anthropology and the 'Other'
- ANTHROP 3G03 - Comparative Mythology
- ANTHROP 3GG3 - Anthropology of Contemporary Europe
- ANTHROP 3GH3 - Interdisciplinary Global Health Field Course: Maternal and Infant Health in Morocco
- ANTHROP 3HE3
- ANTHROP 3HH3 - Globalization, Social Justice and Human Rights
- ANTHROP 3HI3 - Medical Anthropology
- ANTHROP 3LL3 - Of Beauty and Violence
- ANTHROP 3P03 - Doing Ethnography: Theory and Research Methods
- ANTHROP 3PA3 - Haudenosaunee Health, Diet and Traditional Botany
- ANTHROP 3PH3 - Dissent, Power and History
- ANTHROP 3SS3 - Sacred Journeys
- ANTHROP 3V03
- ANTHROP 3Y03 - Indigenous Community Health and Wellbeing
- ANTHROP 4AA3 - Materiality, Matter and Social Lives
- ANTHROP 4B03 - Current Problems in Cultural Anthropology I
- ANTHROP 4BB3 - Current Problems in Cultural Anthropology II
- ANTHROP 4CP3 - Cultural Politics of Food and Eating
- ANTHROP 4D03 - Practicing Anthropology: Ethics, Theory, Engagement
- ANTHROP 4DD3 - Anthropology of Zombies and the Undead
- ANTHROP 4M03
- ANTHROP 4SG3 - The Secret of the Gift

## Biological Anthropology

- ANTHROP 2AN3 - The Anthropology of Food and Nutrition
- ANTHROP 2D03 - DNA Meets Anthropology
- ANTHROP 2E03 - Introduction to Biological Anthropology
- ANTHROP 2FF3 - Human Skeletal Biology and Bioarchaeology
- ANTHROP 2U03 - Plagues and People
- ANTHROP 3BA3 - Special Topics in Biological Anthropology
- ANTHROP 3BF3 - Bioarchaeological Field School
- ANTHROP 3C03 - Health and Environment: Anthropological Approaches
- ANTHROP 3FA3 - Forensic Anthropology
- ANTHROP 3BD3 - The Black Death
- ANTHROP 3PP3 - Paleopathology
- ANTHROP 3R03
- ANTHROP 4DN3 - Diet & Nutrition: Biocultural and Bioarchaeological Perspectives
- ANTHROP 4GS3 - Genetics and Society
- ANTHROP 4J03 - Advanced Topics in Biological Anthropology I
- ANTHROP 4JJ3 - Advanced Topics in Biological Anthropology II
- ANTHROP 4R03 - Advanced Bioarchaeology and Skeletal Biology
- ANTHROP 4S03 - The Anthropology of Infectious Disease
- (Relevant courses are also offered by Biology and Kinesiology.)

## Archaeology

- ANTHROP 2BB3 - Ancient Mesoamerica: Aztecs to Zapotecs
- ANTHROP 2C03 - Archaeology of Environmental Crisis and Response
- ANTHROP 2O03 - Themes in the Archaeological History of North America
- ANTHROP 2HH3 - Science, Technology & Society: Archaeological Perspectives
- ANTHROP 2PA3 - Introduction to Anthropological Archaeology
- ANTHROP 2PC3 - Aliens, Curses and Nazis: Archaeology and Hollywood
- ANTHROP 2RP3 - Religion and Power in the Past
- ANTHROP 2WA3 - Neanderthals to Pyramids: Introduction to World Archaeology
- ANTHROP 3AS3 - Archaeology and Society
- ANTHROP 3CA3 - Ceramic Analysis
- ANTHROP 3CC6 - Archaeological Field School
- ANTHROP 3BB3 - Ancient Agriculture to Criminal Investigations: Paleoethnobotany in Practice
- ANTHROP 3FF3 - Key Debates In Andean Archaeology
- ANTHROP 3DD3 - Archaeology of Death
- ANTHROP 3E03 - Special Topics in Archaeology I
- ANTHROP 3EE3 - Special Topics in Archaeology II
- ANTHROP 3EM3 - Current Debates in Eastern Mediterranean Prehistory
- ANTHROP 3K03 - Archaeological Interpretation
- ANTHROP 3LA3 - Lithics Analysis
- ANTHROP 3X03 - Zooarchaeology
- ANTHROP 4AA3 - Materiality, Matter and Social Lives
- ANTHROP 4AH3 - Archaeology and Heritage: Ethics, Politics, and Practice
- ANTHROP 4CC3 - Archaeology Of Foodways
- ANTHROP 4E03 - Advanced Topics in Archaeology I
- ANTHROP 4EE3 - Advanced Topics in Archaeology II
- ANTHROP 4F03 - Current Debates in Archaeology
- ANTHROP 4FF3 - Digging the City: The Archaeology of Urbanism
- ANTHROP 4HF3 - Archaeology of Hunter-Fisher-Gatherers
- ANTHROP 4HH3 - Archaeologies of Space and Place
- ANTHROP 4KK3 - The Archaeology of Neanderthals and Other Early Humans

- (Relevant courses are also offered by the School of Earth, Environment & Society, History and Classics.)

## Other Courses

Courses not distinguished by subfield include the required course ANTHROP 3PD3 plus the independent study courses ANTHROP 3IS3, ANTHROP 4G03, ANTHROP 4GG3 and topic course ANTHROP 3W03.

In planning a program, it is important for students to take note of the prerequisites of certain upper-level courses.

## Bachelor of Arts (Honours)

### COMBINED HONOURS IN ANTHROPOLOGY AND ANOTHER SUBJECT (B.A.)

#### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 5.0 including a grade of at least C in one of ANTHROP 1AA3 or 1AB3. Satisfaction of admission requirements for the Honours program in the other B.A. subject. For continuation in the program, see *Minimum Requirements for Entering and Continuing in a Program Beyond Level I*.

#### NOTES

- Subject to meeting admission requirements, students may combine two subjects and be graduated with a combined honours B.A. degree. These combinations are available within the Faculty, with programs in the Faculty of Humanities and with the Arts and Science Program.
- Students enrolled in an Honours Anthropology program prior to September 2013 may substitute any Level II, III, IV **Anthropology** course for ANTHROP 3PD3.
- Students who have completed only 3 units of Level I Anthropology will be required to complete 3 more units of Level I Anthropology by the end of the following academic year.

#### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

- from the Level I program completed prior to admission to the program. (See *Admission* above.)

#### 9 UNITS

- ANTHROP 2E03 - Introduction to Biological Anthropology
- ANTHROP 2F03 - Listening across Difference: An Introduction to Cultural Anthropology
- ANTHROP 2PA3 - Introduction to Anthropological Archaeology

#### 3 UNITS

from

- ANTHROP 2D03 - DNA Meets Anthropology
- ANTHROP 2FF3 - Human Skeletal Biology and Bioarchaeology
- ANTHROP 3CA3 - Ceramic Analysis
- ANTHROP 3BB3 - Ancient Agriculture to Criminal Investigations: Paleoethnobotany in Practice
- ANTHROP 3H03
- ANTHROP 3K03 - Archaeological Interpretation
- ANTHROP 3LA3 - Lithics Analysis
- ANTHROP 3P03 - Doing Ethnography: Theory and Research Methods
- ANTHROP 3PP3 - Paleopathology
- ANTHROP 3R03
- ANTHROP 3X03 - Zooarchaeology

#### 15 UNITS

- Levels II, III or IV Anthropology

#### 3 UNITS

- ANTHROP 3PD3 - Anthropological Perspectives and Debates

**36 UNITS**

- courses specified for the other subject

**3 UNITS**

from

- SOCSCI 2J03 - Introduction to Statistics or
- the Research Methods/Statistics requirement specified for the other subject (in combined programs within the Faculty of Social Sciences)

**6 UNITS**

- Level IV Anthropology

**0-3 UNITS**

- ANTHROP 1AA3 - Introduction to Anthropology: Sex, Food and Death
- ANTHROP 1AB3 - Introduction to Anthropology: Race, Religion, and Conflict

(See *Note 3*)

**12-15 UNITS**

- Electives

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**HONOURS ANTHROPOLOGY (B.A.)**


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**ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 5.0 including a grade of at least C in one of ANTHROP 1AA3 or 1AB3. For continuation in the program, see the section on *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the Faculty of Social Sciences Academic Regulations.

**NOTE**

- Students enrolled in an Honours Anthropology program prior to September 2013 may substitute any level II, III, or IV **Anthropology** course for ANTHROP 3PD3.
- Students who have completed only 3 units of Level I Anthropology will be required to complete 3 more units of Level I Anthropology by the end of the following academic year.

**REQUIREMENTS**

*120 units total (Levels I to IV), of which 48 units may be Level I*

**30 UNITS**

from

- the Level I program completed prior to admission to the program. (See *Admission* above.)

**9 UNITS**

- ANTHROP 2E03 - Introduction to Biological Anthropology
- ANTHROP 2F03 - Listening across Difference: An Introduction to Cultural Anthropology
- ANTHROP 2PA3 - Introduction to Anthropological Archaeology

**3 UNITS**

from

- ANTHROP 2D03 - DNA Meets Anthropology
- ANTHROP 2FF3 - Human Skeletal Biology and Bioarchaeology
- ANTHROP 3CA3 - Ceramic Analysis
- ANTHROP 3BB3 - Ancient Agriculture to Criminal Investigations: Paleoethnobotany in Practice
- ANTHROP 3H03
- ANTHROP 3K03 - Archaeological Interpretation
- ANTHROP 3LA3 - Lithics Analysis
- ANTHROP 3P03 - Doing Ethnography: Theory and Research Methods
- ANTHROP 3PP3 - Paleopathology
- ANTHROP 3R03
- ANTHROP 3X03 - Zooarchaeology

**24 UNITS**

- Levels II, III or IV Anthropology

**3 UNITS**

- ANTHROP 3PD3 - Anthropological Perspectives and Debates

**3 UNITS**

- SOCSCI 2J03 - Introduction to Statistics

**12 UNITS**

- Level IV Anthropology

**0-3 UNITS**

- ANTHROP 1AA3 - Introduction to Anthropology: Sex, Food and Death
- ANTHROP 1AB3 - Introduction to Anthropology: Race, Religion, and Conflict

(See *Note 2*)

**33-36 UNITS**

- Electives, of which at least six units must be taken from outside of Anthropology

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**Bachelor of Arts**


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**ANTHROPOLOGY (B.A.)**


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**ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 3.5 including a grade of at least C- in three units from ANTHROP 1AA3 or 1AB3.

**NOTE**

1. Students who have completed only 3 units of level I Anthropology will be required to complete 3 more units of Level I Anthropology by the end of the following academic year.

**REQUIREMENTS**

*90 units total (Levels I to III), of which 42 units may be Level I*

**30 UNITS**

from

- the Level I program completed prior to admission to the program. (See *Admission* above.)

**6 UNITS**

from

- ANTHROP 2E03 - Introduction to Biological Anthropology
- ANTHROP 2F03 - Listening across Difference: An Introduction to Cultural Anthropology
- ANTHROP 2PA3 - Introduction to Anthropological Archaeology

**18 UNITS**

- Levels II, III or IV Anthropology

**0-3 UNITS**

- ANTHROP 1AA3 - Introduction to Anthropology: Sex, Food and Death
- ANTHROP 1AB3 - Introduction to Anthropology: Race, Religion, and Conflict

(See *Note 1*)

**33-36 UNITS**

- Electives, of which at least six units must be taken from outside of Anthropology

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**Minor(s):**


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**MINOR IN ANTHROPOLOGY**


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**REQUIREMENTS**

*24 units total*

**6 UNITS**

from

- ANTHROP 1AA3 - Introduction to Anthropology: Sex, Food and Death
- ANTHROP 1AB3 - Introduction to Anthropology: Race, Religion, and Conflict

**3 UNITS**

from

- ANTHROP 2E03 - Introduction to Biological Anthropology



- ANTHROP 2F03 - Listening across Difference: An Introduction to Cultural Anthropology
- ANTHROP 2PA3 - Introduction to Anthropological Archaeology

**15 UNITS**

- Levels II, III or IV Anthropology

## Department of Economics

<http://www.economics.mcmaster.ca>

**Faculty as of January 15, 2020**

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**Stephen R.G. Jones**

ASSOCIATE CHAIR

**Seungjin Han**

UNIVERSITY SCHOLAR

**Katherine Cuff**

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William McMaster Chair in Econometrics

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McMaster Decision Science Laboratory

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Research, NY), Harold Innis Industry Professor in Economics

## Bachelor of Arts (Honours)

### COMBINED HONOURS IN ECONOMICS AND ANOTHER SUBJECT (B.A.)

**ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 5.0 including an average of at least 5.0 in ECON 1B03 (or 1BX3) and 1BB3 (or 1BA3). Satisfaction of admission requirements for the Honours program in the other B.A. subject. For continuation in the program, see *Minimum Requirements for Entering and Continuing in a Program Beyond Level I*. Beginning in September 2020, the Level II Economics programs will continue to permit entry for students who have completed any Level I program including the same required courses as Economics I .

**REQUIREMENTS**

*120 units total (Levels I to IV), of which 48 units may be Level I*

**30 UNITS**

from

- Level I program completed prior to admission to the program. (See Admission above.)

**6 UNITS**

- ECON 2G03
- ECON 2GG3 - Intermediate Microeconomics II

or

- ECON 2Z03 - Intermediate Microeconomics I
- ECON 2ZZ3 - Intermediate Microeconomics II

**6 UNITS**

- ECON 2H03 - Intermediate Macroeconomics I
- ECON 2HH3 - Intermediate Macroeconomics II

**6 UNITS**

- ECON 4F03 - Methods of Inquiry in Economics
- ECON 4A03 - Honours Economic Analysis

or

- ECON 4FF3 - Research Methods in Economics
- ECON 4AA3 - Economic Specialist Seminar

(See Note 4 above.)

**15 UNITS**

Levels II, III, IV Economics **with no more than six units** from the following courses:

- ECON 2A03 - Economics of Labour-Market Issues

- ECON 2C03
- ECON 2D03 - Economic Issues
- ECON 2E03
- ECON 2F03
- ECON 2I03 - Financial Economics
- ECON 2J03 - Environmental Economics
- ECON 2N03 - Public Policy Toward Business
- ECON 2P03 - Economics of Professional Sports
- ECON 2Q03 - Economics of Bad Behaviour
- ECON 2T03 - Economics of Trade Unionism and Labour

(See Note 5 above.)

### 36 UNITS

- courses specified for the other subject

### 6 UNITS

- ECON 2B03 - Analysis of Economic Data and
- ECON 3EE3 - Econometrics I or
- ECON 3E03 - Applied Econometrics or

in combined programs within the Faculty of Social Sciences, the Research Methods/Statistics requirement specified for the other subject. Students who plan to take ECON 3EE3 are strongly advised to take ECON 2B03. (See Note 3 above.)

### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1M03 - Calculus for Business, Humanities and the Social Sciences

### 3 UNITS

from

- STATS 1L03 - Probability and Linear Algebra \* (or Grade 12 Mathematics of Data Management U)

### 9 UNITS

- Electives

\* If requirement completed in Level I or with Grade 12 U courses, these units will be taken as electives.

## HONOURS ECONOMICS (B.A.)

### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 5.0 including an average of at least 5.0 in ECON 1B03 (or 1BX3) and 1BB3 (or 1BA3). For continuation in program, see the section on Minimum Requirements for Entering and Continuing in a Program Beyond Level I. Beginning in September 2020, the Level II Economics programs will continue to permit entry for students who have completed any Level I program including the same required courses as Economics I.

### NOTES

- Alternate admission: For students enrolled in a program beyond Level I, admission to Levels II, III and IV of Honours Economics programs requires an average of at least 5.0 in ECON 2G03, 2GG3 (or 2Z03, 2ZZ3) 2H03 and 2HH3, in addition to the required Grade Point Average (GPA) as stated in the Minimum Requirement for Entering and Continuing in a Program Beyond Level I in the Faculty of Social Sciences Academic Regulations. **Students enrolled in Levels II, III and IV cannot gain admission to Honours Economics programs by upgrading ECON 1B03 (or 1BX3) or 1BB3 (or 1BA3).**
- COMMERCE 2FA3 may be substituted for ECON 2I03 and COMMERCE 2QA3 may be substituted for ECON 2B03.
- Students with prior credit in a statistics course recognized as an alternative to ECON 2B03 are exempt from this requirement. Those

students can take ECON 3EE3 (formerly 3U03) only if they achieved a grade of at least B+ in an alternative statistics course. There is no such grade requirement for ECON 3E03 (formerly 3WW3). See ECON 3EE3 (formerly 3U03) in the Course Listings section of this Calendar for a list of recognized alternative statistics courses.

- Students interested in an M.A. in Economics should take ECON 3EE3 (formerly 3U03) and consider the Specialist Option.
- MATH 1M03 is required for any student planning to transfer into Commerce and strongly recommended for any student with a minor in Business or Finance. MATH 1M03 is required for ECON 3G03 and is strongly recommended for students planning any graduate study in economics.
- Students must complete STATS 1L03 before taking ECON 3EE3 (formerly 3U03) or ECON 3E03 (formerly 3WW3).

### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

### 30 UNITS

from

- the Level I program completed prior to admission to the program. (See Admission above.)

### 6 UNITS

- ECON 2G03
- ECON 2GG3 - Intermediate Microeconomics II

or

- ECON 2Z03 - Intermediate Microeconomics I
- ECON 2ZZ3 - Intermediate Microeconomics II

### 12 UNITS

- ECON 2B03 - Analysis of Economic Data
- ECON 2H03 - Intermediate Macroeconomics I
- ECON 2HH3 - Intermediate Macroeconomics II
- ECON 4A03 - Honours Economic Analysis

(See Notes 2 and 3 above)

### 24 UNITS

Levels II, III, IV Economics with no more than six units from the following courses

- ECON 2A03 - Economics of Labour-Market Issues
- ECON 2C03
- ECON 2D03 - Economic Issues
- ECON 2E03
- ECON 2F03
- ECON 2I03 - Financial Economics
- ECON 2J03 - Environmental Economics
- ECON 2N03 - Public Policy Toward Business
- ECON 2P03 - Economics of Professional Sports
- ECON 2Q03 - Economics of Bad Behaviour
- ECON 2T03 - Economics of Trade Unionism and Labour

(See Note 2 above.)

### 3 UNITS

from

- ECON 3EE3 - Econometrics I
- ECON 3E03 - Applied Econometrics

(See Notes 3 and 4 above.)

### 3 UNITS

from

- ECON 4F03 - Methods of Inquiry in Economics
- ECON 4FF3 - Research Methods in Economics

### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1M03 - Calculus for Business, Humanities and the Social

Sciences

### 3 UNITS

from

- STATS 1L03 - Probability and Linear Algebra \* (or Grade 12 Mathematics of Data Management U)

### 36 UNITS

- Electives. The number of units of Economics courses above Level I (excluding ECON 2B03, 3E03 and 3EE3) must not exceed 60.

\* If requirement was completed in Level I or with Grade 12 U courses, these units will be taken as electives.

*Please note, for calendar copy, changes must be made in all programs.*

## HONOURS ECONOMICS (SPECIALIST OPTION) (B.A.)

### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 5.0 including an average of at least 5.0 in ECON 1B03 (or 1BX3) and 1BB3 (or 1BA3). For continuation in program, see the section on *Minimum Requirements for Entering and Continuing in a Program Beyond Level I*. Beginning in September 2020, the Level II Economics programs will continue to permit entry for students who have completed any Level I program including the same required courses as Economics I.

### NOTES

- Alternate admission: For students enrolled in a program beyond Level I, admission to Levels II, III and IV of the Honours Economics (Specialist Option) program requires an average of at least 6.0 in ECON 2G03, 2GG3 (or 2Z03, 2ZZ3), 2H03 and 2HH3 with a grade of at least C in each of ECON 2GG3 and 2HH3, in addition to the required Grade Point Average (GPA) as stated in the Minimum Requirement for Entering and Continuing in a Program Beyond Level I in the Faculty of Social Sciences Academic Regulations. **Students enrolled in Levels II, III and IV cannot gain admission to the Honours Economics (Specialist Option) program by upgrading ECON 1B03 (or 1BX3) or 1BB3 (or 1BA3).**
- COMMERCE 2FA3 may be substituted for ECON 2I03 and COMMERCE 2QA3 may be substituted for ECON 2B03.
- Students in the Specialist Option are expected to take ECON 2B03. Students with prior credit in a recognized alternative statistics course are exempt from this requirement. Those students can take ECON 3EE3 (formerly 3U03) only if they achieved a grade of at least B+ in a recognized alternative statistics course. See ECON 2B03 in the Course Listings section of this Calendar for a list of recognized alternative statistics courses.
- Students interested in an M.A. in Economics should take ECON 3EE3 (formerly 3U03) and consider the Specialist Option.
- MATH 1M03 is required for any student planning to transfer into Commerce and strongly recommended for any student with a minor in Business or Finance. MATH 1M03 is required for ECON 3G03 and is strongly recommended for students planning any graduate study in economics.
- Students must complete STATS 1L03 before taking ECON 3EE3 (formerly 3U03) or ECON 3E03 (formerly 3WW3.)

### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

### 30 UNITS

from

- the Level I program completed prior to admission to the program. (See Admission above.)

### 6 UNITS

- ECON 2G03
- ECON 2GG3 - Intermediate Microeconomics II

or

- ECON 2Z03 - Intermediate Microeconomics I
- ECON 2ZZ3 - Intermediate Microeconomics II

### 27 UNITS

- ECON 2B03 - Analysis of Economic Data
- ECON 2H03 - Intermediate Macroeconomics I
- ECON 2HH3 - Intermediate Macroeconomics II
- ECON 3G03 - Introduction to Advanced Economic Theory
- ECON 4AA3 - Economic Specialist Seminar
- ECON 4FF3 - Research Methods in Economics
- ECON 4G03 - Econometrics II
- ECON 4T03 - Advanced Economic Theory I
- ECON 4TT3 - Advanced Economic Theory II

(See *Notes 2 and 3* above.)

### 12 UNITS

Levels II, III, IV Economics with **no more than six units** from the following courses:

- ECON 2A03 - Economics of Labour-Market Issues
- ECON 2C03
- ECON 2D03 - Economic Issues
- ECON 2E03
- ECON 2F03
- ECON 2I03 - Financial Economics
- ECON 2J03 - Environmental Economics
- ECON 2N03 - Public Policy Toward Business
- ECON 2P03 - Economics of Professional Sports
- ECON 2Q03 - Economics of Bad Behaviour
- ECON 2T03 - Economics of Trade Unionism and Labour

(See *Note 2* above.)

### 3 UNITS

- ECON 3EE3 - Econometrics I
- ECON 3E03 - Applied Econometrics (with a grade of at least A-)

(See *Notes 3 and 4* above.)

### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1M03 - Calculus for Business, Humanities and the Social Sciences

### 3 UNITS

from

- STATS 1L03 - Probability and Linear Algebra \* (or Grade 12 Mathematics of Data Management U)

### 36 UNITS

- Electives. The number of units of Economics courses above Level I excluding ECON 2B03, 3EE3 (formerly 3WW3) and 3E03 (formerly 3U03) must not exceed 60.

*\* If requirement was completed in Level I or with Grade 12 U courses, these units will be taken as electives.*

## HONOURS ECONOMICS AND COMPUTER SCIENCE (B.A.)

### ADMISSION

Enrollment in this program is limited and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement, completion of any Level I program with a Grade Point Average of at least 5.0, including an average of at least 5.0 in ECON 1B03 (or 1BX3) and 1BB3 (or 1BA3), and a weighted average of at least 5.0 in ECON 1B03 (or 1BX3), 1BB3 (or 1BA3), COMPSCI 1MD3 and 1JC3; MATH 1A03, 1AA3, and 1B03. For continuation in the program, see *Minimum Requirements for Entering*

and Continuing in a Program Beyond Level I. Beginning in September 2020, the Level II Economics programs will continue to permit entry for students who have completed any Level I program including the same required courses as Economics I.

#### NOTES

- Alternate admission: For students enrolled in a program beyond Level I, admission to Levels II, III and IV of Honours Economics programs requires an average of at least 5.0 in ECON 2G03, 2GG3 (or 2Z03, 2ZZ3), 2H03 and 2HH3, in addition to the required Grade Point Average (GPA) as stated in the Minimum Requirement for Entering and Continuing in a Program Beyond Level I in the Faculty of Social Sciences Academic Regulations. **Students enrolled in Levels II, III and IV cannot gain admission to Honours Economics programs by upgrading ECON 1B03 (or 1BX3) or 1BB3 (or 1BA3).**
- COMMERCE 2FA3 may be substituted for ECON 2I03 and COMMERCE 2QA3 may be substituted for ECON 2B03.
- Students with prior credit in a statistics course recognized as an alternative to ECON 2B03 are exempt from this requirement. Those students can take ECON 3EE3 (formerly 3U03) only if they achieved a grade of at least B+ in an alternative statistics course. There is no such grade requirement for ECON 3E03 (formerly 3WW3). See ECON 3EE3 (formerly 3U03) in the Course Listings section of this Calendar for a list of recognized alternative statistics courses. Students must complete STATS 1L03 before taking ECON 3EE3 (formerly 3U03.)

#### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- the Level I program completed prior to admission to the program. (See *Admission* above.)

#### 6 UNITS

- ECON 2G03
- ECON 2GG3 - Intermediate Microeconomics II

or

- ECON 2Z03 - Intermediate Microeconomics I
- ECON 2ZZ3 - Intermediate Microeconomics II

#### 6 UNITS

- ECON 2H03 - Intermediate Macroeconomics I
- ECON 2HH3 - Intermediate Macroeconomics II

#### 6 UNITS

- ECON 4F03 - Methods of Inquiry in Economics and
- ECON 4A03 - Honours Economic Analysis

or

- ECON 4FF3 - Research Methods in Economics
- ECON 4AA3 - Economic Specialist Seminar

#### 18 UNITS

Levels II, III, IV Economics with **no more than six units from** the following courses:

- ECON 2A03 - Economics of Labour-Market Issues
- ECON 2C03
- ECON 2D03 - Economic Issues
- ECON 2E03
- ECON 2F03
- ECON 2I03 - Financial Economics
- ECON 2J03 - Environmental Economics
- ECON 2N03 - Public Policy Toward Business
- ECON 2P03 - Economics of Professional Sports
- ECON 2Q03 - Economics of Bad Behaviour
- ECON 2T03 - Economics of Trade Unionism and Labour

(See Note 2 above.)

#### 18 UNITS

from

- COMPSCI 2C03 - Data Structures and Algorithms
- COMPSCI 2FA3 - Discrete Mathematics with Applications II
- COMPSCI 2GA3 - Computer Architecture
- COMPSCI 2ME3 - Introduction to Software Development
- COMPSCI 2S03 - Principles of Programming
- COMPSCI 2XA3 - Computer Science Practice and Experience: Software Development Skills

#### 9 UNITS

from

- COMPSCI 3DB3 - Databases
- COMPSCI 3MI3 - Principles of Programming Languages
- COMPSCI 3SD3 - Concurrent Systems
- COMPSCI 3SH3 - Computer Science Practice and Experience: Operating Systems
- COMPSCI 4HC3 - Human Computer Interfaces
- COMPSCI 4WW3 - Web Systems and Web Computing

#### 3 UNITS

- Levels III or IV Computer Science except COMPSCI 4ZP6 A/B

#### 6 UNITS

- STATS 2D03 - Introduction to Probability *and*
- STATS 2MB3 - Statistical Methods and Applications

or

- ECON 2B03 - Analysis of Economic Data *and*
- ECON 3EE3 - Econometrics I (or ECON 3E03 (formerly 3WW3))

(See *Note 3* above.)

#### 18 UNITS

- Electives

#### ADMISSION EFFECTIVE 2021-2022

Enrollment in this program is limited and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement, completion of any Level I program with a Grade Point Average of at least 5.0, including an average of at least 5.0 in ECON 1B03 and 1BB3, and a weighted average of at least 5.0 in ECON 1B03 (or 1BX3), ECON 1BB3 (or 1BA3), COMPSCI 1MD3, 1JC3, 1XC3, and 1DM3; MATH 1A03, 1AA3, and 1B03. For continuation in the program, see Minimum Requirements for Entering and Continuing in a Program Beyond Level I. Beginning in September 2020, the Level II Economics programs will continue to permit entry for students who have completed any Level I program including the same required courses as Economics I.

#### NOTES

- Alternate admission: For students enrolled in a program beyond Level I, admission to Levels II, III and IV of Honours Economics programs requires an average of at least 5.0 in ECON 2G03, 2GG3 (or 2Z03, 2ZZ3), 2H03 and 2HH3, in addition to the required Grade Point Average (GPA) as stated in the Minimum Requirement for Entering and Continuing in a Program Beyond Level I in the Faculty of Social Sciences Academic Regulations. **Students enrolled in Levels II, III and IV cannot gain admission to Honours Economics programs by upgrading ECON 1B03 (or 1BX3) or 1BB3 (or 1BA3).**
- COMMERCE 2FA3 may be substituted for ECON 2I03 and COMMERCE 2QA3 may be substituted for ECON 2B03.
- Students with prior credit in a statistics course recognized as an alternative to ECON 2B03 are exempt from this requirement. Those students can take ECON 3EE3 (formerly 3U03) only if they achieved a grade of at least B+ in an alternative statistics course. There is no such grade requirement for ECON 3E03 (formerly 3WW3). See ECON 3EE3 (formerly 3U03) in the Course Listings section of this Calendar for a list of recognized alternative statistics courses. Students must complete STATS 1L03 before taking ECON 3EE3 (formerly 3U03.)



**REQUIREMENTS EFFECTIVE 2021-2022**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

from

- the Level I program completed prior to admission to the program. (See *Admission* above.)

**6 UNITS**

- ECON 2G03
- ECON 2GG3 - Intermediate Microeconomics II

or

- ECON 2Z03 - Intermediate Microeconomics I
- ECON 2ZZ3 - Intermediate Microeconomics II

**6 UNITS**

- ECON 2H03 - Intermediate Macroeconomics I
- ECON 2HH3 - Intermediate Macroeconomics II

**6 UNITS**

- ECON 4F03 - Methods of Inquiry in Economics
- ECON 4A03 - Honours Economic Analysis

or

- ECON 4FF3 - Research Methods in Economics
- ECON 4AA3 - Economic Specialist Seminar

**18 UNITS**

Levels II, III, IV Economics with **no more than six units** from the following courses:

- ECON 2A03 - Economics of Labour-Market Issues
- ECON 2C03
- ECON 2D03 - Economic Issues
- ECON 2E03
- ECON 2F03
- ECON 2I03 - Financial Economics
- ECON 2J03 - Environmental Economics
- ECON 2N03 - Public Policy Toward Business
- ECON 2P03 - Economics of Professional Sports
- ECON 2Q03 - Economics of Bad Behaviour
- ECON 2T03 - Economics of Trade Unionism and Labour

(See *Note 2* above.)

**18 UNITS**

from

- COMPSCI 2AC3 - Automata and Computability
- COMPSCI 2C03 - Data Structures and Algorithms
- COMPSCI 2DB3 - Databases
- COMPSCI 2GA3 - Computer Architecture
- COMPSCI 2LC3 - Logical Reasoning for Computer Science
- COMPSCI 2ME3 - Introduction to Software Development
- COMPSCI 2SD3 - Concurrent Systems
- COMPSCI 2XC3 - Computer Science Practice and Experience: Algorithms and Software Design

**9 UNITS**

from

- COMPSCI 3AC3 - Algorithms and Complexity
- COMPSCI 3MI3 - Principles of Programming Languages
- COMPSCI 3N03 - Computer Networks and Security
- COMPSCI 3SH3 - Computer Science Practice and Experience: Operating Systems
- COMPSCI 3TB3 - Syntax-Based Tools and Compilers
- COMPSCI 4HC3 - Human Computer Interfaces
- COMPSCI 4WW3 - Web Systems and Web Computing

**3 UNITS**

- Levels III or IV Computer Science except COMPSCI 4ZP6 A/B

**6 UNITS**

- STATS 2D03 - Introduction to Probability

- STATS 2MB3 - Statistical Methods and Applications

or

- ECON 3EE3 - Econometrics I (or ECON 3E03 (formerly 3WW3))
- ECON 2B03 - Analysis of Economic Data

(See *Note 3* above.)

**18 UNITS**

- Electives

**HONOURS ECONOMICS AND MATHEMATICS (B.A.)****ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 5.0 including MATH 1A03 (or 1X03) an average of at least 5.0 in ECON 1B03 (or 1BX3) and 1BB3 (or 1BA3) and a grade of at least C+ in each of MATH 1AA3 (or 1XX3) and 1B03. For continuation in the program, see *Minimum Requirements for Entering and Continuing in a Program Beyond Level I*. Beginning in September 2020, the Level II Economics programs will continue to permit entry for students who have completed any Level I program including the same required courses as Economics I.

**NOTES**

- Alternate admission: For students enrolled in a program beyond Level I, admission to Levels II, III and IV of Honours Economics programs requires an average of at least 5.0 in ECON 2G03, 2GG3 (or 2Z03, 2ZZ3), 2H03 and 2HH3, in addition to the required Grade Point Average (GPA) as stated in the Minimum Requirement for Entering and Continuing in a Program Beyond Level I in the Faculty of Social Sciences Academic Regulations. **Students enrolled in Levels II, III and IV cannot gain admission to Honours Economics programs by upgrading ECON 1B03 (or 1BX3) or 1BB3 (or 1BA3).**
- COMMERCE 2FA3 may be substituted for ECON 2I03 and COMMERCE 2QA3 may be substituted for ECON 2B03.
- Students with prior credit in a statistic course recognized as an alternative to ECON 2B03 are exempt from this requirement. Those students can take ECON 3EE3 (formerly 3U03) only if they achieved a grade of at least B+ in an alternative statistics course. See ECON 3EE3 (formerly 3U03) in the *Course Listings* section of this Calendar for a list of recognized alternative statistics courses.
- Neither ECON 2B03, 3E03 (formerly 3WW3) nor 3EE3 (formerly 3U03) can be used to satisfy these required units.
- Neither STATS 2D03 nor 2MB3 can be used to satisfy these required units.
- Students must complete STATS 1L03 before taking ECON 3EE3 (formerly 3U03).

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

from

- the Level I program completed prior to admission to the program. (See *Admission* above.)

**6 UNITS**

- ECON 2G03
- ECON 2GG3 - Intermediate Microeconomics II

or

- ECON 2Z03 - Intermediate Microeconomics I
- ECON 2ZZ3 - Intermediate Microeconomics II

**6 UNITS**

- ECON 2H03 - Intermediate Macroeconomics I
- ECON 2HH3 - Intermediate Macroeconomics II

**6 UNITS**

- ECON 4F03 - Methods of Inquiry in Economics *and*
- ECON 4A03 - Honours Economic Analysis

or

- ECON 4FF3 - Research Methods in Economics *and*
- ECON 4AA3 - Economic Specialist Seminar

#### 12 UNITS

from Levels II, III, IV Economics **with no more than six units from** the following courses:

- ECON 2A03 - Economics of Labour-Market Issues
- ECON 2C03
- ECON 2D03 - Economic Issues
- ECON 2E03
- ECON 2F03
- ECON 2I03 - Financial Economics
- ECON 2J03 - Environmental Economics
- ECON 2N03 - Public Policy Toward Business
- ECON 2P03 - Economics of Professional Sports
- ECON 2Q03 - Economics of Bad Behaviour
- ECON 2T03 - Economics of Trade Unionism and Labour

(See *Note 2* above.)

#### 12 UNITS

- MATH 2C03 - Introduction to Differential Equations
- MATH 2X03 - Advanced Calculus I (or 2A03)
- MATH 2XX3 - Advanced Calculus II (or 2AB3)
- MATH 3X03 - Complex Analysis I

#### 3 UNITS

from

- MATH 2LA3 - Applied Linear Algebra
- MATH 2R03 - Linear Algebra II

#### 3 UNITS

from

- MATH 3A03 - Real Analysis I
- MATH 3IA3 - Introduction to Analysis

#### 12 UNITS

from

- Levels II, III, IV Mathematics, Statistics with **no more than six units** at Level II, and **at least three units** at Level IV (See *Notes 4 and 5* above.)

#### 12 UNITS

- six units from ECON 2B03, ECON 3EE3
- six units from Levels III, IV Mathematics or Statistics

or

- six units from STATS 2D03, STATS 2MB3
  - six units from Levels III, IV Economics
- (See *Note 3* above.)

#### 9-18 UNITS

- Electives

## Bachelor of Arts

### ECONOMICS (B.A.)

#### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 3.5 and an average of at least 4.0 in ECON 1B03 (or 1BX3) and 1BB3 (or 1BA3). Beginning in September 2020, the Level II Economics programs will continue to permit entry for students who have completed any Level I program including the same required courses as Economics I .

#### NOTES

- COMMERCE 2FA3 may be substituted for ECON 2I03 and COMMERCE 2QA3 may be substituted for ECON 2B03.
- Students with prior credit in a course equivalent to ECON 2B03 are exempt from this requirement. See ECON 2B03 in the Course Listings section of this Calendar for equivalencies.

- **Alternate admission to the B.A. Economics program requires a Cumulative Average of at least 3.5 including an average of at least 4.0 in ECON 2G03 (or 2Z03), 2H03.**

#### REQUIREMENTS

90 units total (Levels I to III), of which 42 units may be Level I

#### 30 UNITS

from

- the Level I program completed prior to admission to the program. (See *Admission* above.)

#### 3 UNITS

- ECON 2G03

or

- ECON 2Z03 - Intermediate Microeconomics I

#### 6 UNITS

- ECON 2B03 - Analysis of Economic Data
- ECON 2H03 - Intermediate Macroeconomics I

(See *Note 2* above.)

#### 15 UNITS

Levels II, III, IV Economics with **no more than six units from** the following courses:

- ECON 2A03 - Economics of Labour-Market Issues
- ECON 2C03
- ECON 2D03 - Economic Issues
- ECON 2E03
- ECON 2F03
- ECON 2I03 - Financial Economics
- ECON 2J03 - Environmental Economics
- ECON 2N03 - Public Policy Toward Business
- ECON 2P03 - Economics of Professional Sports
- ECON 2Q03 - Economics of Bad Behaviour
- ECON 2T03 - Economics of Trade Unionism and Labour

(See *Note 1* above.)

#### 3 UNITS

from

- MATH 1A03 - Calculus For Science I
- MATH 1LS3 - Calculus for the Life Sciences I or
- MATH 1M03 - Calculus for Business, Humanities and the Social Sciences

#### 3 UNITS

from

- STATS 1L03 - Probability and Linear Algebra \* (or Grade 12 Mathematics of Data Management U)

#### 30 UNITS

- Electives. The number of units of Economics courses above Level I (excluding ECON 2B03 and 3U03) must not exceed 36.

*\*If requirement was completed in Level I or with Grade 12 U courses, these units will be taken as electives.*

## Minor(s):

### MINOR IN ECONOMICS

#### NOTES

- Although ECON 2G03 (or 2Z03) and 2H03 are not required for the Minor in Economics, most Level III and IV Economics courses have at least one of these courses as a prerequisite.
- COMMERCE 2FA3 may be substituted for ECON 2I03.
- COMMERCE 2QA3 (or another Statistics course equivalent to ECON 2B03) may be substituted for ECON 2B03.
- ECON 2CC3 may not be used to satisfy a minor in Economics.

**REQUIREMENTS****3-6 UNITS**

Level 1 Economics

- ECON 1B03 - Introductory Microeconomics (or 1BX3) *and*
- ECON 1BB3 - Introductory Macroeconomics (or 1BA3)

or

- ARTSSCI 2E03 - Economics: Principles and Policy

**18 UNITS**

Levels II, III, IV Economics with **no more than six units from** the following courses:

- ECON 2A03 - Economics of Labour-Market Issues
- ECON 2C03
- ECON 2D03 - Economic Issues
- ECON 2E03
- ECON 2F03
- ECON 2I03 - Financial Economics
- ECON 2J03 - Environmental Economics
- ECON 2N03 - Public Policy Toward Business
- ECON 2P03 - Economics of Professional Sports
- ECON 2Q03 - Economics of Bad Behaviour
- ECON 2T03 - Economics of Trade Unionism and Labour

(See *Notes* above.)

## School of Earth, Environment & Society (Faculty of Social Sciences)

<http://www.science.mcmaster.ca/geo/>

### Environment & Society Subfields

(Applicable to all Environment & Society programs)

Environment & Society programs at McMaster are interdisciplinary in nature, drawing from Human Geography, Environmental Studies, Geographic Information Science, and Urban Studies. Environment & Society courses reflect this interdisciplinarity and encompass five major subfields or themes: Economic Development, Environment and Sustainability, Geographic Information Science (GIS) & Spatial Analysis, Health & Population, and Urban Geography & Planning. It should be noted that each subfield has its own sequence of courses and prerequisites (See the *Course Listings* section of this Calendar). Students can elect to take some or all of the upper-level courses from different subfields.

- **Economic Geography:** ENVSOCY 2LE3, ENVSOCY 3LT3, ENVSOCY 4LE3, ENVSOCY 4LP3, ENVSOCY 4LW3
- **Environmental Issues & Policy:** ENVSOCY 2EI3, ENVSOCY 2EK3, ENVSOCY 3EC3, ENVSOCY 3EE3, ENVSOCY 3EG3, ENVSOCY 3ER3, ENVSOCY 4EA3, ENVSOCY 4ET3, ENVSOCY 4HH3
- **Geographic Information Systems (GIS) & Spatial Analysis:** ENVSOCY 2GI3, ENVSOCY 3GI3, ENVSOCY 3GV3, ENVSOCY 3SR3, ENVSOCY 4GA3, ENVSOCY 4GS3, ENVSOCY 4GT3
- **Health & Population:** ENVSOCY 2HI3, ENVSOCY 3HP3, ENVSOCY 4HD3, ENVSOCY 4HH3
- **Urban Geography & Planning:** ENVSOCY 2UI3, ENVSOCY 3UP3, ENVSOCY 3UR3, ENVSOCY 3UW3, ENVSOCY 4UD3, ENVSOCY 4US3

**OTHER COURSES**

Courses not distinguished by subfield include core courses such as research methods, statistics, field courses, internship opportunities and capstone experiences, as well as a broad suite of regional and topical courses.

- **Core (Research Methods, Field Courses, Internships, and Capstone):** ENVSOCY 3MA3, ENVSOCY 3MB3, GEOG 3ME3, ENVIRSC 3ME3, ENVSOCY 3MF3, ENVSOCY 3MI3, ENVSOCY 4MF3,

ENVSOCY 4MS3, ENVSOCY 4MT6 A/B

- **Regional Geography:** ENVSOCY 20C3, ENVSOCY 2RC3, ENVSOCY 2RU3, ENVSOCY 2RW3, ENVSOCY 3RW3
- **Topics in Geography:** ENVSOCY 2TF3, ENVSOCY 2TS3, ENVSOCY 3TG3, ENVSOCY 4UF3

In planning a program, it is important for students to take note of the prerequisites for certain upper-level courses. Further, not every Environment & Society course listed above is offered every year. For course availability, students are advised to consult "*Class Search*" on Mosaic or contact the School of Earth, Environment & Society after April 1st for the list of courses that will be offered in the following academic year.

For additional information regarding Environmental Science, please see the *School of Earth, Environment & Society (Faculty of Science)* section of this calendar.

## Bachelor of Arts (Honours)

### COMBINED HONOURS IN ENVIRONMENT & SOCIETY AND ANOTHER SUBJECT (B.A.)

**ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 5.0 including a grade of at least C in one of ENVSOCY 1HA3, ENVSOCY 1HB3, GEOG 1HA3 or GEOG 1HB3 and satisfaction of admission requirements for the Honours program in the other B.A. subject (See *Note 1* and *4* below). For continuation in the program, see the section on *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the Faculty of Social Sciences Academic Regulations.

**NOTES**

- Subject to meeting admission requirements, students may combine two subjects and be graduated with a combined Honours B.A. degree. These combinations are available within the Faculty of Social Sciences, with programs in the Faculty of Humanities and with the Arts & Science Program.
- Not every Environment & Society course listed in this Calendar is offered every year. For course availability, students are advised to consult "*Class Search*" on Mosaic or contact the School of Earth, Environment & Society after April 1st for the list of courses that will be offered in the following academic year.
- Students are strongly encouraged to check prerequisites of upper-level Environment & Society courses and to speak with an Undergraduate Advisor in the School of Earth, Environment & Society regarding course selection.
- Two of ENVSOCY 1HA3, ENVSOCY 1HB3, GEOG 1HA3 and GEOG 1HB3 must be completed by the end of 60 units.
- Students intending to enrol in ENVSOCY 4MT6 A/B must submit an application to the course coordinator by April 1 of the academic year prior to registration. Application forms are available from the School of Earth, Environment & Society main office after March 1. Students will be informed of their permission to register in ENVSOCY 4MT6 A/B on April 15. Registration in this course is conditional upon achieving a GPA of at least 7.5.
- Students interested in completing courses in the Geographic Information Systems (GIS) & Spatial Analysis subfield are strongly encouraged to complete MATH 1K03; if a Grade 12 Mathematics U was not completed.
- Students interested in taking courses in Environmental Science and/or Earth Science subfields are strongly encouraged to complete ENVIRSC 1C03 and/or EARTHSC 1G03.
- With permission from an Undergraduate Advisor in the School of Earth, Environment & Society, students enrolled in a combined Honours Environment & Society program may substitute ENVSOCY 3MA3 and/

or ENVSOCTY 3MB3 with an equivalent research methods and/or statistics course from the other subject.

### REQUIREMENTS

Students who entered the Combined Honours in Geography and Another Subject (B.A.) program prior to September 2020 should refer to the 2019-2020 Undergraduate Calendar or their personal Advisement Report for program requirements.

*120 units total (Levels I to IV), of which 48 units may be Level I*

#### LEVEL I: 30 UNITS

30 units

from

- the Level I program completed prior to admission to the program (See *Admission* above.)

#### LEVELS II TO IV: 90 UNITS

6 units

- ENVSOCTY 2EI3 - Environment & Society: Challenges and Solutions
- ENVSOCTY 2GI3 - Geographic Information Systems
- GEOG 2GI3

6 units

- ENVSOCTY 3MA3 - Research Methods
- ENVSOCTY 3MB3 - Data Analysis
- GEOG 3MA3
- GEOG 3MB3

(See *Note 8* above.)

3 units

- ENVIRSC 3ME3 - Environmental Field Camp
- ENVSOCTY 3MF3 - Urban Field Camp
- GEOG 3MF3

9 units

- Level II ENVSOCTY, EARTHSC, ENVIRSC, GEOG

(See *Note 7* above.)

15 units

- Level III or IV ENVSOCTY, EARTHSC, ENVIRSC, GEOG

(See *Note 7* above.)

36 units

- courses specified for the other subject

0-3 units

0-3 units

- ENVSOCTY 1HA3 - Society, Culture and Environment
- ENVSOCTY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3

(See *Note 4*)

12-15 units

- Electives

## HONOURS ENVIRONMENT & SOCIETY (B.A.)

### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 5.0 including a grade of at least C in one of ENVSOCTY 1HA3, ENVSOCTY 1HB3, GEOG 1HA3 or GEOG 1HB3 (see *Note 3* below). For continuation in the program, see the section on *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the Faculty of Social Sciences Academic Regulations.

### NOTES

- Not every Environment & Society course listed in this Calendar is offered every year. Students are advised to consult the Master Timetable published by the Office of the Registrar or contact the School of Earth, Environment & Society after April 1st for the list of courses that will be offered in the following academic year.

- Students are strongly encouraged to check the prerequisites of upper-level Environment & Society courses and to speak with an Undergraduate Advisor in the School of Earth, Environment & Society regarding course selection.
- Two of ENVSOCTY 1HA3, ENVSOCTY 1HB3, GEOG 1HA3 and 1HB3 must be completed by the end of 60 units.
- Students intending to register in ENVSOCTY 4MT6 A/B must submit an application to the course coordinator by April 1 of the academic year prior to registration. Application forms are available from the School of Earth, Environment & Society main office after March 1. Students will be informed of their permission to register in ENVSOCTY 4MT6 A/B on April 15. Registration in this course is conditional upon achieving a GPA of at least 7.5.
- Students interested in completing courses in the Geographic Information Systems (GIS) & Spatial Analysis subfield are strongly encouraged to complete MATH 1K03; if a Grade 12 Mathematics U was not completed.
- Students interested in taking courses in Environmental Science and/or Earth science subfields are strongly encouraged to complete ENVIRSC 1C03 and/or EARTHSC 1G03.
- The School of Earth, Environment & Society encourages students to embrace academic breadth in both knowledge and skills. As such, a minimum of 6 units of the 39 elective units (above Level I) must be taken from outside of the School of Earth, Environment & Society.

### REQUIREMENTS

Students who entered the Honours Geography (B.A.) program prior to September 2020 should refer to the 2019-2020 Undergraduate Calendar or their personal Advisement Report for program requirements.

*120 units total (Levels I to IV), of which 48 units may be Level I*

#### LEVEL I: 30 UNITS

30 units

from

- the Level I program completed prior to admission to the program (See *Admission* above.)

#### LEVEL II: 30 UNITS

6 units

- ENVSOCTY 2EI3 - Environment & Society: Challenges and Solutions
- ENVSOCTY 2GI3 - Geographic Information Systems
- GEOG 2EI3
- GEOG 2GI3

12 units

- Level II ENVSOCTY, EARTHSC, ENVIRSC, GEOG

(See *Note 6* above.)

0-3 units

0-3 units

- ENVSOCTY 1HA3 - Society, Culture and Environment
- ENVSOCTY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3

(See *Note 3*)

9-12 units

- Electives

(See *Note 7* above.)

#### LEVELS III: 30 UNITS

6 units

- ENVSOCTY 3MA3 - Research Methods
- ENVSOCTY 3MB3 - Data Analysis
- GEOG 3MA3
- GEOG 3MB3

3 units

- ENVIRSC 3ME3 - Environmental Field Camp
- ENVSOCTY 3MF3 - Urban Field Camp



12 units

- Level III ENVSOCTY, EARTHSC, ENVIRSC, GEOG (See *Note 6* above.)

9 units

- Electives (See *note 7* above.)

**LEVEL IV: 30 UNITS**12 units

- Level IV ENVSOCTY, EARTHSC, ENVIRSC, GEOG

18 units

- Electives (See *Note 7* above.)

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## HONOURS GEOGRAPHY AND ENVIRONMENTAL STUDIES (B.A.)

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**ADMISSION**

Effective September 2020, students will no longer be admitted to the Honours Geography and Environmental Studies (B.A.) program. Interested students are encouraged to view the requirements for the Honours Environment & Society (B.A.) program.

**NOTES**

- Not every Environment & Society course listed in this Calendar is offered every year. For course availability, students are advised to consult "*Class Search*" on Mosaic or contact the School of Earth, Environment & Society after April 1st for the list of courses that will be offered in the following academic year.
- Students are strongly encouraged to check the prerequisites of upper-level Environment & Society courses and to speak with an Undergraduate Advisor in the School of Earth, Environment & Society regarding course selection.
- ENVIRSC 1C03 and two courses from GEOG 1HA3, 1HB3, ENVSOCTY 1HA3, 1HB3 must be completed by the end of 60 units.
- Students intending to register in ENVSOCTY 4MT6 A/B must submit an application to the course coordinator by April 1 of the academic year prior to registration. Application forms are available from the School of Earth, Environment & Society main office after March 1. Students will be informed of their permission to register in ENVSOCTY 4MT6 A/B on April 15. Registration in this course is conditional upon achieving a GPA of at least 7.5.
- Students interested in completing courses in the Geographic Information Systems (GIS) & Spatial Analysis subfield are strongly encouraged to complete MATH 1K03&nbsp;if a Grade 12 Mathematics U was not completed.
- No more than 9 units from EARTHSC 2GG3, ENVIRSC 2WW3, ENVSOCTY 2OC3, ENVSOCTY 2RC3, ENVSOCTY 2RU3, ENVSOCTY 2RW3, ENVSOCTY 3RW3, GEOG 2OC3, 2RC3, 2RU3, 2RW3, 3RW3 may count towards a student's program; additional units taken from this group of courses will count towards elective units.
- The School of Earth, Environment & Society encourages students to embrace academic breadth in both knowledge and skills. As such, a minimum of 6 units of the 39 elective units (above Level I) must be taken from outside of the School of Earth, Environment & Society.

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

**LEVEL I: 30 UNITS**30 units

from

- the Level I program completed prior to admission to the program (See *Admission* above.)

**LEVEL II: 30 UNITS**6 units

- ENVSOCTY 2EI3 - Environment & Society: Challenges and Solutions
- ENVSOCTY 2GI3 - Geographic Information Systems
- GEOG 2EI3
- GEOG 2GI3

12 units

- Level II ENVSOCTY, GEOG, EARTHSC, ENVIRSC (See *Note 6* above.)

0-6 units

- ENVIRSC 1C03 - Climate, Water And Environment
- ENVSOCTY 1HA3 - Society, Culture and Environment
- ENVSOCTY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3 (See *Note 3*)

6-12 units

- Electives (See *Note 7* above.)

**LEVEL III: 30 UNITS**3 units

- ENVSOCTY 3MA3 - Research Methods
- GEOG 3MA3

3 units

- ENVSOCTY 3MB3 - Data Analysis
- GEOG 3MB3

3 units

from

- ENVIRSC 3ME3 - Environmental Field Camp
- ENVSOCTY 3MF3 - Urban Field Camp
- GEOG 3MF3
- GEOG 3ME3

6 units

from

- ENVSOCTY 3EC3 - Environmental Catastrophes
- ENVSOCTY 3EE3 - Energy and Society
- ENVSOCTY 3ER3 - Sustainability and the Economy
- GEOG 3EC3
- GEOG 3EE3
- GEOG 3ER3

6 units

- Level III ENVSOCTY, GEOG, EARTHSC, ENVIRSC (See *Note 6* above.)

9 units

- Electives (see *Note 7* above.)

**LEVEL IV: 30 UNITS**3 units

- ENVSOCTY 4EA3 - Environmental Assessment
- GEOG 4EA3

3 units

- ENVSOCTY 4ET3 - Environmental Policy, Ethics and Risk
- GEOG 4ET3

6 units

- Level IV ENVSOCTY, GEOG, EARTHSC, ENVIRSC

18 units

- Electives (See *Note 7* above.)

## Bachelor of Arts

### ENVIRONMENT & SOCIETY (B.A.)

#### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 3.5 including a grade of C- 4.0 in one of ENVSOCTY 1HA3, ENVSOCTY 1HB3, GEOG 1HA3 or GEOG 1HB3. (See *Note 3* below.)

#### NOTES

- Not every Environment & Society course listed in this Calendar is offered every year. For course availability students are advised to consult "*Class Search*" on Mosaic or contact the School of Earth, Environment & Society after April 1st for the list of courses that will be offered in the following academic year.
- Students are strongly encouraged to check prerequisites of upper-level Environment & Society courses and to speak with an Undergraduate Academic Advisor in the School of Earth, Environment & Society regarding course selection.
- Two of ENVSOCTY 1HA3, ENVSOCTY 1HB3, GEOG 1HA3 and 1HB3 must be completed by the end of 60 units.
- Students interested in completing courses in the Geographic Information Systems (GIS) & Spatial Analysis subfield are strongly encouraged to complete MATH 1K03; if a Grade 12 Mathematics U was not completed.
- Students interested in taking courses in Environmental Science and/or Earth Science subfields are strongly encouraged to complete ENVIRSC 1C03 and/or EARTHSC 1G03.
- The School of Earth, Environment & Society encourages students to embrace academic breadth in both knowledge and skills. As such, a minimum of 6 units of the 36 elective units (above Level I) must be taken from outside of the School of Earth, Environment & Society.

#### REQUIREMENTS

Students who entered the Geography (B.A.) program prior to September 2020 should refer to the 2019-2020 Undergraduate Calendar or their personal Advisement Report for program requirements  
90 units total (Levels I to III), of which 42 units may be Level I

#### LEVEL 1: 30 UNITS

##### 30 units

from

- the Level I program completed prior to admission to the program. (See *Admission* above.)

#### LEVEL II AND III: 60 UNITS

##### 12 units

- Level II ENVSOCTY, EARTHSC, ENVIRSC, GEOG (See *Note 5* above.)

##### 12 units

- Level III or IV ENVSOCTY, EARTHSC, ENVIRSC, GEOG (See *Note 5* above.)

##### 0-3 units

- ENVSOCTY 1HA3 - Society, Culture and Environment
- ENVSOCTY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3 (See *Note 3*)

##### 33-36 units

- Electives (See *Note 6* above.)

## Institute on Globalization and the Human Condition

<https://globalization.mcmaster.ca/>

Faculty as of January 15, 2020

#### DIRECTOR

**Petra Rethmann**/(*Anthropology*) B.A. (*Vienna*), M.A. (*Munich*), Ph.D. (*McGill*)

#### ASSOCIATE DIRECTOR

**Tony Porter**/ B.A. (*McGill*), M.A., Ph.D. (*Carleton*)/Political Science

Please visit the *Interdisciplinary Minors and Thematic Areas* section of this calendar for information on the Interdisciplinary Minor in Globalization Studies.

## Department of Health, Aging and Society

<http://www.healthagingandsociety.mcmaster.ca>

Faculty as of January 15, 2020

#### CHAIR

**James R. Dunn**

#### PROFESSORS

**Gavin Andrews**/B.A. (*Wales*), Ph.D. (*Nottingham*)

**James Dunn**/B.Arts. Sc., M.A. (*McMaster*), Ph.D. (*Simon Fraser*)

**Amanda Grenier**/BSW (*Windsor*), MSW, Ph.D. (*McGill*)

**Michel Grignon**/(*Economics*) M.A. (*ENSAE*), Ph.D. (*EHESS*)

**Chris Sinding**/(*Social Work*) B.A. (*Western Ontario*), M.A. (*McMaster*), Ph.D. (*Toronto*)

#### ADJUNCT PROFESSOR

**Ellie Berger**/(*Nipissing*) B.A. (*McMaster*), M.Sc. (*Toronto*), Ph.D. (*McMaster*)

**David R. Phillips**/(*Lingnan*) B.Sc. Econ., Ph.D. (*Wales*)

**Jason Powell**/(*Liverpool*) B.A., M.A., (*Liverpool*), Ph.D. (*John Moores*)

#### ASSOCIATE PROFESSORS

**Chelsea Gabel**/(*Political Science*) B.A. (*Western Ontario*), M.A. (*Windsor*), Ph.D. (*McMaster*)

**James Gillett**/B.A. (*Calgary*), M.A., Ph.D. (*McMaster*)

**Lydia Kapiriri**/M.D. (*Makerere, Uganda*), MPH (*KIT, Amsterdam*), M.Med PH (*Makerere*), Ph.D. (*Bergen, Norway*)

**Tara Marshall**/(*Social Psychology*) B.A. (*Queen's*), M.A., Ph.D. (*Toronto*)

**Stephanie Premji**/(*Labour Studies*) B.A. (*Concordia*), M.Sc., Ph.D. (*Montréal*)

**Geraldine Voros**/B.A. (*Guelph*), M.A. (*McMaster*)

#### ADJUNCT ASSOCIATE PROFESSORS

**Ellen MacEachen** (*Waterloo*) B.A. (*Concordia*), M.Sc. (*Queen's*), Ph.D. (*Toronto*)

#### ADJUNCT ASSISTANT PROFESSOR

**Dustin Galer**/B.A. (*York*), M.A. (*Toronto*), Ph.D. (*Toronto*)

**Elena Neiterman**/(*Waterloo*) B.A. (*Hebrew University*), M.A. (*Hebrew University*), M.A. (*McMaster*), Ph.D. (*McMaster*)

#### ASSISTANT PROFESSORS

**Meridith Griffin**/B.Kin. (*McMaster*), M.A. (*British Columbia*), Ph.D. (*Exeter*)

**Randy Jackson**/(*Social Work*) B.A. (*Ottawa*), M.A. (*Manitoba*)

**Mat Savelli** Hons. B.A. (*McMaster University*), M.Sc., Ph.D. (*University of Oxford*)

#### ASSOCIATE MEMBERS

**Gina Agarwal**/(*Family Medicine*) MBBS (*University of London*) DFFP (*London*); PhD (*McMaster*)

**David Clark**/(*English and Cultural Studies*) B.A., M.A., Ph.D. (*Western Ontario*)

**Sarah Dickson**/(*Civil Engineering*) B.A. (*Waterloo*), Ph.D. (*Waterloo*)

**Jeremiah E. Hurley**/(*Economics*) B.A. (*John Carroll*), M.A., Ph.D. (*Wisconsin-Madison*)

**Nick Kates**/(*Psychiatry and Behavioural Neurosciences*) B.Med. (*University of*)

London), MCFP

**Carrie McAiney**/(*Psychiatry and Behavioural Neurosciences*) B.A., M.A., Ph.D. (Waterloo)

**Tina Moffat**/(*Anthropology*) B.Sc. (Toronto), B.A., Ph.D. (McMaster)

**Jenny Ploeg**/(*Nursing*) B.Sc.N., M.Sc.N. (Western Ontario), Ph.D. (Toronto), R.N.

**Fran Scott** (*Health Research Methods, Evidence and Impact*), B.Sc. (Toronto), M.D. (McMaster), M.Sc. (McMaster)

**Byron G. Spencer**/(*Economics*) B.A. (Queen's), Ph.D. (Rice)

**Marisa Young**/(*Sociology*) B.A., M.A., (Calgary), Ph.D. (Toronto)

For the Honours Arts & Science and Health Studies program (B.Arts.Sc.), see *Arts & Science Program*

## Bachelor of Arts (Honours)

### COMBINED HONOURS IN AGING AND SOCIETY AND ANOTHER SUBJECT (B.A.)

#### ADMISSION

**Enrolment in this program is limited and possession of the published minimum requirements does not guarantee admission.** Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a minimum Grade Point Average of 5.0 including a grade of at least C in HLTHAGE 1BB3 and satisfaction of admission requirements for the Honours program in the other B.A. subject. For continuation in the program, see the section on *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the Faculty of Social Sciences Academic Regulations.

#### NOTES

- Courses other than those listed below in the Course List may be substituted with the prior permission of the Chair. Students wishing to apply for substitutions must contact the Administrator of the Department of Health, Aging and Society. See Admission to Level II Programs in Academic Regulations in this section of the Calendar.
- HLTHAGE 1AA3 - Introduction to Health and Society or HLTHAGE 1ZZ3 - Inquiry: Introduction to Health and Society must be completed by the end of 60 units, however students are strongly encouraged to complete this requirement prior to the end of Level I. One of HLTHAGE 1AA3 or 1ZZ3 and 1BB3 are prerequisites for HLTHAGE 2BB3 which is a required course in Level II of the program.
- Students who have completed HLTHAGE 2A06 or 3Z06 or equivalent are not required to complete HLTHAGE 2A03, 3B03 or 3G03. Students may choose to complete the Research Methods course(s) as required by the other subject. Students who choose to complete Research Methods requirements in the other subject, will replace with equivalent units from Levels II, III or IV Health, Aging and Society courses.
- Students may take a maximum of 9 units from HLTHAGE 4B03, 4C03, 4H03, 4I03, 4L03, 4N03, 4P03, 4U03, 4V03, 4W03, 4Z06 A/B.

#### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- the Level I program completed prior to admission to the program (See *Admission* above.)

#### 9 UNITS

- HLTHAGE 2BB3 - Perspectives in Health, Aging and Society
- HLTHAGE 2D03 - Continuum of Care
- HLTHAGE 2F03 - Aging and Health Care Systems

#### 3 UNITS

- HLTHAGE 2A03 - Research Methods in Health and in Aging I

#### 3 UNITS

from

- HLTHAGE 3B03 - Advanced Research Methods
- HLTHAGE 3G03 - Community Based Research

(See *Note 2* above.)

#### 3-6 UNITS

from

- SOCSOCI 2J03 - Introduction to Statistics
- in combined programs within the Faculty of Social Sciences, the Research Methods/Statistics requirement specified for the other subject.

#### 3 UNITS

- HLTHAGE 3L03 - Embodied Aging

#### 3 UNITS

from

- HLTHAGE 3BB3 - Field Experience
- HLTHAGE 3EE3 - The Practice of Everyday Life: Observations and Inquiry

#### 9 UNITS

from

- HLTHAGE 4B03 - Death and Dying in Later Life
- HLTHAGE 4C03 - Representations of Health and Illness Across the Lifecourse
- HLTHAGE 4H03 - History and Culture of Aging
- HLTHAGE 4I03 - Aging and Health
- HLTHAGE 4L03 - Social Policy and Aging
- HLTHAGE 4N03 - Aging and Wellbeing
- HLTHAGE 4P03 - Leisure and Recreation in Later Life
- HLTHAGE 4U03 - Professions and Occupations in Health and Aging
- HLTHAGE 4V03 - Aging and Humour: The Good, the Bad and the Funny
- HLTHAGE 4W03 - Selected Issues in Aging and Society
- HLTHAGE 4Z06 A/B - Health, Aging and Society Thesis

(See *Note 3* above)

#### 6 UNITS

from

- *Course List* or Health, Aging and Society

#### 36 UNITS

- Courses as specified for the other subject

#### 3 UNITS

- HLTHAGE 1AA3 - Introduction to Health and Society
- HLTHAGE 1ZZ3 - Inquiry: Introduction to Health and Society

(if not completed in Level 1 see *Note 2*)

#### 9-12 UNITS

- Electives

#### COURSE LIST

- ANTHROP 3HI3 - Medical Anthropology
- ECON 2CC3 - Health Economics and its Application to Health Policy
- ECON 3D03 - Labour Economics
- ECON 3Q03 - The Economics of Aging
- ECON 3Z03 - Health Economics
- ENVSOCY 2HI3 - Health and Place
- ENVSOCY 3HP3 - Population, Health and Aging
- GEOG 2HI3
- GEOG 3HH3
- GEOG 3HP3
- KINESIOL 3S03
- KINESIOL 3SS3
- PHILOS 2D03 - Bioethics
- PHILOS 3C03 - Advanced Bioethics
- RELIGST 2C03
- PSYCH 3AG3 - Aging
- RELIGST 2M03
- RELIGST 2N03

- RELIGST 2WW3
- SCAR 2M03 - Death and Dying: Comparative Views
- SCAR 2N03 - Death and Dying: The Western Experience
- SCAR 2WW3 - Health, Healing and Religion: Western Perspectives
- SOCWORK 3C03 - Social Aspects of Health and Illness
- SOCWORK 4L03
- SOCWORK 4R03 - Feminist Approaches to Social Work and Social Justice
- SOCIOL 3X03 - Sociology of Aging
- SOCIOL 3CC3 - Sociology of the Family and the Life Cycle
- SOCIOL 3G03 - Sociology of Health Care
- SOCIOL 3HH3 - Sociology of Health

or other designated and approved courses. (See Note 1 above.)

## COMBINED HONOURS IN HEALTH AND SOCIETY AND ANOTHER SUBJECT (B.A.)

### ADMISSION

**Enrolment in this program is limited and possession of the published minimum requirements does not guarantee admission.** Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a minimum Grade Point Average of 5.0, including a grade of at least C in HLTHAGE 1AA3 or 1ZZ3 and satisfaction of admission requirements for the Honours program in the other B.A. subject. For continuation in the program, see *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the Faculty of Social Sciences Academic Regulations.

### NOTES

- See Admission to Level II Programs in Academic Regulations in this section of the Calendar.
- HLTHAGE 1BB3 - Introduction to Aging and Society must be completed by the end of 60 units, however students are strongly encouraged to complete this requirement prior to the end of Level I. One of HLTHAGE 1AA3 or 1ZZ3 and 1BB3 are prerequisites for HLTHAGE 2BB3 which is a required course in Level II of the program.
- Students are strongly encouraged to complete HLTHAGE 2A03 and 3B03 or 3G03 to satisfy the Research Methods requirement of the degree, but may complete the Research Methods course(s) as required by the other subject and replace these with equal units of Health, Aging and Society or Course List courses.
- Students may take a maximum of 9 units from HLTHAGE 4B03, 4C03, 4D03, 4F03, 4G03, 4I03, 4J03, 4N03, 4O03, 4Q03, 4R03, 4S03, 4T03, 4U03, 4Z06 A/B.

### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- the Level I program completed prior to admission to the program. (See *Admission* above.)

#### 9 UNITS

- HLTHAGE 2B03 - Social Identity, Health and Illness
- HLTHAGE 2BB3 - Perspectives in Health, Aging and Society
- HLTHAGE 2F03 - Aging and Health Care Systems

#### 3 UNITS

- HLTHAGE 2A03 - Research Methods in Health and in Aging I

#### 3 UNITS

from

- HLTHAGE 3B03 - Advanced Research Methods
- HLTHAGE 3G03 - Community Based Research
- (See *Note 2* above.)

#### 3-6 UNITS

from

- SOCSCI 2J03 - Introduction to Statistics

or

- In combined programs within the Faculty of Social Sciences, the Research Methods/Statistics requirement specified for the other subject

#### 3 UNITS

- HLTHAGE 3AA3 - State, Civil Society and Health

#### 3 UNITS

from

- HLTHAGE 3BB3 - Field Experience
- HLTHAGE 3EE3 - The Practice of Everyday Life: Observations and Inquiry

#### 9 UNITS

from

- HLTHAGE 4B03 - Death and Dying in Later Life
- HLTHAGE 4C03 - Representations of Health and Illness Across the Lifecourse
- HLTHAGE 4D03 - Health, Culture and Diversity
- HLTHAGE 4F03 - Selected Issues in Health and Society
- HLTHAGE 4G03 - Global Health
- HLTHAGE 4I03 - Aging and Health
- HLTHAGE 4J03 - Narratives of Illness
- HLTHAGE 4N03 - Aging and Wellbeing
- HLTHAGE 4O03 - Soundscapes of Wellbeing in Popular Music
- HLTHAGE 4Q03 - Representations of Mental Illness
- HLTHAGE 4R03 - Beyond the Social: Determinants of Indigenous Peoples Health
- HLTHAGE 4S03 - Health and the Unfairly Structured City
- HLTHAGE 4T03 - Gender, Sex and Health
- HLTHAGE 4U03 - Professions and Occupations in Health and Aging
- HLTHAGE 4Z06 A/B - Health, Aging and Society Thesis

(see *Note 3* above)

#### 6 UNITS

from

- *Course List* or Health, Aging and Society

#### 36 UNITS

- courses specified for the other subject

#### 0-3 UNITS

- HLTHAGE 1BB3 - Introduction to Aging and Society

(if not completed in Level I see *Note 2*)

#### 9-15 UNITS

- Electives

### COURSE LIST

*Students are responsible for ensuring that course prerequisites are fulfilled.*

- ANTHROP 2AN3 - The Anthropology of Food and Nutrition
- ANTHROP 2FF3 - Human Skeletal Biology and Bioarchaeology
- ANTHROP 2U03 - Plagues and People
- ANTHROP 3C03 - Health and Environment: Anthropological Approaches
- ANTHROP 3HI3 - Medical Anthropology
- ANTHROP 3BD3 - The Black Death
- ANTHROP 3Y03 - Indigenous Community Health and Wellbeing
- ANTHROP 4S03 - The Anthropology of Infectious Disease
- ECON 3Z03 - Health Economics
- ENVSOCTY 2HI3 - Health and Place
- ENVSOCTY 3HP3 - Population, Health and Aging
- ENVSOCTY 4HH3 - Environment and Health
- HISTORY 2EH3
- HISTORY 3CP3
- GEOG 2HI3
- GEOG 3HH3
- GEOG 3HP3



- GEOG 4HH3
- HTHSCI 2G03 - Statistics & Epidemiology 1
- INDIGST 3H03 - Indigenous Medicine I - Philosophy
- INDIGST 3HH3 - Indigenous Medicine II - Practical
- KINESIOL 3AA3
- KINESIOL 3S03
- KINESIOL 3SS3
- LABRST 3D03 - Work: Dangerous to your Health?
- MUSIC 2MT3 - Introduction to the Practice of Music Therapy
- PEACEST 3B03 - Peace-Building and Health Initiatives
- PHILOS 2D03 - Bioethics
- PHILOS 3C03 - Advanced Bioethics
- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 3B03 - Special Populations
- RELIGST 2C03
- RELIGST 2ER3
- RELIGST 2M03
- RELIGST 2N03
- RELIGST 2MT3
- RELIGST 2WW3
- SCAR 2ER3 - Religion, the Body, and the Machine
- SCAR 2M03 - Death and Dying: Comparative Views
- SCAR 2MT3 - Asian Meditation Traditions
- SCAR 2N03 - Death and Dying: The Western Experience
- SCAR 2WW3 - Health, Healing and Religion: Western Perspectives
- SOCWORK 3C03 - Social Aspects of Health and Illness
- SOCWORK 3003 - Social Work and Sexualities
- SOCIOLOG 3G03 - Sociology of Health Care
- SOCIOLOG 3HH3 - Sociology of Health
- SOCIOLOG 4G03 - Advanced Topics in the Sociology of Health and Illness

## HONOURS AGING AND SOCIETY (B.A.)

### ADMISSION

**Enrolment in this program is limited and possession of the published minimum requirements does not guarantee admission.** Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a minimum Grade Point Average of 5.0 including a grade of at least C in HLTHAGE 1BB3. For continuation in the program, see the section on *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the Faculty of Social Sciences Academic Regulations.

### NOTES

- See Admission to Level II Programs in Academic Regulations in this section of the Calendar.
- HLTHAGE 1AA3 - Introduction to Health and Society or HLTHAGE 1ZZ3 - Inquiry: Introduction to Health and Society must be completed by the end of 60 units, however students are strongly encouraged to complete this requirement in Level I. One of HLTHAGE 1AA3 or 1ZZ3 and 1BB3 are prerequisites for HLTHAGE 2BB3 which is a required course in Level II of the program.
- Students who have completed HLTH AGE 2A06 or 3Z06 (or equivalent -- see course antirequisites) are not required to complete HLTHAGE 2A03 or 3B03 or 3G03.
- Students may take a maximum of 9 units from HLTHAGE 4B03, 4C03, 4H03, 4I03, 4L03, 4N03, 4P03, 4U03, 4V03, 4W03, 4Z06 A/B.

### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

### 30 UNITS

from

- the Level I program completed prior to admission to the program (See Admission above.)

### 9 UNITS

- HLTHAGE 2BB3 - Perspectives in Health, Aging and Society
- HLTHAGE 2D03 - Continuum of Care
- HLTHAGE 2F03 - Aging and Health Care Systems

### 3 UNITS

- HLTHAGE 2A03 - Research Methods in Health and in Aging I

### 3 UNITS

from

- HLTHAGE 3B03 - Advanced Research Methods
- HLTHAGE 3G03 - Community Based Research

(See *Note 3* above.)

### 3 UNITS

- SOCSCI 2J03 - Introduction to Statistics

### 3 UNITS

- HLTHAGE 3L03 - Embodied Aging

### 3 UNITS

from

- HLTHAGE 3BB3 - Field Experience
- HLTHAGE 3EE3 - The Practice of Everyday Life: Observations and Inquiry

### 9 UNITS

from

- HLTHAGE 4B03 - Death and Dying in Later Life
- HLTHAGE 4C03 - Representations of Health and Illness Across the Lifecourse
- HLTHAGE 4H03 - History and Culture of Aging
- HLTHAGE 4I03 - Aging and Health
- HLTHAGE 4L03 - Social Policy and Aging
- HLTHAGE 4N03 - Aging and Wellbeing
- HLTHAGE 4P03 - Leisure and Recreation in Later Life
- HLTHAGE 4U03 - Professions and Occupations in Health and Aging
- HLTHAGE 4V03 - Aging and Humour: The Good, the Bad and the Funny
- HLTHAGE 4W03 - Selected Issues in Aging and Society
- HLTHAGE 4Z06 A/B - Health, Aging and Society Thesis

(See *Note 4* above)

### 15 UNITS

from

- Course List or Health, Aging and Society

### 0-3 UNITS

from

- HLTHAGE 1AA3 - Introduction to Health and Society
- HLTHAGE 1ZZ3 - Inquiry: Introduction to Health and Society

(See *Note 5*)

### 39-42 UNITS

- Electives, of which at least six units must be taken from outside of Health, Aging & Society

### COURSE LIST

- ANTHROP 3HI3 - Medical Anthropology
- ECON 2CC3 - Health Economics and its Application to Health Policy
- ECON 3D03 - Labour Economics
- ECON 3Q03 - The Economics of Aging
- ECON 3Z03 - Health Economics
- ENVSOCTY 3HP3 - Population, Health and Aging
- ENVSOCTY 2HI3 - Health and Place
- GEOG 2HI3
- GEOG 3HH3
- GEOG 3HP3
- KINESIOL 3S03
- KINESIOL 3SS3
- PHILOS 2D03 - Bioethics
- PHILOS 3C03 - Advanced Bioethics
- PSYCH 3AG3 - Aging

- RELIGST 2C03
- REGLIST 2ER3
- RELIGST 2M03
- RELIGST 2N03
- RELIGST 2WW3
- SCAR 2ER3 - Religion, the Body, and the Machine
- SCAR 2M03 - Death and Dying: Comparative Views
- SCAR 2N03 - Death and Dying: The Western Experience
- SCAR 2WW3 - Health, Healing and Religion: Western Perspectives
- SOCWORK 3C03 - Social Aspects of Health and Illness
- SOCWORK 4R03 - Feminist Approaches to Social Work and Social Justice
- SOCIOLOG 3X03 - Sociology of Aging
- SOCIOLOG 3CC3 - Sociology of the Family and the Life Cycle
- SOCIOLOG 3G03 - Sociology of Health Care
- SOCIOLOG 3HH3 - Sociology of Health

or other designated and approved courses. (See Note 2 above.)

## HONOURS AGING AND SOCIETY SPECIALIZATION IN MENTAL HEALTH AND ADDICTION (B.A.)

### ADMISSION

**Enrolment in this program is limited and possession of the published minimum requirements does not guarantee admission.** Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a minimum Grade Point Average of 5.0 including a grade of at least C in HLTHAGE 1BB3 and a grade of at least C in HLTHAGE 1CC3. HLTHAGE 1AA3 or HLTHAGE 1ZZ3 must be completed by the end of 60 units, however students are **strongly** encouraged to complete this requirement in Level I. For continuation in the program, see *Minimum Requirements for Entering and Continuing in a Program Beyond Level I*.

### NOTES

- See Admission to Level II Programs in Academic Regulations in this section of the Calendar.
- Students may take a maximum of 9-12 units from HLTHAGE 4B03, 4C03, 4H03, 4I03, 4J03, 4L03, 4N03, 4O03, 4P03, 4Q03, 4U03, 4V03, 4W03, 4Z06 A/B.
- HLTHAGE 1AA3 - Introduction to Health and Society or HLTHAGE 1ZZ3 - Inquiry: Introduction to Health and Society **must** be completed by the end of 60 units, however students are **strongly** encouraged to complete this requirement prior to the end of Level I. Both HLTHAGE 1AA3 or 1ZZ3 and 1BB3 are prerequisites for HLTHAGE 2BB3 which is a required course in Level II of the program.

### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- Level I program completed prior to admission to the program (See *Admission* above.)

#### 15 UNITS

from

- HLTHAGE 2BB3 - Perspectives in Health, Aging and Society
- HLTHAGE 2D03 - Continuum of Care
- HLTHAGE 2F03 - Aging and Health Care Systems
- HLTHAGE 2GG3 - Mental Health and Society
- HLTHAGE 2L03 - Drugs, Sex and Alcohol: Society and its Addictions

#### 3 UNITS

- HLTHAGE 2A03 - Research Methods in Health and in Aging I

#### 3 UNITS

from

- HLTHAGE 3B03 - Advanced Research Methods

- HLTHAGE 3G03 - Community Based Research

#### 3 UNITS

- SOCSCI 2J03 - Introduction to Statistics

#### 3 UNITS

from

- HLTHAGE 3M03 - Approaches to Mental Health and Resilience
- HLTHAGE 3N03 - Aging and Mental Health

#### 3 UNITS

- HLTHAGE 3L03 - Embodied Aging

#### 3 UNITS

from

- HLTHAGE 3BB3 - Field Experience
- HLTHAGE 3EE3 - The Practice of Everyday Life: Observations and Inquiry

#### 6 UNITS

from

- HLTHAGE 4J03 - Narratives of Illness
- HLTHAGE 4N03 - Aging and Wellbeing
- HLTHAGE 4O03 - Soundscapes of Wellbeing in Popular Music
- HLTHAGE 4Q03 - Representations of Mental Illness

#### 12 UNITS

from

- ANTHROP 3HI3 - Medical Anthropology
- ANTHROP 3Y03 - Indigenous Community Health and Wellbeing
- ECON 2Q03 - Economics of Bad Behaviour
- HLTHAGE 3D03 - Perspectives on Disability, Chronic Illness and Aging
- HLTHAGE 3M03 - Approaches to Mental Health and Resilience
- HLTHAGE 3N03 - Aging and Mental Health
- HLTHAGE 3R03 - Health Inequalities
- HLTHAGE 3YY3 - Indigenous Community Health and Wellbeing
- HLTHAGE 4J03 - Narratives of Illness
- HLTHAGE 4Q03 - Representations of Mental Illness
- HTHSCI 3MH3 - Critical Examination of Mental Health
- HTHSCI 4IC3 - Integration of Children's Physical and Mental Health
- INDIGST 2F03 - Residential Schools in Canada: History and Impact
- INDIGST 3H03 - Indigenous Medicine I - Philosophy
- POLSCI 2C03 - Force and Fear, Crime and Punishment
- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 3BA3 - Positive Psychology
- RELIGST 2MT3
- SCAR 2MT3 - Asian Meditation Traditions
- SOCIOLOG 2BB3 - Sociology of Deviance
- SOCIOLOG 2CC3 - Constructing Deviance
- SOCIOLOG 3GG3 - Special Topics in the Sociology of Deviance
- SOCIOLOG 3HH3 - Sociology of Health
- SOCIOLOG 4GG3 - Special Topics in the Sociology of Deviance
- SOCPSY 3A03 - Mental Health
- SOCPSY 3ZZ3 - Small Worlds: Children and Childhood
- SOCWORK 4Y03 - Critical Issues in Mental Health & Addiction: Mad & Critical Disability Studies Perspectives for SW

#### 3 OR 6 UNITS AS OUTLINED BELOW

##### 3 units

from

- HLTHAGE 4B03 - Death and Dying in Later Life
- HLTHAGE 4C03 - Representations of Health and Illness Across the Lifecourse
- HLTHAGE 4H03 - History and Culture of Aging
- HLTHAGE 4I03 - Aging and Health
- HLTHAGE 4J03 - Narratives of Illness
- HLTHAGE 4L03 - Social Policy and Aging
- HLTHAGE 4N03 - Aging and Wellbeing
- HLTHAGE 4O03 - Soundscapes of Wellbeing in Popular Music

- HLTHAGE 4P03 - Leisure and Recreation in Later Life
- HLTHAGE 4Q03 - Representations of Mental Illness
- HLTHAGE 4U03 - Professions and Occupations in Health and Aging
- HLTHAGE 4V03 - Aging and Humour: The Good, the Bad and the Funny
- HLTHAGE 4W03 - Selected Issues in Aging and Society

or 6 units

- HLTHAGE 4Z06 A/B - Health, Aging and Society Thesis

#### 0-3 UNITS

from

- HLTHAGE 1AA3 - Introduction to Health and Society
- HLTHAGE 1ZZ3 - Inquiry: Introduction to Health and Society

(if not completed in Level I see *Note 3*)

#### 30-36 UNITS

- Electives, of which no more than 15 units may be from Health, Aging and Society (the maximum Health, Aging and Society courses to be taken is 66).

## HONOURS HEALTH AND SOCIETY (B.A.)

### ADMISSION

**Enrolment in this program is limited and possession of the published minimum requirements does not guarantee admission.** Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a minimum Grade Point Average of 5.0 including a grade of at least C in HLTHAGE 1AA3 or HLTHAGE 1ZZ3. For continuation in the program, see *Minimum Requirements for Entering and Continuing in a Program Beyond Level I*.

### NOTES

- See Admission to Level II Programs in Academic Regulations in this section of the Calendar.
- Courses other than those listed below in the Course List may be substituted with the prior permission of the Chair. Students wishing to apply for substitutions must contact the Administrator of the Department of Health, Aging and Society. Given the extensive curriculum revisions that have been made, students are **strongly** encouraged to review course antirequisites in the course Lists section of the Calendar.
- Students who have completed HEALTHST 2B03 and 3G03 or HLTH AGE 2A06 or 3Z06 (or equivalent) are not required to complete HLTHAGE 2A03 and 3B03 or 3G03.
- Students may take a maximum of 9 units from HLTHAGE 4B03, 4C03, 4D03, 4F03, 4G03, 4I03, 4J03, 4N03, 4O03, 4Q03, 4R03, 4S03, 4T03, 4U03, 4Z06 A/B.
- HLTHAGE 1BB3: Introduction to Aging and Society must be completed by the end of 60 units, however students are **strongly** encouraged to complete this requirement in Level I. Both HLTHAGE 1AA3 or 1ZZ3 and 1BB3 are prerequisites for HLTHAGE 2BB3 which is a required course in Level II of the program.

### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- the Level I program completed prior to admission to the program. (See *Admission* above.)

#### 9 UNITS

- HLTHAGE 2B03 - Social Identity, Health and Illness
- HLTHAGE 2BB3 - Perspectives in Health, Aging and Society
- HLTHAGE 2F03 - Aging and Health Care Systems

#### 3 UNITS

- HLTHAGE 2A03 - Research Methods in Health and in Aging I

#### 3 UNITS

from

- HLTHAGE 3B03 - Advanced Research Methods
- HLTHAGE 3G03 - Community Based Research

(See *Note 3* above.)

#### 3 UNITS

- SOCSOCI 2J03 - Introduction to Statistics

#### 3 UNITS

- HLTHAGE 3AA3 - State, Civil Society and Health

#### 3 UNITS

from

- HLTHAGE 3BB3 - Field Experience
- HLTHAGE 3EE3 - The Practice of Everyday Life: Observations and Inquiry

#### 9 UNITS

from

- HLTHAGE 4B03 - Death and Dying in Later Life
- HLTHAGE 4C03 - Representations of Health and Illness Across the Lifecourse
- HLTHAGE 4D03 - Health, Culture and Diversity
- HLTHAGE 4F03 - Selected Issues in Health and Society
- HLTHAGE 4G03 - Global Health
- HLTHAGE 4I03 - Aging and Health
- HLTHAGE 4J03 - Narratives of Illness
- HLTHAGE 4N03 - Aging and Wellbeing
- HLTHAGE 4O03 - Soundscapes of Wellbeing in Popular Music
- HLTHAGE 4Q03 - Representations of Mental Illness
- HLTHAGE 4R03 - Beyond the Social: Determinants of Indigenous Peoples Health
- HLTHAGE 4S03 - Health and the Unfairly Structured City
- HLTHAGE 4T03 - Gender, Sex and Health
- HLTHAGE 4U03 - Professions and Occupations in Health and Aging
- HLTHAGE 4Z06 A/B - Health, Aging and Society Thesis

(See *Note 4* above)

#### 15 UNITS

from

- *Course List* or Health, Aging and Society

#### 0-3 UNITS

- HLTHAGE 1BB3 - Introduction to Aging and Society

If not completed in Level 1

(See *Note 5*)

#### 39-42 UNITS

- Electives, of which at least six units must be taken from outside of Health, Aging & Society

### COURSE LIST

*Students are responsible for ensuring that course prerequisites are fulfilled.*

- ANTHROP 2AN3 - The Anthropology of Food and Nutrition
- ANTHROP 2U03 - Plagues and People
- ANTHROP 3C03 - Health and Environment: Anthropological Approaches
- ANTHROP 3HI3 - Medical Anthropology
- ANTHROP 3Y03 - Indigenous Community Health and Wellbeing
- ECON 2CC3 - Health Economics and its Application to Health Policy
- ECON 3Z03 - Health Economics
- ENVSOCTY 2HI3 - Health and Place
- ENVSOCTY 3HP3 - Population, Health and Aging
- ENVSOCTY 4HH3 - Environment and Health
- GEOG 2HI3
- GEOG 3HH3
- GEOG 3HP3
- GEOG 4HH3
- HISTORY 2EH3
- HTHSCI 2G03 - Statistics & Epidemiology 1
- INDIGST 3H03 - Indigenous Medicine I - Philosophy
- INDIGST 3HH3 - Indigenous Medicine II - Practical

- KINESIOL 3A03
- KINESIOL 3S03
- KINESIOL 3SS3
- LABRST 3D03 - Work: Dangerous to your Health?
- MUSIC 2MT3 - Introduction to the Practice of Music Therapy
- PEACEST 3B03 - Peace-Building and Health Initiatives
- PHILOS 2D03 - Bioethics
- PHILOS 3C03 - Advanced Bioethics
- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 3B03 - Special Populations
- RELIGST 2C03
- RELIGST 2ER3
- RELIGST 2M03
- RELIGST 2MT3
- RELIGST 2N03
- RELIGST 2WW3
- RELIGST 2WX3
- SCAR 2ER3 - Religion, the Body, and the Machine
- SCAR 2M03 - Death and Dying: Comparative Views
- SCAR 2MT3 - Asian Meditation Traditions
- SCAR 2N03 - Death and Dying: The Western Experience
- SCAR 2WW3 - Health, Healing and Religion: Western Perspectives
- SOCWORK 3C03 - Social Aspects of Health and Illness
- SOCWORK 3O03 - Social Work and Sexualities
- SOCIOLOG 3G03 - Sociology of Health Care
- SOCIOLOG 3HH3 - Sociology of Health

## HONOURS HEALTH AND SOCIETY SPECIALIZATION IN MENTAL HEALTH AND ADDICTION (B.A.)

### ADMISSION

Enrolment in this program is limited and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a minimum Grade Point Average of 5.0 including a grade of at least C in HLTHAGE 1AA3 or 1ZZ3 and a grade of at least C in HLTHAGE 1CC3. HLTHAGE 1BB3 must be completed by the end of 60 units, however students and are strongly encouraged to complete this requirement in Level I. For continuation in the program, see General Academic Regulations.

### NOTES

- See Admission to Level II Programs in Academic Regulations in this section of the Calendar.
- Students may take a maximum of 9-12 units from HLTHAGE 4B03, 4C03, 4D03, 4F03, 4G03, 4I03, 4J03, 4N03, 4O03, 4Q03, 4R03, 4S03, 4T03, 4U03, 4Z06 A/B.
- HLTHAGE 1BB3: Introduction to Aging and Society must be completed by the end of 60 units, however students are **strongly** encouraged to complete this requirement in Level I. One of HLTHAGE 1AA3 or 1ZZ3 and 1BB3 are prerequisites for HLTHAGE 2BB3 which is a required course in Level II of

### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- Level I program completed prior to admission to the program (See *Admission* above.)

#### 15 UNITS

from

- HLTHAGE 2B03 - Social Identity, Health and Illness
- HLTHAGE 2BB3 - Perspectives in Health, Aging and Society
- HLTHAGE 2F03 - Aging and Health Care Systems

- HLTHAGE 2GG3 - Mental Health and Society
- HLTHAGE 2L03 - Drugs, Sex and Alcohol: Society and its Addictions

#### 3 UNITS

- HLTHAGE 2A03 - Research Methods in Health and in Aging I

#### 3 UNITS

from

- HLTHAGE 3B03 - Advanced Research Methods
- HLTHAGE 3G03 - Community Based Research

#### 3 UNITS

- SOCSCI 2J03 - Introduction to Statistics

#### 3 UNITS

from

- HLTHAGE 3M03 - Approaches to Mental Health and Resilience
- HLTHAGE 3N03 - Aging and Mental Health

#### 3 UNITS

- HLTHAGE 3AA3 - State, Civil Society and Health

#### 3 UNITS

from

- HLTHAGE 3BB3 - Field Experience
- HLTHAGE 3EE3 - The Practice of Everyday Life: Observations and Inquiry

#### 6 UNITS

from

- HLTHAGE 4J03 - Narratives of Illness
- HLTHAGE 4N03 - Aging and Wellbeing
- HLTHAGE 4O03 - Soundscapes of Wellbeing in Popular Music
- HLTHAGE 4Q03 - Representations of Mental Illness

#### 12 UNITS

from

- ANTHROP 3HI3 - Medical Anthropology
- ANTHROP 3Y03 - Indigenous Community Health and Wellbeing
- ECON 2Q03 - Economics of Bad Behaviour
- HLTHAGE 3D03 - Perspectives on Disability, Chronic Illness and Aging
- HLTHAGE 3M03 - Approaches to Mental Health and Resilience
- HLTHAGE 3N03 - Aging and Mental Health
- HLTHAGE 3R03 - Health Inequalities
- HLTHAGE 3YY3 - Indigenous Community Health and Wellbeing
- HLTHAGE 4J03 - Narratives of Illness
- HLTHAGE 4Q03 - Representations of Mental Illness
- HTHSCI 3MH3 - Critical Examination of Mental Health
- HTHSCI 4IC3 - Integration of Children's Physical and Mental Health
- INDIGST 2F03 - Residential Schools in Canada: History and Impact
- INDIGST 3H03 - Indigenous Medicine I - Philosophy
- POLSCI 2C03 - Force and Fear, Crime and Punishment
- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 3BA3 - Positive Psychology
- RELIGST 2MT3
- SCAR 2MT3 - Asian Meditation Traditions
- SOCIOLOG 2BB3 - Sociology of Deviance
- SOCIOLOG 2CC3 - Constructing Deviance
- SOCIOLOG 3GG3 - Special Topics in the Sociology of Deviance
- SOCIOLOG 3HH3 - Sociology of Health
- SOCIOLOG 4GG3 - Special Topics in the Sociology of Deviance
- SOCPSY 3A03 - Mental Health
- SOCPSY 3ZZ3 - Small Worlds: Children and Childhood
- SOCWORK 4Y03 - Critical Issues in Mental Health & Addiction: Mad & Critical Disability Studies Perspectives for SW

#### 3-6 UNITS AS OUTLINED BELOW

##### 3 units

from

- HLTHAGE 4B03 - Death and Dying in Later Life
- HLTHAGE 4C03 - Representations of Health and Illness Across the



Lifecourse

- HLTHAGE 4D03 - Health, Culture and Diversity
- HLTHAGE 4F03 - Selected Issues in Health and Society
- HLTHAGE 4G03 - Global Health
- HLTHAGE 4I03 - Aging and Health
- HLTHAGE 4J03 - Narratives of Illness
- HLTHAGE 4M03 - Environment and Health
- HLTHAGE 4N03 - Aging and Wellbeing
- HLTHAGE 4O03 - Soundscapes of Wellbeing in Popular Music
- HLTHAGE 4Q03 - Representations of Mental Illness
- HLTHAGE 4R03 - Beyond the Social: Determinants of Indigenous Peoples Health
- HLTHAGE 4S03 - Health and the Unfairly Structured City
- HLTHAGE 4T03 - Gender, Sex and Health
- HLTHAGE 4U03 - Professions and Occupations in Health and Aging

or 6 units

- HLTHAGE 4Z06 A/B - Health, Aging and Society Thesis

#### 0-3 UNITS

- HLTHAGE 1BB3 - Introduction to Aging and Society

(If not completed in Level I see *Note 3*)

#### 33-36 UNITS

- Electives, of which no more than 15 units may be from Health, Aging and Society (the maximum Health, Aging and Society courses to be taken is 66).

## Bachelor of Arts

### HEALTH, AGING AND SOCIETY (B.A.)

#### ADMISSION

**Enrolment in this program is limited.** Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a minimum Grade Point Average of 3.5 and an average of at least 4.0 in HLTHAGE 1AA3 or 1ZZ3 and 1BB3.

#### NOTES

- See Admission to Level II Programs in Academic Regulations in this section of the Calendar.
- Students who completed HLTH AGE 2A06, 3A03 or 3Z06 or equivalent (please refer to antirequisites in the Course Listings section of this Calendar) are not required to complete HLTHAGE 2A03 or 3B03 or 3G03.

#### REQUIREMENTS

90 units total (Levels I to III), of which 42 units may be Level I

#### 30 UNITS

from

- the Level I program completed prior to admission to the program (See *Admission* above.)

#### 15 UNITS

- HLTHAGE 2A03 - Research Methods in Health and in Aging I
- HLTHAGE 2B03 - Social Identity, Health and Illness
- HLTHAGE 2BB3 - Perspectives in Health, Aging and Society
- HLTHAGE 2D03 - Continuum of Care
- HLTHAGE 2F03 - Aging and Health Care Systems

(See *Note 2* above.)

#### 6 UNITS

- HLTHAGE 3AA3 - State, Civil Society and Health
- HLTHAGE 3L03 - Embodied Aging

#### 3 UNITS

from

- HLTHAGE 3B03 - Advanced Research Methods
- HLTHAGE 3G03 - Community Based Research

#### 3 UNITS

from

- HLTHAGE 3BB3 - Field Experience
- HLTHAGE 3EE3 - The Practice of Everyday Life: Observations and Inquiry

#### 33 UNITS

- Electives, of which at least six units must be taken from outside Health, Aging & Society

## Minor(s):

### MINOR IN HEALTH, AGING AND SOCIETY

#### NOTES

- Students are responsible for ensuring that course prerequisites are fulfilled.
- KINESIOL 2G03 and 3A03 may be used to satisfy Health, Aging and Society requirements for Kinesiology students pursuing a Minor in Health, Aging and Society.
- Students who have completed GERONTOL and/or HEALTHST courses may count these towards a minor in Health, Aging and Society. Given the extensive curriculum revisions that have been made, students are **strongly** encouraged to review course antirequisites in the *Course Listings* section of the Calendar.

#### REQUIREMENTS

24 units total

#### 3 UNITS

from

- HLTHAGE 1AA3 - Introduction to Health and Society
- HLTHAGE 1ZZ3 - Inquiry: Introduction to Health and Society

#### 3 UNITS

- HLTHAGE 1BB3 - Introduction to Aging and Society

#### 18 UNITS

from

- *Course List* or Health, Aging and Society

#### COURSE LIST

- ANTHROP 2AN3 - The Anthropology of Food and Nutrition
- ANTHROP 2U03 - Plagues and People
- ANTHROP 3C03 - Health and Environment: Anthropological Approaches
- ANTHROP 3HI3 - Medical Anthropology
- ANTHROP 3Y03 - Indigenous Community Health and Wellbeing
- ANTHROP 4S03 - The Anthropology of Infectious Disease
- ECON 2CC3 - Health Economics and its Application to Health Policy
- ECON 3Q03 - The Economics of Aging
- ECON 3Z03 - Health Economics
- ENVSOCY 2HI3 - Health and Place
- ENVSOCY 3HP3 - Population, Health and Aging
- ENVSOCY 4HH3 - Environment and Health
- GEOG 2HI3
- GEOG 3HH3
- GEOG 3HP3
- GEOG 4HH3
- HTHSCI 2G03 - Statistics & Epidemiology 1
- HTHSCI 2J03
- INDIGST 3H03 - Indigenous Medicine I - Philosophy
- INDIGST 3HH3 - Indigenous Medicine II - Practical
- KINESIOL 3S03
- KINESIOL 3SS3
- KINESIOL 4SS3 - Human Aging: Biological and Lifestyle Influences
- LABRST 3D03 - Work: Dangerous to your Health?
- MUSIC 2MT3 - Introduction to the Practice of Music Therapy
- PHILOS 2D03 - Bioethics

- PEACEST 3B03 - Peace-Building and Health Initiatives
- PHILOS 3C03 - Advanced Bioethics
- PEACEST 2D03
- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 3AG3 - Aging
- PSYCH 3B03 - Special Populations
- RELIGST 2C03
- RELIGST 2ER3
- RELIGST 2M03
- RELIGST 2N03
- RELIGST 2WW3
- RELIGST 2WX3
- SCAR 2ER3 - Religion, the Body, and the Machine
- SCAR 2M03 - Death and Dying: Comparative Views
- SCAR 2N03 - Death and Dying: The Western Experience
- SCAR 2WW3 - Health, Healing and Religion: Western Perspectives
- SCAR 2WX3 - Health, Healing and Religion: Comparative Views
- SOCWORK 3C03 - Social Aspects of Health and Illness
- SOCWORK 3O03 - Social Work and Sexualities
- SOCWORK 3S03 - Social Work, Disability and Dis/Ableism
- SOCWORK 4L03
- SOCWORK 4R03 - Feminist Approaches to Social Work and Social Justice
- SOCWORK 4Y03 - Critical Issues in Mental Health & Addiction: Mad & Critical Disability Studies Perspectives for SW
- SOCIOLOG 3CC3 - Sociology of the Family and the Life Cycle
- SOCIOLOG 3G03 - Sociology of Health Care
- SOCIOLOG 3HH3 - Sociology of Health
- SOCIOLOG 3X03 - Sociology of Aging
- SOCIOLOG 4G03 - Advanced Topics in the Sociology of Health and Illness
- SOCPSY 3A03 - Mental Health

### MINOR IN MENTAL HEALTH, ADDICTION AND SOCIETY

The minor in Mental Health and Addiction provides students with opportunity to develop an in-depth understanding of the relationship between mental health, addiction, and society. It involves examining the links between mental health and wider social processes, including marginalization, the construction of deviance, and the social determinants of health. Students will also gain a solid understanding of mental illness and some of the ways in which social change and other non-biomedical interventions can be harnessed to address issues related to mental health and addiction and promote wellbeing. Students will select courses from the Faculties of Social Sciences, Science that address these themes, developing a strong interdisciplinary grasp on the links between mental health, addiction, and society. Beyond the required courses, students will be able to select from a wide variety of courses that cater to their own interests.

It is the student's responsibility to check carefully for prerequisites, co-requisites and enrolment restrictions of all courses in this list. Students are encouraged to speak to their Faculty advisors about Faculty-specific rules about double-counting courses for the minor.

#### REQUIREMENTS

24 units total

#### 3 UNITS

- HLTHAGE 1CC3 - Introduction to Mental Health and Illness (or HLTHAGE 2G03 if taken prior to Spring 2016)

#### 3 UNITS

from

- HLTHAGE 1AA3 - Introduction to Health and Society
- HLTHAGE 1BB3 - Introduction to Aging and Society
- HLTHAGE 1ZZ3 - Inquiry: Introduction to Health and Society

- SOCIOLOG 1C03 - Canadian Society: Social Problems, Social Policy, and the Law
- SOCPSY 1Z03 - An Introduction to Social Psychology
- SOCWORK 1AA3 - So You Think You Can Help? Introduction to Social Work I
- SOCWORK 1BB3 - Re-Imagining Help: Introduction to Social Work II

#### 6 UNITS

- HLTHAGE 2GG3 - Mental Health and Society (or HLTHAGE 2G03 if taken between June 2016 and August 2017)
- HLTHAGE 2L03 - Drugs, Sex and Alcohol: Society and its Addictions

#### 12 UNITS

from

- Course List (see *below*)

#### COURSE LIST

- ANTHROP 3HI3 - Medical Anthropology
- ANTHROP 3Y03 - Indigenous Community Health and Wellbeing
- ECON 2Q03 - Economics of Bad Behaviour
- HLTHAGE 3D03 - Perspectives on Disability, Chronic Illness and Aging
- HLTHAGE 3M03 - Approaches to Mental Health and Resilience
- HLTHAGE 3N03 - Aging and Mental Health
- HLTHAGE 3R03 - Health Inequalities
- HLTHAGE 3YY3 - Indigenous Community Health and Wellbeing
- HLTHAGE 4J03 - Narratives of Illness
- HLTHAGE 4Q03 - Representations of Mental Illness
- INDIGST 2F03 - Residential Schools in Canada: History and Impact
- INDIGST 3H03 - Indigenous Medicine I - Philosophy
- POLSCI 2C03 - Force and Fear, Crime and Punishment
- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 3BA3 - Positive Psychology
- RELIGST 2MT3
- SCAR 2MT3 - Asian Meditation Traditions
- SOCIOLOG 2BB3 - Sociology of Deviance
- SOCIOLOG 2CC3 - Constructing Deviance
- SOCIOLOG 3GG3 - Special Topics in the Sociology of Deviance
- SOCIOLOG 3HH3 - Sociology of Health
- SOCIOLOG 4GG3 - Special Topics in the Sociology of Deviance
- SOCPSY 3A03 - Mental Health
- SOCPSY 3ZZ3 - Small Worlds: Children and Childhood
- SOCWORK 4Y03 - Critical Issues in Mental Health & Addiction: Mad & Critical Disability Studies Perspectives for SW

#### NOTE

Please see the *Course Listings* section for a detailed description of the above courses.

## Indigenous Studies Program

L.R. Wilson Hall, Room 1811, ext. 23788

<https://indigenous.mcmaster.ca>

#### DIRECTOR

**Chelsea Gabel** (Acting)

#### COMMITTEE OF INSTRUCTORS

**Dawn Martin-Hill**/B.A., M.A., Ph.D. (*McMaster*)

**Rick Monture**/B.A., M.A., Ph.D. (*McMaster*)

**Allan Downey**/B.A., (*Mercyhurst*), M.A. (*Laurier*), Ph.D. (*Laurier*)

**Chelsea Gabel**/B.A. (*Western*), M.A. (*Windsor*); Ph.D. (*McMaster*)

**Vanessa Watts**/B.A. (*Trent*), M.A. (*Victoria*), Ph.D. (*Queen's*)

**Kaitlin Debicki**/B.A., M.A., Ph.D. (*McMaster*)

**Adrienne Xaxier**/B.A. (*McMaster*), M.A. (*Royal Roads University*)

#### ASSOCIATE ELDERS

**Renee Thomas-Hill**, Elder-in-Residence, Six Nations

**Bertha Skye**, Visiting Elder-in-Residence, Six Nations

For the Honours Arts & Science and Indigenous Studies Program (B.Arts.Sc.), see *Arts & Science Program*.

## Bachelor of Arts (Honours)

### COMBINED HONOURS IN INDIGENOUS STUDIES AND ANOTHER SUBJECT (B.A.)

#### ADMISSION

Completion of any Level I program, with a Grade Point Average of at least 5.0 and a grade of C in one of INDIGST 1A03, 1AA3, 1B03 or RECONCIL 1A03. Satisfaction of the admission requirements for the Honours program in the other B.A. subject. For continuation in the program, see *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the Faculty of Social Sciences Academic Regulations.

#### NOTES

- Those students who completed INDIGST 2M06 A/B prior to September 2017 can use these 6-units towards the fulfillment of INDIGST 2M03 and INDIGST 2MM3. Those students who completed INDIGST 2AA3 prior to September 2016 may request approval of an additional 3-unit research methodology course, to use in fulfillment of this 6-unit research methodology requirement. Students are encouraged to consult the ISP Director for approval of an alternate applicable course.
- Students who have completed only 3 units of Level I Indigenous Studies will be required to complete 3 more units of Level I Indigenous Studies by the end of the following academic year.

#### COURSE LIST

- ANTHROP 2BB3 - Ancient Mesoamerica: Aztecs to Zapotecs
- ANTHROP 3Y03 - Indigenous Community Health and Wellbeing
- CAYUGA 2Z03 - Intermediate Cayuga
- CSCT 4RI3
- ENGLISH 3W03 - Contemporary Native Literature in Canada
- ENGLISH 3X03 - Contemporary Native Literature in the United States
- ENGLISH 4RI3 - Colonialism and Resistance in Representations of Indigenous Womanhood
- HISTORY 2T03 - Survey of Canadian History, Beginnings to 1885
- HISTORY 2TT3 - Survey of Canadian History, 1885 to the Present
- HISTORY 3CW3 - Canada in a World of Empires, 1492-1919
- INUKTUT 2Z03 - Intermediate Inuktitut
- MOHAWK 2Z03 - Intermediate Mohawk
- OJIBWE 2Z03 - Intermediate Ojibwe
- PEACEST 2C03 - Peace and Popular Culture
- PEACEST 3B03 - Peace-Building and Health Initiatives
- PEACEST 3W03 - Contemporary Native Literature in Canada
- PHILOS 3L03 - Environmental Philosophy
- POLSCI 2F03 - Politics, Power and Influence in Canada
- POLSCI 3C03 - Government and Politics of Indigenous People
- POLSCI 3F03
- SOCIOL 4RR3 - Indigenous Peoples and Canada
- SOCWORK 3I03 - Social Work and Indigenous Peoples
- SOCWORK 3Q03
- SOCWORK 4I03
- SOCWORK 4QQ3 - Indigenizing Social Work Practice Approaches

#### REQUIREMENTS

120 units total (Level I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- Level I completed prior to admission to the program (See *Admission* above.)

#### 9 UNITS

from

- INDIGST 2A03 - Indigenous Peoples' Spirituality
- INDIGST 2B03 - History of Indigenous Peoples' Sovereignty
- INDIGST 2BB3 - Contemporary Indigenous Knowledge and Societies
- INDIGST 2C03 - Current Issues in Indigenous Studies: Selected Topics
- INDIGST 2D03 - Traditional Indigenous Ecological Knowledge
- INDIGST 2F03 - Residential Schools in Canada: History and Impact
- INDIGST 2G03 - Indigenous Perspectives on Peace and Conflict
- INDIGST 2H03 - Indigenous Celebrity
- INDIGST 2J03 - Indigenous Experiential Education
- INDIGST 2K03 - Indigenous Futurisms and Wonderworks
- INDIGST 2U03 - Indigenous Textiles and Design

#### 6 UNITS

- INDIGST 2M03 - Indigenous Research Methods and Ethics
- INDIGST 2MM3 - Indigenous Ways of Knowing: Theory

(See Note 1)

#### 6 UNITS

from

- INDIGST 3D03 - Contemporary Native Literature in Canada
- INDIGST 3E03 - Contemporary Native Literature in the United States
- INDIGST 3EE3 - Indigenous Representations in Film
- INDIGST 3G03 - Indigenous Creative Arts and Drama: Selected Topics
- INDIGST 3H03 - Indigenous Medicine I - Philosophy
- INDIGST 3HH3 - Indigenous Medicine II - Practical
- SOCWORK 3I03 - Social Work and Indigenous Peoples
- INDIGST 3J03 - Government and Politics of Indigenous People
- INDIGST 3K03 - Indigenous Human Rights
- INDIGST 3L03 - Indigenous Independent Study
- INDIGST 3N03 - Indigenous Women: Land, Rights, and Politics
- INDIGST 3P03 - Haudenosaunee Health, Diet and Traditional Botany
- INDIGST 3Q03 - Histories of Indigenous Sport and Recreation
- INDIGST 3R03 - *Ogweho:weh* Experiential Land-Based Learning
- INDIGST 3S03 - Other-than-Human Worlds and Relations

#### 9 UNITS

from

- Level II or III Indigenous Studies or the *Course List*

#### 6 UNITS

from

- INDIGST 4A03 - Storytelling and Environmental Conservation
- INDIGST 4B03 - Indigenous Literary Governance and Resistance
- INDIGST 4D03 - Indigenous Critical Theory and Inquiry
- INDIGST 4HH3 - Indigenous Health and Interdisciplinary Approaches
- INDIGST 4IW3 - Twenty-First Century Indigenous Writing and Film
- INDIGST 4L03 - Indigenous Community Research Experience
- INDIGST 4T06 A/B - Honours Thesis
- INDIGST 4SH3
- INDIGST 4RI3 - Colonialism and Resistance in Representations of Indigenous Womanhood
- SOCWORK 4I03
- SOCWORK 4QQ3 - Indigenizing Social Work Practice Approaches
- SOCIOL 4RR3 - Indigenous Peoples and Canada

#### 36 UNITS

- courses specified for the other subject

#### 3 UNITS

from

- CAYUGA 1Z03 - Introduction to Cayuga Language and Culture
- INUKTUT 1Z03 - Introduction to Inuit Language and Culture
- MOHAWK 1Z03 - Introduction to Mohawk Language and Culture
- OJIBWE 1Z03 - Introduction to Ojibwe Language and Culture

(Note: If this requirement was completed in Level I, these units will be taken as electives.)

**0-3 UNITS**

- INDIGST 1A03 - Introduction to Indigenous Studies
- INDIGST 1AA3 - Introduction to Contemporary Indigenous Studies

**12-15 UNITS**

- Electives

**HONOURS INDIGENOUS STUDIES (B.A.)****ADMISSION**

Completion of any Level I program, with a Grade Point Average of at least 5.0 and an average of 5.0 in one of INDIGST 1A03, 1AA3, 1B03 or RECONCIL 1A03. For continuation in the program, see *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the Faculty of Social Sciences Academic Regulations.

**NOTES**

- Those students who completed INDIGST 2M06 A/B prior to September 2017 can use these 6-units towards the fulfillment of INDIGST 2M03 and INDIGST 2MM3. Those students who completed INDIGST 2AA3 prior to September 2016 may request approval of an additional 3-unit research methodology course, to use in fulfillment of this 6-unit research methodology requirement. Students are encouraged to consult the Director of the Indigenous Studies Program for approval of an alternate applicable course.
- Students who have completed only 3 units of level I Indigenous Studies will be required to complete 3 more units of Level I Indigenous Studies by the end of the following academic year.

**COURSE LIST**

- ANTHROP 2BB3 - Ancient Mesoamerica: Aztecs to Zapotecs
- ANTHROP 3Y03 - Indigenous Community Health and Wellbeing
- CAYUGA 2Z03 - Intermediate Cayuga
- CSCT 4RI3
- ENGLISH 3W03 - Contemporary Native Literature in Canada
- ENGLISH 3X03 - Contemporary Native Literature in the United States
- ENGLISH 4RI3 - Colonialism and Resistance in Representations of Indigenous Womanhood
- HISTORY 2T03 - Survey of Canadian History, Beginnings to 1885
- HISTORY 2TT3 - Survey of Canadian History, 1885 to the Present
- HISTORY 3CW3 - Canada in a World of Empires, 1492-1919
- MOHAWK 2Z03 - Intermediate Mohawk
- OJIBWE 2Z03 - Intermediate Ojibwe
- PEACEST 2C03 - Peace and Popular Culture
- PEACEST 3B03 - Peace-Building and Health Initiatives
- PEACEST 3W03 - Contemporary Native Literature in Canada
- PHILOS 3L03 - Environmental Philosophy
- POLSCI 2F03 - Politics, Power and Influence in Canada
- POLSCI 3C03 - Government and Politics of Indigenous People
- POLSCI 3F03
- RELIGST 2W03
- SOCIOL 4RR3 - Indigenous Peoples and Canada
- SOCWORK 3I03 - Social Work and Indigenous Peoples
- SOCWORK 3Q03
- SOCWORK 4I03
- SOCWORK 4QQ3 - Indigenizing Social Work Practice Approaches

**REQUIREMENTS**

120 units total (Level I to IV), of which 48 units may be Level I

**30 UNITS**

from

- Level I completed prior to admission to the program (See *Admission* above.)

**9 UNITS**

from

- INDIGST 2A03 - Indigenous Peoples' Spirituality
- INDIGST 2B03 - History of Indigenous Peoples' Sovereignty
- INDIGST 2BB3 - Contemporary Indigenous Knowledge and Societies
- INDIGST 2C03 - Current Issues in Indigenous Studies: Selected Topics
- INDIGST 2D03 - Traditional Indigenous Ecological Knowledge
- INDIGST 2F03 - Residential Schools in Canada: History and Impact
- INDIGST 2G03 - Indigenous Perspectives on Peace and Conflict
- INDIGST 2H03 - Indigenous Celebrity
- INDIGST 2J03 - Indigenous Experiential Education
- INDIGST 2K03 - Indigenous Futurisms and Wonderworks
- INDIGST 2U03 - Indigenous Textiles and Design

**6 UNITS**

- INDIGST 2M03 - Indigenous Research Methods and Ethics
- INDIGST 2MM3 - Indigenous Ways of Knowing: Theory

(See *Note 1*)

**9 UNITS**

from

- INDIGST 3C03 - Study of Iroquois First Nations in Contemporary Times
- INDIGST 3D03 - Contemporary Native Literature in Canada
- INDIGST 3E03 - Contemporary Native Literature in the United States
- INDIGST 3EE3 - Indigenous Representations in Film
- INDIGST 3G03 - Indigenous Creative Arts and Drama: Selected Topics
- INDIGST 3H03 - Indigenous Medicine I - Philosophy
- INDIGST 3HH3 - Indigenous Medicine II - Practical
- INDIGST 3J03 - Government and Politics of Indigenous People
- INDIGST 3K03 - Indigenous Human Rights
- INDIGST 3L03 - Indigenous Independent Study
- INDIGST 3N03 - Indigenous Women: Land, Rights, and Politics
- INDIGST 3P03 - Haudenosaunee Health, Diet and Traditional Botany
- INDIGST 3Q03 - Histories of Indigenous Sport and Recreation
- INDIGST 3R03 - **Ogweho:weh** Experiential Land-Based Learning
- INDIGST 3S03 - Other-than-Human Worlds and Relations
- SOCWORK 3I03 - Social Work and Indigenous Peoples

**15 UNITS**

from

- Level II or III Indigenous Studies or the *Course List*

**12 UNITS**

from

- INDIGST 4A03 - Storytelling and Environmental Conservation
- INDIGST 4B03 - Indigenous Literary Governance and Resistance
- INDIGST 4D03 - Indigenous Critical Theory and Inquiry
- INDIGST 4HH3 - Indigenous Health and Interdisciplinary Approaches
- INDIGST 4IW3 - Twenty-First Century Indigenous Writing and Film
- INDIGST 4L03 - Indigenous Community Research Experience
- INDIGST 4T06 A/B - Honours Thesis
- INDIGST 4SH3
- INDIGST 4RI3 - Colonialism and Resistance in Representations of Indigenous Womanhood
- SOCIOL 4RR3 - Indigenous Peoples and Canada
- SOCWORK 4I03

**3 UNITS**

from

- CAYUGA 1Z03 - Introduction to Cayuga Language and Culture
- INUKTUT 1Z03 - Introduction to Inuit Language and Culture
- MOHAWK 1Z03 - Introduction to Mohawk Language and Culture
- OJIBWE 1Z03 - Introduction to Ojibwe Language and Culture

(Note: If this requirement was completed in Level I, these units will be taken as electives.)

**0-3 UNITS**

- INDIGST 1A03 - Introduction to Indigenous Studies
- INDIGST 1AA3 - Introduction to Contemporary Indigenous Studies



**33-36 UNITS**

- Electives

**Bachelor of Arts****COMBINED PROGRAM IN INDIGENOUS STUDIES AND ANOTHER SUBJECT (B.A.)****ADMISSION**

Completion of any Level I program, with a Grade Point Average of at least 3.5 and a grade of C- in three units of INDIGST 1A03, 1AA3, 1B03, or RECONCIL 1A03 and satisfaction of admission requirements for the B.A. program in the other subject.

**NOTES**

- Three units of work in the other subject of the combined program which are also in the *Course List* may be used to fulfill the requirements of both program components.
- Students who previously completed ANTHROP 2H03, 2VW3, 2W03, 3F03 or POLSCI 3C03 may use these units toward the *Course List* requirement.
- Students who have completed only 3 units of level I Indigenous Studies will be required to complete 3 more units of Level I Indigenous Studies by the end of the following academic year.

**COURSE LIST**

- ANTHROP 2BB3 - Ancient Mesoamerica: Aztecs to Zapotecs
- ANTHROP 3Y03 - Indigenous Community Health and Wellbeing
- SOCWORK 3I03 - Social Work and Indigenous Peoples
- SOCWORK 4I03

**REQUIREMENTS**

90 units total (Levels I to III), of which 42 may be Level I

**30 UNITS**

from

- the Level I program completed prior to admission to the program. (See *Admission* above.)

**6 UNITS**

from

- CAYUGA 2Z03 - Intermediate Cayuga
- INDIGST 2A03 - Indigenous Peoples' Spirituality
- INDIGST 2B03 - History of Indigenous Peoples' Sovereignty
- INDIGST 2M03 - Indigenous Research Methods and Ethics
- INDIGST 2MM3 - Indigenous Ways of Knowing: Theory
- INUKTUT 2Z03 - Intermediate Inuktitut
- MOHAWK 2Z03 - Intermediate Mohawk
- OJIBWE 2Z03 - Intermediate Ojibwe

**3 UNITS**

from

- INDIGST 2C03 - Current Issues in Indigenous Studies: Selected Topics
- INDIGST 2D03 - Traditional Indigenous Ecological Knowledge

**15 UNITS**

from

- Level II Indigenous Studies
- Level III Indigenous Studies
- CAYUGA 2Z03 - Intermediate Cayuga
- INUKTUT 2Z03 - Intermediate Inuktitut
- MOHAWK 2Z03 - Intermediate Mohawk
- OJIBWE 2Z03 - Intermediate Ojibwe (if not taken to satisfy requirement above.)
- courses from the Course List of which at least three units must be Level III.

(See *Notes 2 and 3* above.)

**0-3 UNITS**

- INDIGST 1A03 - Introduction to Indigenous Studies
- INDIGST 1AA3 - Introduction to Contemporary Indigenous Studies

**24 UNITS**

- courses specified for the other subject

**9-12 UNITS**

- Electives

**Minor(s):****MINOR IN INDIGENOUS STUDIES****NOTE**

At least 12 of the 18 units required for the Minor must be Indigenous Studies or Indigenous language courses.

**COURSE LIST**

- CAYUGA 2Z03 - Intermediate Cayuga
- INUKTUT 2Z03 - Intermediate Inuktitut
- MOHAWK 2Z03 - Intermediate Mohawk
- OJIBWE 2Z03 - Intermediate Ojibwe
- ANTHROP 2BB3 - Ancient Mesoamerica: Aztecs to Zapotecs
- ANTHROP 3Y03 - Indigenous Community Health and Wellbeing
- ARTHIST 3BB3 - Indigenous Art and Visual Culture in Canada, 1960 to the Present or

INDIGST 3F03 - Indigenous Art and Visual Culture in Canada, 1960 to the Present

- ENGLISH 3W03 - Contemporary Native Literature in Canada or PEACEST 3W03 - Contemporary Native Literature in Canada
- ENGLISH 3X03 - Contemporary Native Literature in the United States
- ENGLISH 4R13 - Colonialism and Resistance in Representations of Indigenous Womanhood or

CSCST 4R13 or

INDIGST 4R13 - Colonialism and Resistance in Representations of Indigenous Womanhood

- ENGLISH 4SH3
- HISTORY 2T03 - Survey of Canadian History, Beginnings to 1885
- HISTORY 2TT3 - Survey of Canadian History, 1885 to the Present
- HISTORY 3CW3 - Canada in a World of Empires, 1492-1919
- PEACEST 2C03 - Peace and Popular Culture
- PEACEST 3B03 - Peace-Building and Health Initiatives
- PHILOS 3L03 - Environmental Philosophy
- POLSCI 2F03 - Politics, Power and Influence in Canada
- POLSCI 3C03 - Government and Politics of Indigenous People or

INDIGST 3J03 - Government and Politics of Indigenous People

- POLSCI 3F03
- RELIGST 2W03
- RELIGST 2WW3
- SCAR 2WW3 - Health, Healing and Religion: Western Perspectives
- SOCWORK 3I03 - Social Work and Indigenous Peoples
- SOCWORK 4I03
- SOCWORK 4QQ3 - Indigenizing Social Work Practice Approaches
- SOCIOL 4RR3 - Indigenous Peoples and Canada

**REQUIREMENTS**

24 units total

**6 UNITS**

from

- INDIGST 1A03 - Introduction to Indigenous Studies
- INDIGST 1AA3 - Introduction to Contemporary Indigenous Studies
- INUKTUT 1Z03 - Introduction to Inuit Language and Culture
- CAYUGA 1Z03 - Introduction to Cayuga Language and Culture
- MOHAWK 1Z03 - Introduction to Mohawk Language and Culture

- OJIBWE 1Z03 - Introduction to Ojibwe Language and Culture

**18 UNITS**

from

- the *Course List* or Level II, III Indigenous Studies (See *Notes* above.)

## School of Labour Studies

<http://www.labourstudies.mcmaster.ca>

**Faculty as of January 15, 2020**

DIRECTOR

**Stephanie Ross**

PROFESSORS

**Judy Fudge**/ B.A. (*McGill*), M.A. (*York*), LLB (*Osgoode*), Ph.D. (*Oxford*)

ASSOCIATE PROFESSORS

**Suzanne Mills**/(*Geography and Earth Sciences*) B.Sc. (*McGill*), M.Sc. (*Alberta*), Ph.D. (*Saskatchewan*)

**Stephanie Premji**/(*Health, Aging & Society*) B.A. (*Concordia*), M.Sc., Ph.D. (*Montréal*)

**Stephanie Ross**/B.A. (*Carleton*), M.A.(*Carleton*), PhD. (*York*)

ASSISTANT PROFESSORS

**David Goutor**/(*History*) B.A., M.A., Ph.D. (*Toronto*)

**Geraldina Polanco**/ (*Sociology*) B.A. (*British Columbia*), M.A. (*Concordia*), Ph.D. (*British Columbia*)

**Tommy Wu**/ (*Mechanical Engineering*), B.S. (*Carnegie Mellon*), M.S. (*Columbia*), Ph.D. (*City University of New York*)

ASSOCIATE MEMBERS

**Maroussia Hajdukowski-Ahmed**/(*French*) L.ès L., M. ès L., D. de l'U (*Paris-Sorbonne*)

**Ruth Frager**/(*History*) B.A. (*Rochester*), M.A., Ph.D. (*York*)

**Nibaldo Galleguillos**/ (*Political Science and Peace Studies*), B.A. (*Chile*), M.A., Ph.D. (*Toronto*)

**Peter Graefe**/(*Political Science*) B.A. (*McGill*), M.A. (*York*), Ph.D. (*Montréal*)

**Richard Harris**/ (*Geography & Earth Sciences*) B.A. (*Cambridge*), M.A. (*Ohio*), Ph.D. (*Queen's*)

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**Robert D. Wilton**/(*Geography and Earth Sciences*) B.A. (*Hull*), M.A., Ph.D. (*Southern California*)

ADJUNCT LECTURERS

**Andrew King**/LL.B, B.A. (*Toronto*)

## Bachelor of Arts (Honours)

### COMBINED HONOURS IN LABOUR STUDIES AND ANOTHER SUBJECT (B.A.)

**ADMISSION**

**Enrolment in this program is limited.** Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including a grade of at least C in one of LABRST 1D03, 1E03, 1A03 or 1C03 (see Notes 3 and 8 below), and satisfaction of admission requirements for the Honours program in the other B.A. subject. For continuation in the program, see the section on *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the Faculty of Social Sciences Academic Regulations.

**NOTES**

- Subject to meeting admission requirements, students may combine two subjects and be graduated with a combined honours B.A. degree. These combinations are available within the Faculty, with programs in the

Faculty of Humanities and with the Arts and Science Program.

- See *Admission to Level II Programs* in *Academic Regulations* in this section of the Calendar
- Students who have who have completed only 3 units of Level I Labour Studies will be required to complete 3 more units of Level I Labour Studies during their Level II year.
- Students may not transfer to another Labour Studies program except by the normal application process.
- Students who complete a six unit Research Methods/Statistics course will reduce their elective component by three units.
- Students combining Labour Studies with a Humanities subject or with Religious Studies must complete LABRST 4A06 A/B and SOCSCI 2J03. Students in other Combined Honours Programs may complete the Honours Seminar requirement as specified by the other Department and replace LABRST 4A06 A/B with six units Level III Labour Studies courses.
- Students who have completed LABRST 4D03 need not complete LABRST 4C03 or 4E03 .
- Students who have completed LABRST 1C03 and 1A03 need not complete LABRST 1E03 or 1D03
- Students are encouraged to consult the Labour Studies web site at: <http://www.labourstudies.mcmaster.ca>.

**COURSE LIST**

- COMMERCE 1BA3 - Organizational Behaviour (or 2BA3)
- COMMERCE 4BC3 - Collective Bargaining
- LABRST 2H03 - Sports, Work And Labour
- LABRST 2M03 - Pop Culture, Media and Work
- LABRST 3A03 - Economics of Labour Market Issues
- LABRST 3B03 - Economics of Trade Unionism and Labour
- LABRST 3C03 - Labour and Employment Law
- LABRST 3D03 - Work: Dangerous to your Health?
- LABRST 3E03 - Gender, Sexuality and Work
- LABRST 3K03 - On the Move: Workers in a Global World
- LABRST 3L03 - Labour Policy and Advocacy
- LABRST 3P03 - Workers
- LABRST 3T03 - Poverty and Homelessness
- LABRST 4J03 - Independent Study
- SOCWORK 2BB3 - Anti-Oppressive Social Work or any level III or IV *Social & Political Context of Social Work* courses offered by the School of Social Work. Eligible to count for Level II or above.
- SOCWORK 2CC3 - Introduction to Community Practice While student can use this course to fulfill Labour Studies requirements, and while the content is salient to Labour Studies students, this course has a social work focus.
- WOMENST 2A03

**SOCIAL AND POLITICAL CONTEXT OF SOCIAL WORK COURSE LIST**

- SOCWORK 3B03 - Transnational Lives in a Globalizing World
- SOCWORK 3C03 - Social Aspects of Health and Illness
- SOCWORK 3H03
- SOCWORK 3I03 - Social Work and Indigenous Peoples
- SOCWORK 3O03 - Social Work and Sexualities
- SOCWORK 3Q03
- SOCWORK 3S03 - Social Work, Disability and Dis/Ableism
- SOCWORK 3T03 - Poverty and Homelessness
- SOCWORK 4B03
- SOCWORK 4C03 - Critical Perspectives on Race, Racialization, Racism and Colonialism in Canadian Society
- SOCWORK 4G03 - Selected Topics
- SOCWORK 4I03
- SOCWORK 4L03
- SOCWORK 4Q03 - Indigenizing Social Work Practice Approaches

- SOCWORK 4R03 - Feminist Approaches to Social Work and Social Justice
- SOCWORK 4SA3 - Critical Child Welfare: From Theory to Practice Part I\*
- SOCWORK 4SB3 - Critical Child Welfare: From Theory to Practice Part II\*
- SOCWORK 4U03 - Immigration, Settlement and Social Work
- SOCWORK 4W03 - Child Welfare
- SOCWORK 4Y03 - Critical Issues in Mental Health & Addiction: Mad & Critical Disability Studies Perspectives for SW

**\*only open to those students in a Social Work program**

### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- the Level I program completed prior to admission to the program (See *Admission* above.)

#### 9 UNITS

from

- LABRST 2A03 - Unions in Action
- LABRST 2G03 - Labour and Globalization
- LABRST 2J03 - Work and Racism
- LABRST 3M03 - Theoretical Approaches to Labour Studies
- LABRST 3Q03 - Community Engaged Research

#### 18 UNITS

from

- *Course List*, where at least nine units must be selected from Levels III or IV (See above.)

#### 36 UNITS

- courses specified for the other subject

#### 3 UNITS

from

- SOCSCI 2J03 - Introduction to Statistics or
- an equivalent Research Methods/Statistics course specified by the other subject.

(See *Note 5* above.)

#### 9 UNITS

from

- ENVSOCTY 4LE3 - Geographies of the North American Political Economy
- LABRST 4A06 A/B - Labour Studies Practicum
- LABRST 4C03 - Public Sector Collective Bargaining
- LABRST 4F03 - Work and the Environment
- LABRST 4G03 - Advanced Topics in Labour Studies
- LABRST 4H03 - Working Precariously: Labour Strategies, Labour Renewal

(See *Note 7* above.)

#### 0-3 UNITS

from

- LABRST 1A03
- LABRST 1C03
- LABRST 1D03 - Will Robots Take All Our Jobs?
- LABRST 1E03 - Navigating the World of Work

(See *Note 3 & 8* above.)

#### 12-15 UNITS

- Electives

## HONOURS LABOUR STUDIES (B.A.)

### ADMISSION

**Enrolment in this program is limited.** Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including a grade of at least C in

one of LABRST 1D03, 1E03, 1A03 or 1C03 (See *Note 6* below). For continuation in the program, see *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the Faculty of Social Sciences Academic Regulations.

### NOTES

- See Admission to Level II Programs in *Academic Regulations* in this section of the Calendar.
- Students who have who have completed only 3 units of Level I Labour Studies will be required to complete 3 more units of Level I Labour Studies during their Level II year.
- Students may not transfer to another Labour Studies program except by the normal application process.
- Students who complete a six unit Research Methods/Statistics course will reduce their elective component by three units.
- Students who have completed LABRST 4D03 need not complete LABRST 4C03 or 4E03 .
- Students who have completed LABRST 1C03 and 1A03 need not complete LABRST 1E03 or 1D03
- Students are encouraged to consult the Labour Studies web site at: <http://www.labourstudies.mcmaster.ca>.

### COURSE LIST 1

- COMMERCE 1BA3 - Organizational Behaviour (or 2BA3)
- COMMERCE 4BC3 - Collective Bargaining
- LABRST 2H03 - Sports, Work And Labour
- LABRST 2M03 - Pop Culture, Media and Work
- LABRST 3A03 - Economics of Labour Market Issues
- LABRST 3B03 - Economics of Trade Unionism and Labour
- LABRST 3C03 - Labour and Employment Law
- LABRST 3D03 - Work: Dangerous to your Health?
- LABRST 3E03 - Gender, Sexuality and Work
- LABRST 3K03 - On the Move: Workers in a Global World
- LABRST 3L03 - Labour Policy and Advocacy
- LABRST 3P03 - Workers
- LABRST 3T03 - Poverty and Homelessness
- LABRST 4J03 - Independent Study
- SOCWORK 2BB3 - Anti-Oppressive Social Work

or

any 3rd or 4th level Social & Political Context of Social Work courses offered by the School of Social Work. Eligible to count for Level II or above.

- SOCWORK 2CC3 - Introduction to Community Practice
- WOMENST 2A03

### COURSE LIST 2

- COMMERCE 2BC3 - Human Resource Management and Labour Relations
- ECON 2F03
- ECON 2K03 - Economic History of Canada
- ECON 2N03 - Public Policy Toward Business
- HLTH AGE 3J03
- HISTORY 3W03 - Women in Canada and the U.S. to 1920
- HISTORY 3WW3 - Women in Canada and the U.S. from 1920
- POLSCI 3D03
- POLSCI 3E03
- POLSCI 3EE3 - International Relations: North-South
- POLSCI 3F03
- SOCIOLOG 2E06 A/B
- SOCIOLOG 2I03 - Sociology of Organizations
- SOCIOLOG 2Q06 A/B
- SOCIOLOG 2R03 - Perspectives on Social Inequality
- SOCIOLOG 2RR3 - Case Studies of Social Inequality
- SOCIOLOG 2V06 A/B

### SOCIAL AND POLITICAL CONTEXT OF SOCIAL WORK COURSE LIST

- SOCWORK 3B03 - Transnational Lives in a Globalizing World

- SOCWORK 3C03 - Social Aspects of Health and Illness
- SOCWORK 3H03
- SOCWORK 3I03 - Social Work and Indigenous Peoples
- SOCWORK 3O03 - Social Work and Sexualities
- SOCWORK 3Q03
- SOCWORK 3S03 - Social Work, Disability and Dis/Ableism
- SOCWORK 3T03 - Poverty and Homelessness
- SOCWORK 4B03
- SOCWORK 4C03 - Critical Perspectives on Race, Racialization, Racism and Colonialism in Canadian Society
- SOCWORK 4G03 - Selected Topics
- SOCWORK 4I03
- SOCWORK 4L03
- SOCWORK 4QQ3 - Indigenizing Social Work Practice Approaches
- SOCWORK 4R03 - Feminist Approaches to Social Work and Social Justice
- SOCWORK 4SA3 - Critical Child Welfare: From Theory to Practice Part I\*
- SOCWORK 4SB3 - Critical Child Welfare: From Theory to Practice Part II\*
- SOCWORK 4U03 - Immigration, Settlement and Social Work
- SOCWORK 4W03 - Child Welfare
- SOCWORK 4Y03 - Critical Issues in Mental Health & Addiction: Mad & Critical Disability Studies Perspectives for SW

\*only open to those students in a Social Work program

#### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- the Level I program completed prior to admission to the program  
(See Admission above.)

#### 9 UNITS

from

- LABRST 2A03 - Unions in Action
- LABRST 2G03 - Labour and Globalization
- LABRST 2J03 - Work and Racism
- LABRST 3M03 - Theoretical Approaches to Labour Studies
- LABRST 3Q03 - Community Engaged Research

#### 21 UNITS

from

- *Course List 1*, where at least nine units must be selected from Levels III or IV courses

#### 3-6 UNITS

from

- *Course List 2*

#### 3 UNITS

from

- SOCSCI 2J03 - Introduction to Statistics or
- an equivalent Research Methods/Statistics course as prescribed by the other Social Sciences Programs. (See Note 4 above.)

#### 9 UNITS

from

- ENVSOCTY 4LE3 - Geographies of the North American Political Economy
- LABRST 4A06 A/B - Labour Studies Practicum
- LABRST 4C03 - Public Sector Collective Bargaining
- LABRST 4F03 - Work and the Environment
- LABRST 4G03 - Advanced Topics in Labour Studies
- LABRST 4H03 - Working Precariously: Labour Strategies, Labour Renewal

(See Note 5 above.)

#### 0-3 UNITS

from

- LABRST 1A03

- LABRST 1C03
- LABRST 1D03 - Will Robots Take All Our Jobs?
- LABRST 1E03 - Navigating the World of Work

(See Note 2 & 6 above.)

#### 42-45 UNITS

- Electives, of which at least six units must be taken from outside of Labour Studies

## Bachelor of Arts

### LABOUR STUDIES (B.A.)

#### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 3.5 including a grade of at least C- in one of LABRST 1D03, 1E03, 1A03 or 1C03 (See Note 3 below).

#### NOTES

- Students who have who have completed only 3 units of Level I Labour Studies will be required to complete 3 more units of Level I Labour Studies during their Level II year.
- Students may not transfer to another Labour Studies program except by the normal application process.
- 3. Students who have completed LABRST 1C03 and 1A03 need not complete LABRST 1E03 or 1D03
- Students are encouraged to consult the Labour Studies web site at: <http://www.labourstudies.mcmaster.ca>.

#### COURSE LIST

- COMMERCE 1BA3 - Organizational Behaviour (or 2BA3)
- COMMERCE 4BC3 - Collective Bargaining
- LABRST 2H03 - Sports, Work And Labour
- LABRST 2M03 - Pop Culture, Media and Work
- LABRST 3A03 - Economics of Labour and Market Issues
- LABRST 3B03 - Economics of Trade Unionism and Labour
- LABRST 3C03 - Labour and Employment Law
- LABRST 3D03 - Work: Dangerous to your Health?
- LABRST 3E03 - Gender, Sexuality and Work
- LABRST 3K03 - On the Move: Workers in a Global World
- LABRST 3L03 - Labour Policy and Advocacy
- LABRST 3P03 - Workers
- LABRST 3T03 - Poverty and Homelessness
- LABRST 4J03 - Independent Study
- SOCWORK 2BB3 - Anti-Oppressive Social Work

or

any Level III or IV *Social & Political Context of Social Work* courses offered by the School of Social Work. Eligible to count for Level II or above.

- SOCWORK 2CC3 - Introduction to Community Practice (*While student can use this course to fulfill Labour Studies requirements, and while the content is salient to Labour Studies students, this course has a social work focus*)
- WOMENST 2A03

#### SOCIAL AND POLITICAL CONTEXT OF SOCIAL WORK COURSE LIST

- SOCWORK 3B03 - Transnational Lives in a Globalizing World
- SOCWORK 3C03 - Social Aspects of Health and Illness
- SOCWORK 3H03
- SOCWORK 3I03 - Social Work and Indigenous Peoples
- SOCWORK 3O03 - Social Work and Sexualities
- SOCWORK 3Q03
- SOCWORK 3S03 - Social Work, Disability and Dis/Ableism
- SOCWORK 3T03 - Poverty and Homelessness
- SOCWORK 4B03
- SOCWORK 4C03 - Critical Perspectives on Race, Racialization, Racism



- and Colonialism in Canadian Society
- SOCWORK 4G03 - Selected Topics
- SOCWORK 4I03
- SOCWORK 4L03
- SOCWORK 4Q03 - Indigenizing Social Work Practice Approaches
- SOCWORK 4R03 - Feminist Approaches to Social Work and Social Justice
- SOCWORK 4SA3 - Critical Child Welfare: From Theory to Practice Part I\*
- SOCWORK 4SB3 - Critical Child Welfare: From Theory to Practice Part II\*
- SOCWORK 4U03 - Immigration, Settlement and Social Work
- SOCWORK 4W03 - Child Welfare
- SOCWORK 4Y03 - Critical Issues in Mental Health & Addiction: Mad & Critical Disability Studies Perspectives for SW

\*only open to those students in a Social Work program

### REQUIREMENTS

90 units total (Levels I to III), of which 42 units may be Level I

#### 30 UNITS

from

- the Level I program completed prior to admission to the program. (See Admission above.)

#### 9 UNITS

from

- LABRST 2A03 - Unions in Action
- LABRST 2G03 - Labour and Globalization
- LABRST 2J03 - Work and Racism
- LABRST 2M03 - Pop Culture, Media and Work
- LABRST 3Q03 - Community Engaged Research

#### 21 UNITS

from

- *Course List*, where at least nine units must be selected from Levels III or IV courses.

#### 0-3 UNITS

from

- LABRST 1E03
- LABRST 1D03
- LABRST 1D03 - Will Robots Take All Our Jobs?
- LABRST 1E03 - Navigating the World of Work

(See Note 1 & 3 above.)

#### 27-30 UNITS

- Electives, of which at least six units must be taken from outside of Labour Studies

## Minor(s):

### MINOR IN LABOUR STUDIES

#### NOTES

- Students working towards a Minor in Labour Studies may take no more than three units of Level IV Labour Studies courses.
- Students who have completed LABRST 1C03 and 1A03 need not complete LABRST 1E03 or 1D03
- Students are encouraged to consult the Labour Studies web site at: <http://www.labourstudies.mcmaster.ca/>.
- Students may not transfer from the Minor in Labour Studies to another Labour Studies program except by the normal application process.

#### REQUIREMENTS

24 units total

#### 6 UNITS

- LABRST 1D03 - Will Robots Take All Our Jobs?
- LABRST 1E03 - Navigating the World of Work
- LABRST 1A03

- LABRST 1C03  
(See Note 2 above)

#### 6 UNITS

- LABRST 2A03 - Unions in Action
- LABRST 3M03 - Theoretical Approaches to Labour Studies

#### 12 UNITS

- Levels II, III, or IV Labour Studies (See Note 2 above.)

## Department of Political Science

<https://politicalscience.mcmaster.ca/>

Faculty as of January 15, 2020

#### CHAIR

#### Karen Bird

#### PROFESSORS

**J. Marshall Beier**, B.A., M.A., Ph.D. (York)

**Karen Bird**, B.A. (Wilfrid Laurier), Ph.D. (Minnesota)

**Ahmed Shafiqul Huque**, B.A., M.A. (Dhaka), M.A. (Manitoba), Ph.D. (British Columbia)

**Stephen McBride**, B.Sc. (London), M.A., Ph.D. (McMaster)/Canada Research Chair in Public Policy and Globalization

**Robert J. O'Brien**, B.A. (Carleton), M.Sc. (London), Ph.D. (York)

**Peter Nyers**, B.A., M.A. (Victoria), Ph.D. (York)

**Tony Porter**, B.A. (McGill), M.A., Ph.D. (Carleton)

#### ASSOCIATE PROFESSORS

**Katherine Boothe**, B.A. (Alberta), M.A., Ph.D. (British Columbia)

**Michelle L. Dion**, B.A. (Texas-Austin), M.A., Ph.D. (North Carolina-Chapel Hill)

**Catherine Frost**, B.A. (Lakehead), M.A., Ph.D. (Toronto)

**Nibaldo H. Galleguillos**, B.A. (Chile), M.A., Ph.D. (Toronto)

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**Alina Sajed**, B.A., M.A. (Al. I. Cuza), M.A., Ph.D. (McMaster)

**Netina Tan**, B.A., M.A. SE Asian Stud. (Nat. Univ. of Singapore), M.A. (Regina), Ph.D. (British Columbia)

**Lana Wylie**, B.A. (McMaster), M.A. (Calgary), Ph.D. (Massachusetts)

#### ASSISTANT PROFESSORS

**Todd Alway**, B.A. (McMaster), M.A. (York), Ph.D. (Carleton)

**Greg Flynn**, B.A. (Waterloo), LL.B. (Western), M.A., Ph.D. (McMaster)

**Inder Marwah**, B.A. (Trent), M.A., Ph.D. (Toronto)

**Clifton van der Linden**, B.A. (McMaster), M.A. (Western), Ph.D. (Toronto)

#### ASSOCIATE MEMBERS

**Julia Abelson** (C.E.P.A.) B.A., B.Sc. (McMaster), M.Sc. (Harvard), Ph.D. (Bath)

**Gail Krantzberg** (W.G. Booth School of Engineering Practice and Technology), B.Sc. (McGill), M.Sc./M.E.S., Ph.D. (Toronto)

**John Lavis** (C.E.P.A.) M.D. (Queen's), M.Sc. (LSE), Ph.D. (Harvard)

## Fields of Study

Students are responsible for ensuring that course prerequisites are fulfilled.

#### • Canadian Politics

POLSCI 2C03, 2D03, 2EM3, 2F03, 2LW3, 2PF3, 2U03, 3BB3, 3C03, 3CL3, 3FF3, 3FG3, 3GG3, 3IP3, 3J03, 3JJ3, 3K03, 3NN6 A/B, 3RF3, 3Z03, 4CA3, 4CF3, 4JS3, 4JS6 A/B, 4LC3, 4O06 A/B, 4P03, 4RR3, 4T06 A/B, 4UP3

#### • Comparative Politics

POLSCI 2C03, 2M03, 2PF3, 2U03, 2US3, 2XX3, 3BB3, 3D03, 3EE3, 3F03, 3G03, 3GG3, 3H03, 3I03, 3JR3, 3K03, 3KK3, 3LC3, 3LL3, 3PG3, 3U03, 3V03, 3VV3, 3Y03, 4A03, 4AA6 A/B, 4D06 A/B, 4G06 A/B, 4KC3, 4LA3, 4PA3, 4P03, 4Q06 A/B, 4R06, 4RR3, 4SS3, 4UF3, 4UP3, 4YR3

#### • International Relations

POLSCI 2H03, 2I03, 2J03, 2XX3, 3AA3, 3B03, 3E03, 3EE3, 3FF3, 3GC3, 3JR3, 3K03, 3KK3, 3LB3, 3P03, 3PG3, 3Q03, 3QQ3, 3X03, 3Y03, 4D06

A/B, 4DV3, 4GC3, 4GG3, 4HR3, 4KB3, 4KD3, 4KK3, 4LL3, 4NN3, 4PE3, 4PP3, 4QQ3, 4Y03, 4YR3

- **Political Theory**

POLSCI 2006 A/B, 3CC3, 3FR3, 3LA3, 3PB3, 3PG3, 3VV3, 4AA6, 4C06 A/B, 4DD3, 4E06 A/B, 4DV3, 4FF3, 4HH3, 4JJ3, 4KA3, 4OL3, 4RT3, 4Y03

- **Public Policy**

POLSCI 2C03, 2U03, 2EM3, 2LW3, 3B03, 3D03, 3E03, 3FF3, 3GC3, 3IP3, 3J03, 3LL3, 3LP3, 3U03, 3Z03, 4CF3, 4G06 A/B, 4JS3, 4L03, 4LC3, 4O06 A/B, 4PO3, 4LC3, 4R06, 4RR3, 4SS3

**The following courses while satisfying the requirements of the program are not specific to any field of study:**

POLSCI 1AA3, 1AB3, 1G06 A/B, 2NN3, 2MN3, 3N06 A/B, 3NN3, 3PR3, 3UU3, 3WP3, 4Z06 A/B, 4ZZ3, 4ZZ6 A/B

## Bachelor of Arts (Honours)

### COMBINED HONOURS IN POLITICAL SCIENCE AND ANOTHER SUBJECT (B.A.)

#### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 5.0 including a grade of C or greater in one of POLSCI 1AA3 or 1AB3 (or 1G06 A/B) (See *Note 6* below). Satisfaction of the admission requirements for the Honours program in the other B.A. subject. For continuation in the program, see *Minimum Requirements for Entering and Continuing in a Program Beyond Level I*.

#### NOTES

- Subject to meeting admission requirements, students may combine two subjects and be graduated with a combined Honours B.A. degree. These combinations are available within the Faculty, with programs in the Faculty of Humanities and with the Arts and Science Program.
- Students should be alerted to those Levels II and III courses that are required to qualify for a number of Level IV courses. Students who wish to enter courses but who lack the necessary prerequisites must obtain the permission of the instructor.
- POLSCI 2NN3 and POLSCI 3NN3 or POLSCI 3N06 A/B and POLSCI 2006 A/B are required for students enrolled in Honours Political Science programs and they are recommended for students in the B.A. program.
- Students may take a maximum of six units of Level IV Political Science and will be removed from any excess units of Level IV Political Science unless permission is granted by the Department. Additional units of Level IV Political Science may not be used as electives.
- Students who have completed only 3 units of level I Political Science will be required to complete 3 more units of Level I Political Science by the end of the following academic year.
- Completion of POLSCI 1AB3 by the end of Level I is strongly recommended in order for students to meet the prerequisite for POLSCI 2NN3.

#### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- the Level I program completed prior to admission to the program. (See *Admission* above.)

#### 6 UNITS

- POLSCI 2006 A/B - Political Theory

#### 18 UNITS

- Levels II, III, Political Science of which a maximum of nine units may be Level II; including at least one course from the *Canadian Politics* Field of Study

#### 6 UNITS

- Level IV Political Science (See *Note 4*)

#### 36 UNITS

- courses specified for the other subject

#### 6 UNITS

- POLSCI 2NN3 - Politics by Design *and*
- POLSCI 3NN3 - Statistical Analysis of Primary Data

or

- POLSCI 3N06 A/B

or

- in combined programs within the Faculty of Social Sciences, the six units of Research Methods/Statistics course specified for the other subject

#### 0-3 UNITS

- POLSCI 1AA3 - Government, Politics, and Power
- POLSCI 1AB3 - Politics and Power in a Globalizing World

If not completed in Level 1 (See *Note 5*)

#### 15-18 UNITS

- Electives (the maximum Political Science courses to be taken is 54 units)

### HONOURS POLITICAL SCIENCE (B.A.)

#### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 5.0 including a grade of C or greater in one of POLSCI 1AA3 or 1AB3 (or 1G06 A/B) (See *Note 5* below). For continuation in the program, see *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the *Faculty of Social Sciences Academic Regulations*.

#### NOTES

- Students should be alerted to those Levels II and III courses that are required to qualify for a number of Level IV courses. Students who wish to enter courses but who lack the necessary prerequisites must obtain the permission of the instructor.
- POLSCI 2NN3 and 3NN3 or 3N06 A/B and POLSCI 2006 A/B are required for students enrolled in Honours Political Science programs and recommended for students in the B.A. program.
- Students may take a maximum of 12 units of Level IV Political Science and will be removed from any excess units of Level IV Political Science unless permission is granted by the Department. Additional units of Level IV Political Science may not be used as electives.
- Students who have completed only 3 units of Level I Political Science will be required to complete 3 more units of Level I Political Science by the end of the following academic year.
- Completion of POLSCI 1AB3 by the end of Level I is strongly recommended in order for students to meet the prerequisite for POLSCI 2NN3.
- Students who wish to minor in Globalization Studies, Justice, Law & Order or Public Leadership should consult with the Department of Political Science to ensure they meet all degree requirements and restrictions.

#### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- the Level I program completed prior to admission to the program (See *Admission* above.)

#### 6 UNITS

- POLSCI 2006 A/B - Political Theory

#### 24 UNITS

- Levels II, III Political Science of which a maximum of 15 units may be Level II; including at least one course from the *Canadian Politics* Field of Study

#### 12 UNITS

- Level IV Political Science (See *Note 1* above.)

**6 UNITS**

- POLSCI 2NN3 - Politics by Design *and*
- POLSCI 3NN3 - Statistical Analysis of Primary Data

or

- POLSCI 3N06 A/B

**0-3 UNITS**

- POLSCI 1AA3 - Government, Politics, and Power
- POLSCI 1AB3 - Politics and Power in a Globalizing World

If not completed in Level 1 (See *Note 4*)

**39-42 UNITS**

- Electives, of which no more than 18 units may be from Political Science (the maximum Political Science courses to be taken is 66 units)

## HONOURS POLITICAL SCIENCE SPECIALIZATION IN GLOBAL CITIZENSHIP (B.A.)

**ADMISSION**

Enrollment in this program is limited and possession of the published minimum requirements does not guarantee admission. Selection is based on academic achievement but requires, as a minimum, completion on any Level I program with a Grade Point average of at least a 5.0 including a grade of C or greater in POLSCI 1AB3 (or 1G06 A/B). Students are strongly encouraged to complete POLSCI 1AA3 and GLOBALZN 1A03 in Level I (See *Note 5* below). For continuation in the program, see *Minimum Requirements for Entering and Continuing in a Program Beyond Level I*.

**NOTES**

- Students should be alerted to those Levels II and III courses that are required to qualify for a number of Level IV courses. Students who wish to enter courses but who lack the necessary prerequisites must obtain the permission of the instructor.
- POLSCI 2NN3, 3NN3 and POLSCI 2006 A/B are required for students enrolled in Honours Political Science programs and they are recommended for students in the B.A. program.
- Students may take a maximum of 12 units of Level IV Political Science. Additional units of Level IV Political Science and will be removed from any excess units of Level IV Political Science unless permission is granted by the Department. Additional units of Level IV Political Science may not be used as electives.
- POLSCI 4Z06 A/B may be selected if topic relates to Global Citizenship.
- Students who have not completed POLSCI 1AA3 or GLOBALZN 1A03 in Level I should do so by the end of Level II.

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

from

- the Level I program completed prior to admission to the program (See *Admission* above.)

**12 UNITS**

- POLSCI 2I03 - Global Politics
- POLSCI 2J03 - Global Political Economy
- POLSCI 2006 A/B - Political Theory

**3 UNITS**

- POLSCI 2D03 - Canadian Democracy

or

- POLSCI 2M03 - Governance, Representation, and Participation in Democracies

**6 UNITS**

- POLSCI 2NN3 - Politics by Design
- POLSCI 3NN3 - Statistical Analysis of Primary Data

**18 UNITS**

Global Citizenship Experiential requirement

A.

One term abroad taking equivalent of 9 units from courses similar to those on Global Citizenship Course List and 9 units from the Global Citizenship Level III Course List

**9 units**

- Take abroad
- and

**9 units**

from

- POLSCI 3C03 - Government and Politics of Indigenous People
- POLSCI 3CC3 - Political Authority: 20th-Century Political Theory
- POLSCI 3EE3 - International Relations: North-South
- POLSCI 3G03 - Ethnicity and Multiculturalism: Theory and Practice
- POLSCI 3GC3 - Global Climate Change
- POLSCI 3H03 - Honours Issues in Comparative Politics
- POLSCI 3K03 - Migration and Citizenship: Canadian, Comparative and Global Perspectives
- POLSCI 3KK3 - Genocide: Sociological and Political Perspectives
- POLSCI 3LB3 - Globalization and the World Order
- POLSCI 3LC3 - Southeast Asian Politics
- POLSCI 3LL3 - Development and Public Policy
- POLSCI 3PB3 - Politics from Below
- POLSCI 3PG3 - Political Geography
- POLSCI 3Q03 - The Causes of War
- POLSCI 3RF3 - The Charter of Rights and Freedoms
- POLSCI 3V03 - Gender and Politics
- POLSCI 3VV3 - Democratic Theory
- POLSCI 3Y03 - Democratization and Human Rights

Or

B.

Two terms abroad taking 18 units of courses similar to those on the Global Citizenship Level III Course List

Or

C.

POLSCI 3WP3 and 15 units from the Global Citizenship Level III Course List

**3 units**

- POLSCI 3WP3 - Working in Politics AND

**15 units**

from

- POLSCI 3C03 - Government and Politics of Indigenous People
- POLSCI 3CC3 - Political Authority: 20th-Century Political Theory
- POLSCI 3EE3 - International Relations: North-South
- POLSCI 3G03 - Ethnicity and Multiculturalism: Theory and Practice
- POLSCI 3GC3 - Global Climate Change
- POLSCI 3H03 - Honours Issues in Comparative Politics
- POLSCI 3K03 - Migration and Citizenship: Canadian, Comparative and Global Perspectives
- POLSCI 3KK3 - Genocide: Sociological and Political Perspectives
- POLSCI 3LC3 - Southeast Asian Politics
- POLSCI 3LB3 - Globalization and the World Order
- POLSCI 3LL3 - Development and Public Policy
- POLSCI 3PB3 - Politics from Below
- POLSCI 3PG3 - Political Geography
- POLSCI 3Q03 - The Causes of War
- POLSCI 3RF3 - The Charter of Rights and Freedoms
- POLSCI 3V03 - Gender and Politics
- POLSCI 3VV3 - Democratic Theory
- POLSCI 3Y03 - Democratization and Human Rights

**3 UNITS**

- POLSCI 4GC3 - Advanced Issues in Global Citizenship

**9 UNITS**

- From the Global Citizenship Level IV Course List

**0-3 UNITS**

- GLOBALZN 1A03 - Global Citizenship (See *Note 5*)

**0-3 UNITS**

- POLSCI 1AA3 - Government, Politics, and Power (See *Note 5*)

**36-39 UNITS**

- Electives, of which no more than 6 units may be from Political Science

**GLOBAL CITIZENSHIP LEVEL III COURSE LIST**

- POLSCI 3C03 - Government and Politics of Indigenous People
- POLSCI 3CC3 - Political Authority: 20th-Century Political Theory
- POLSCI 3EE3 - International Relations: North-South
- POLSCI 3G03 - Ethnicity and Multiculturalism: Theory and Practice
- POLSCI 3GC3 - Global Climate Change
- POLSCI 3H03 - Honours Issues in Comparative Politics
- POLSCI 3K03 - Migration and Citizenship: Canadian, Comparative and Global Perspectives
- POLSCI 3KK3 - Genocide: Sociological and Political Perspectives
- POLSCI 3LB3 - Globalization and the World Order
- POLSCI 3LC3 - Southeast Asian Politics
- POLSCI 3LL3 - Development and Public Policy
- POLSCI 3PB3 - Politics from Below
- POLSCI 3PG3 - Political Geography
- POLSCI 3Q03 - The Causes of War
- POLSCI 3RF3 - The Charter of Rights and Freedoms
- POLSCI 3V03 - Gender and Politics
- POLSCI 3VV3 - Democratic Theory
- POLSCI 3Y03 - Democratization and Human Rights

**GLOBAL CITIZENSHIP LEVEL IV COURSE LIST**

- POLSCI 4CF3 - Canadian Foreign Policy
- POLSCI 4D06 A/B - International Politics
- POLSCI 4GG3 - Conceptual Issues in Global Politics
- POLSCI 4HR3 - Human Rights
- POLSCI 4JJ3 - Cosmopolitanism
- POLSCI 4KB3 - Non-Western International Relations
- POLSCI 4KC3 - Comparative Democratization
- POLSCI 4KK3 - Advanced Issues in Global Security
- POLSCI 4LA3 - Politics in Latin America
- POLSCI 4NN3 - Studies in Global Political Economy
- POLSCI 4PE3 - Global Political Ecology
- POLSCI 4QQ3 - Issues in International Politics
- POLSCI 4UF3 - US Foreign Policy
- POLSCI 4Y03 - Domination and Decolonization
- POLSCI 4YR3 - Child/Youth Rights and Security in Global Political Perspective
- POLSCI 4Z06 A/B - Honours Essay (*see note 4*)

**HONOURS POLITICAL SCIENCE SPECIALIZATION IN PUBLIC LAW AND JUDICIAL STUDIES (B.A.)****ADMISSION**

**Enrollment in this program is limited and possession of the published minimum requirements does not guarantee admission.** Selection is based on academic achievement. Completion on any Level I program with a Grade Point average of at least a 5.0 including a grade of C or greater in one of POLSCI 1AA3 or 1AB3 (or 1G06 A/B) (See *Note 5* below). For continuation in the program, see *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the *Faculty of Social Sciences Academic Regulations*.

**NOTES**

- Students should be alerted to those Levels II and III courses that are required to qualify for a number of Level IV courses. Students who wish to enter courses but who lack the necessary prerequisites must obtain the permission of the instructor.
- POLSCI 2NN3 and 3NN3 or 3N06 A/B and POLSCI 2006 A/B are required for students enrolled in Honours Political Science programs and they are recommended for students in the B.A. program.
- Students may take a maximum of 12 units of Level IV Political Science and will be removed from any excess units of Level IV Political Science unless permission is granted by the Department. Additional units of Level IV Political Science may not be used as electives.
- Students who have completed only 3 units of level I Political Science will be required to complete 3 more units of Level I Political Science by the end of the following academic year.
- Completion of POLSCI 1AB3 by the end of Level I is strongly recommend in order for students to meet the prerequisite for POLSCI 2NN3.
- Students enrolled in Honours Political Science Specialization in Public Law and Judicial Studies may not claim a Minor in Justice, Law and Order.

**REQUIREMENTS**

*120 units total (Levels I to IV), of which 48 units may be Level I*

**30 UNITS**

from

- the Level I program completed prior to admission to the program. (See *Admission* above.)

**9 UNITS**

- POLSCI 2006 A/B - Political Theory
- POLSCI 2C03 - Force and Fear, Crime and Punishment

**3 UNITS**

- POLSCI 2D03 - Canadian Democracy

or

- POLSCI 2M03 - Governance, Representation, and Participation in Democracies

**6 UNITS**

- POLSCI 3CL3 - Constitutional and Public Law in Canada
- POLSCI 3RF3 - The Charter of Rights and Freedoms

or

- POLSCI 3NN6 A/B

**9 UNITS**

- from the Public Law and Judicial Studies Course List

**9 UNITS**

- Level II, III Political Science of which a maximum of 3 units may be Level II

**6 UNITS**

- Level IV Political Science (See *Note 1* above.)

**6 UNITS**

- POLSCI 4JS3 - Judicial Studies
- POLSCI 4LC3 - Research on Law and Courts

**6 UNITS**

- POLSCI 2NN3 - Politics by Design and
- POLSCI 3NN3 - Statistical Analysis of Primary Data

or

- POLSCI 3N06 A/B

**0-3 UNITS**

- POLSCI 1AA3 - Government, Politics, and Power
- POLSCI 1AB3 - Politics and Power in a Globalizing World

If not completed in Level 1 (See *Note 4*)

**33-36 UNITS**

- Electives, of which no more than 12 units may be from Political Science (the maximum Political Science courses to be taken is 66 units)



**PUBLIC LAW AND JUDICIAL STUDIES COURSE LIST**

- LABRST 3C03 - Labour and Employment Law
- POLSCI 3C03 - Government and Politics of Indigenous People
- POLSCI 3CC3 - Political Authority: 20th-Century Political Theory
- POLSCI 3G03 - Ethnicity and Multiculturalism: Theory and Practice
- POLSCI 3GG3 - Federalism
- POLSCI 3IP3 - Intellectual Property
- POLSCI 3JR3 - The Rule of Law and Legal and Judicial Reforms in the Developing World
- POLSCI 3K03 - Migration and Citizenship: Canadian, Comparative and Global Perspectives
- POLSCI 3KA3 - Indigenous Human Rights
- POLSCI 3KK3 - Genocide: Sociological and Political Perspectives
- POLSCI 3LP3 - Topics in Law and Policy
- POLSCI 3V03 - Gender and Politics
- POLSCI 3VV3 - Democratic Theory
- POLSCI 3Y03 - Democratization and Human Rights

**Bachelor of Arts****POLITICAL SCIENCES (B.A.)****ADMISSION**

Completion of any Level I program, with a Grade Point Average of at least 3.5 including a grade of C- or greater in one of POLSCI 1AA3 or 1AB3 (or 1G06 A/B) (see *Note 4* below).

**NOTES**

- Students should be alerted to those Levels II and III courses that are required to qualify for a number of Level IV courses. Students who wish to enter courses but who lack the necessary prerequisites must obtain the permission of the instructor.
- POLSCI 2NN3 and POLSCI 3NN3 or POLSCI 3N06 A/B and POLSCI 2006 A/B are required for students enrolled in Honours Political Science programs and they are recommended for students in B.A. programs.
- Students who have completed only 3 units of Level I Political Science will be required to complete 3 more units of Level I Political by the end of the of the following academic year.
- Completion of POLSCI 1AB3 by the end of Level I is strongly recommend in order for students to meet the prerequisite for POLSCI 2NN3.

**REQUIREMENTS**

90 units total (Levels I to III), of which 42 units may be Level I

**30 UNITS**

from

- the Level I program completed prior to admission to the program. (See *Admission* above)

**24 UNITS**

- Level II, III Political Science of which a maximum of 15 units may be Level II; including at least one course from the *Canadian Politics* Field of Study (See *Note 2* above)

**0-3 UNITS**

- POLSCI 1AA3 - Government, Politics, and Power
- POLSCI 1AB3 - Politics and Power in a Globalizing World

If not completed in Level 1 (See *Note 3*)

**33-36 UNITS**

- Electives, of which no more than 18 units can be from Political Science (the maximum Political Science courses to be taken is 42 units)

**Minor(s):****MINOR IN JUSTICE, LAW AND ORDER****NOTES**

- In order to declare a Minor in Justice, Law and Order, at least 12 units (above Level I) must be elective to the degree.
- Students are responsible for ensuring that any prerequisites for preferred upper-year courses are met in advance.
- Students enrolled in Honours Political Science Specialization in Public Law and Judicial Studies may not claim a Minor in Justice, Law and Order.

**REQUIREMENTS**

24 units total

**6 UNITS**

- POLSCI 1AA3 - Government, Politics, and Power
- POLSCI 1AB3 - Politics and Power in a Globalizing World

or

- POLSCI 1G06

**6 UNITS**

- POLSCI 2D03 - Canadian Democracy
- POLSCI 2C03 - Force and Fear, Crime and Punishment

**6 UNITS**

- POLSCI 3CL3 - Constitutional and Public Law in Canada
- POLSCI 3RF3 - The Charter of Rights and Freedoms

or

- POLSCI 3NN6 A/B

**6 UNITS**

- from the Multidisciplinary Course List (See *Note 2*)

**MULTIDISCIPLINARY COURSE LIST**

- ANTHROP 3FA3 - Forensic Anthropology
- HLTHAGE 2G03
- HLTHAGE 2GG3 - Mental Health and Society
- HLTHAGE 3DD3 - Work: Dangerous to your Health?
- INDIGST 3K03 - Indigenous Human Rights
- LABRST 2W03 - Human Rights and Social Justice
- LABRST 3C03 - Labour and Employment Law
- POLSCI 3C03 - Government and Politics of Indigenous People
- POLSCI 3CC3 - Political Authority: 20th-Century Political Theory
- POLSCI 3G03 - Ethnicity and Multiculturalism: Theory and Practice
- POLSCI 3GG3 - Federalism
- POLSCI 3K03 - Migration and Citizenship: Canadian, Comparative and Global Perspectives
- POLSCI 3KK3 - Genocide: Sociological and Political Perspectives
- POLSCI 3V03 - Gender and Politics
- POLSCI 3VV3 - Democratic Theory
- POLSCI 3Y03 - Democratization and Human Rights
- PSYCH 3CC3 - Forensic Psychology
- RELIGST 2RD3
- SCAR 2RD3 - Religion and Diversity
- SOCWORK 3H03
- SOCIOLOG 2BB3 - Sociology of Deviance
- SOCIOLOG 2CC3 - Constructing Deviance
- SOCIOLOG 2C06
- SOCIOLOG 3GG3 - Special Topics in the Sociology of Deviance

**MINOR IN POLITICAL SCIENCE****REQUIREMENTS**

24 units total

**6 UNITS**

- Level I Political Science

**18 UNITS**

- Levels II, III Political Science of which up to 12 units may be Level II

**MINOR IN PUBLIC LEADERSHIP**

This minor is intended to provide students with a strong theoretical, practical and applied understanding of leadership and the role that political and/or public actors can play in the public domain of both democratic and non-democratic states to achieve their policy goals, affect positive social change and impact the policy choices of governments. Students will be prepared for further studies or careers in politics, government, public policy, community organization and activism, education, human rights and law.

Students will select courses from the Faculty of Social Sciences that address these themes, developing a strong interdisciplinary grasp on the different concepts of leadership and their application to different policy and public environments. Beyond the required courses, students will be able to select from a wide variety of courses that cater to their own interests.

It is the student's responsibility to check carefully for prerequisites, co-requisites and enrolment restrictions of all courses in this list. Students are encouraged to speak to their Faculty advisors about Faculty-specific rules about double-counting courses for the minor.

**REQUIREMENTS**

24 units total

**3 UNITS****Foundations of Public Policy, Public Administration and Public Service**

- POLSCI 2U03 - Public Policy and Administration

**3 UNITS**

from

**Leadership and Leadership Practices**

- POLSCI 3FG3 - Public Service Leadership
- SOCSCI 2LC3 - Leadership and Communications for the Not-For-Profit Sector
- SOCSCI 3EL3 - Leadership Through Experiential Learning

**6 UNITS**

from

**Spaces, Places and Needs for Public Leadership**

- POLSCI 2F03 - Politics, Power and Influence in Canada
- POLSCI 2H03 - Globalization and the State
- POLSCI 2XX3 - Politics of the Developing World
- POLSCI 3PB3 - Politics from Below
- RELIGST 2ER3
- RELIGST 2VR3
- SCAR 2ER3 - Religion, the Body, and the Machine
- SCAR 2VR3 - Violence and Religion

**12 UNITS**

from

**Other Aspects of Leadership**

- POLSCI 3BB3 - Political Communication: Canada and the World
- POLSCI 3C03 - Government and Politics of Indigenous People
- POLSCI 3EE3 - International Relations: North-South
- POLSCI 3F03
- POLSCI 3G03 - Ethnicity and Multiculturalism: Theory and Practice
- POLSCI 3J03 - Honours Issues in Canadian Politics and Canadian Public Policy
- POLSCI 3K03 - Migration and Citizenship: Canadian, Comparative and Global Perspectives
- POLSCI 3LB3 - Globalization and the World Order
- POLSCI 3LL3 - Development and Public Policy
- POLSCI 3V03 - Gender and Politics

- POLSCI 3VV3 - Democratic Theory
- POLSCI 3Y03 - Democratization and Human Rights
- POLSCI 3Z03 - Canadian Public Sector Management
- POLSCI 4006 A/B - Canadian Politics
- RELIGST 3CC3
- SCAR 3CC3 - Religion and Politics

**NOTE**

Please see the *Course Listings* section for a detailed description of the above courses.

## Department of Psychology, Neuroscience & Behaviour (Faculty of Social Sciences)

<http://www.science.mcmaster.ca/pnb/>

**HONOURS ARTS & SCIENCE AND PSYCHOLOGY NEUROSCIENCE & BEHAVIOUR**

(B.Arts.Sc.; See *Arts & Science Program*)

**HONOURS BIOLOGY AND PSYCHOLOGY, NEUROSCIENCE & BEHAVIOUR (B.SC.)**

(See B.Sc. programs in *Biology, Faculty of Science, Department of Biology*)

**HONOURS COGNITIVE SCIENCE OF LANGUAGE (B.A.)**

(See *Faculty of Humanities, Department of Linguistics and Languages*)

**HONOURS HUMAN BEHAVIOUR (B.A.SC.)**

(See *Faculty of Science, Department of Psychology, Neuroscience & Behaviour*)

**HONOURS HUMAN BEHAVIOUR - AUTISM AND BEHAVIOURAL SCIENCE SPECIALIZATION (B.A.SC.)**

(See *Faculty of Science, Department of Psychology, Neuroscience & Behaviour*)

**HONOURS HUMAN BEHAVIOUR - EARLY CHILDHOOD EDUCATION SPECIALIZATION (B.A.SC.)**

(See *Faculty of Science, Department of Psychology, Neuroscience & Behaviour*)

**HONOURS NEUROSCIENCE (B.SC.)**

(See *Faculty of Science, Department of Psychology, Neuroscience & Behaviour*)

**HONOURS PSYCHOLOGY, NEUROSCIENCE & BEHAVIOUR (B.SC.)**

(See *Faculty of Science, Department of Psychology, Neuroscience & Behaviour*)

**HONOURS PSYCHOLOGY, NEUROSCIENCE AND BEHAVIOUR (B.SC.) (MENTAL HEALTH SPECIALIZATION)**

(See *Faculty of Science, Department of Psychology, Neuroscience & Behaviour*)

**HONOURS PSYCHOLOGY, NEUROSCIENCE & BEHAVIOUR (B.SC.) (MUSIC COGNITION SPECIALIZATION)**

(See *Faculty of Science, Department of Psychology, Neuroscience & Behaviour*)

**HONOURS SOCIAL PSYCHOLOGY (B.A.)**

B.A.; (See *Faculty of Social Sciences, Honours Social Psychology (B.A.)*)

## Bachelor of Arts (Honours)

### COMBINED HONOURS IN PSYCHOLOGY, NEUROSCIENCE & BEHAVIOUR AND ANOTHER SUBJECT (B.A.)

**ADMISSION**

**Enrolment in this program is limited and possession of the published minimum requirements does not guarantee admission.** Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0; a grade of at least B- in PSYCH 1FF3 or 1XX3 (See *Note 8* below); credit in one of BIOLOGY 1A03, 1M03, 1P03 or Grade 12 Biology U (See *Note 9* below); and credit in one of MATH 1A03, 1LS3 or 1M03. (See *Notes 1* and *2* below). Satisfaction of the admission requirements for the Honours program in the other subject.

**NOTES**

- Students with Grade 12 Calculus and Vectors U must take one of MATH 1A03, 1LS3 or 1M03. Students with Grade 12 Advanced Functions U must complete MATH 1F03 prior to completing one of MATH 1A03, 1LS3 or 1M03. Students with Grade 11 Math must first take MATH 1K03. Students who obtain at least a B- in MATH 1K03, may then take MATH 1M03. Students who obtain less than B- in MATH 1K03, must take MATH 1F03 prior to taking one of MATH 1A03, 1LS3 or 1M03.
- Students wishing to take more advanced MATH courses are required to have at least a B- in MATH 1M03 or credit in MATH 1A03 or 1LS3.
- Subject to meeting admission requirements, students may combine two subjects and be graduated with a combined honours B.A. degree. These combinations are available within the Faculty, with programs in the Faculty of Humanities and with Arts and Science Programs.
- Students considering applying to graduate school should complete a course with a strong research component such as PNB 3QQ3 A/B S, 4QQ3 A/B S, 4D06 A/B, 4D09 A/B.
- PSYCH 3AB3, 3AC3, 3AG3, 3BA3, 3CB3, 3CD3 may only be used as electives.
- The Department of Psychology, Neuroscience & Behaviour pre-registration ballot will include the thesis courses (PNB 4D06 A/B, 4D09 A/B), and the Independent Research and Library courses (PNB 3QQ3 A/B S, 3QQ3 A/B S, 4QQ3 A/B S, 4QQ3 A/B S). Students wishing to take these courses must complete and submit a ballot by **mid February**. Students will be informed of the outcome of the first phase by **mid March**. Specific dates will be announced during the fall term. Ballots can be obtained on The Department of Psychology, Neuroscience & Behaviour web site at: <http://pnb.mcmaster.ca/>.
- Both PNB 2XD3 and 2XF3 are recommended but not required. PNB 2XD3 is included in the *Psychology Course List* and may be used towards the Level III Psych requirements.
- Either PSYCH 1FF3 or 1XX3 is required for Admission but PSYCH 1XX3 is recommended. Completion of one of PSYCH 1F03 or 1X03 is required by the end of Level II but PSYCH 1X03 is recommended in Level I.
- It is recommended that students take BIOLOGY 1M03 in Level I, and BIOLOGY 1A03 in Level II.

**COURSE LIST 2 (PSYCHOLOGY COURSE LIST)**

- BIOLOGY 3P03 - Cell Physiology
- BIOLOGY 4T03 - Molecular and Cellular Neuroscience
- HTHSCI 4BB3 - Neuroimmunology
- HUMBEHV 3MD3 - Research Methods for Human Behaviour
- KINESIOL 3E03 - Neural Control of Human Movement
- LIFESCI 3BB3 - Neurobiology of Disease
- LIFESCI 3E03 - Reproductive Endocrinology
- LIFESCI 3K03 - Neural Control of Human Movement
- LINGUIST 2PS3 - Psycholinguistics
- LINGUIST 3C03 - Child Language Acquisition
- LINGUIST 3NL3 - Cognitive Neuroscience of Language
- MUSICCOG 2MP3 - Introduction to Music Cognition
- PNB 2A03 - Python for PNB
- PNB 2XD3 - Integrative PNB Through Scientific Writing
- All Level III and IV MUSICCOG courses
- NEUROSCI 3J03 - Visual Neuroscience
- NEUROSCI 3SN3 - Neural Circuits
- All Level III and IV PNB courses

**AND,**

all Level III and IV PSYCH courses **except:**

- PSYCH 3AB3 - Adolescent Psychology
- PSYCH 3AC3 - Human Sexuality
- PSYCH 3AG3 - Aging
- PSYCH 3BA3 - Positive Psychology

- PSYCH 3CB3 - Attitudes and Persuasion
- PSYCH 3CD3

**REQUIREMENTS (EFFECTIVE 2020-2021)**

*120 units total (Levels I to IV), of which no more than 48 units may be Level I*

**LEVEL I: 30 UNITS**

(See *Admission* above)

**LEVEL II: 30 UNITS**

12 units

- PNB 2XA3 - Human Perception & Cognition
- PNB 2XB3 - Neuroanatomy & Neurophysiology
- PNB 2XC3 - Animal Behaviour & Evolution
- PNB 2XE3 - Descriptive Statistics and Research Methods
- PNB 2XT0 - PNB Tutorial

12 units

- courses as specified for the other subject

0-3 units

- PSYCH 1F03 - Survey of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

if not completed in Level I (See *Note 8* above)

3-6 units

- Electives
- (See *Notes 7* and *9* above)

**LEVEL III: 30 UNITS**

3 units

- PNB 3XE3 - Inferential Statistics and Research Methods

3 units

from

- PNB 3EE3 - Perception Laboratory
- PNB 3EV3 - Evolutionary Psychology Lab
- PNB 3L03 - Neurodevelopment & Plasticity Lab
- PNB 3MM3 - Cognitive Neuroscience Lab
- PNB 3QQ3 A/B S - Intermediate Independent Research
- PNB 3S03 - Animal Behaviour Lab
- PNB 3V03 - Laboratory in Human Memory and Cognition

6 units

from

- Course List 2
- (See *Note 7* above)

12 units

- courses as specified for the other subject

6 units

- Electives
- (See *Notes 5* and *7* above)

**LEVEL IV: 30 UNITS**

12 units

from

- *Course List 2*

12 units

- courses as specified for the other subject

6 units

- Electives
- (See *Note 5* above)

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2020**

*120 units total (Levels I to IV), of which no more than 48 units may be Level I*

**LEVEL I: 30 UNITS**

(See *Admission* above)

**LEVEL II: 30 UNITS**

12 units

- PNB 2XA3 - Human Perception & Cognition
- PNB 2XB3 - Neuroanatomy & Neurophysiology

- PNB 2XC3 - Animal Behaviour & Evolution
- PNB 2XE3 - Descriptive Statistics and Research Methods
- PNB 2XT0 - PNB Tutorial

12 units

- courses as specified for the other subject

0-3 units

- PSYCH 1F03 - Survey of Psychology or
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

if not completed in Level I (See *Note 8* above)

3-6 units

- Electives  
(See *Notes 7 and 9* above)

**LEVEL III: 30 UNITS**3 units

- PNB 3XE3 - Inferential Statistics and Research Methods

3 units

from

- HUMBEHV 3MD3 - Research Methods for Human Behaviour
- PNB 3EE3 - Perception Laboratory
- PNB 3EV3 - Evolutionary Psychology Lab
- PNB 3L03 - Neurodevelopment & Plasticity Lab
- PNB 3MM3 - Cognitive Neuroscience Lab
- PNB 3QQ3 A/B S - Intermediate Independent Research
- PNB 3RM3
- PNB 3S03 - Animal Behaviour Lab
- PNB 3V03 - Laboratory in Human Memory and Cognition

6 units

from

- *Course List 2*  
(See *Note 7* above)

12 units

- courses as specified for the other subject

6 units

- Electives  
(See *Notes 5 and 7* above)

**LEVEL IV: 30 UNITS**12 units

from

- *Course List 2*

12 units

- courses as specified for the other subject

6 units

- Electives  
(See *Note 5* above)

## HONOURS PSYCHOLOGY, NEUROSCIENCE & BEHAVIOUR (B.A.)

**ADMISSION**

**Enrolment in this program is limited and possession of the published minimum requirements does not guarantee admission.** Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0; a grade of at least B- in PSYCH 1FF3 or 1XX3 (See *Note 6* below); credit in one of BIOLOGY 1A03, 1M03, 1P03 or Grade 12 Biology U (See *Note 7* below); and credit in one of MATH 1A03, 1LS3 or 1M03 (See *Notes 1 and 2* below).

**NOTES**

- Students with Grade 12 Calculus and Vectors U must take one of MATH 1A03, 1LS3 or 1M03. Students with Grade 12 Advanced Functions U must complete MATH 1F03 prior to completing one of MATH 1A03, 1LS3 or 1M03. Students with Grade 11 Math must first take MATH

1K03. Students who obtain at least a B- in MATH 1K03, may then take MATH 1M03. Students who obtain less than B- in MATH 1K03 must take MATH 1F03 prior to taking one of MATH 1A03, 1LS3 or 1M03.

- Students wishing to take more advanced MATH courses are required to have at least a B- in MATH 1M03 or credit in MATH 1A03 or 1LS3.
- Students considering applying to graduate school should complete a course with a strong research component such as PNB 3QQ3 A/B S, 4QQ3 A/B S, 4D06 A/B, 4D09 A/B.
- PSYCH 3AB3, 3AC3, 3AG3, 3BA3, 3CB3, 3CD3 may only be used as electives.
- The Department of Psychology, Neuroscience & Behaviour pre-registration ballot will include the thesis courses (PNB 4D06 A/B, 4D09 A/B) and the Independent Research and Library courses (PNB 3Q03 A/B S, 3QQ3 A/B S, 4QQ3 A/B S, 4Q03 A/B S). Students wishing to take these courses must complete and submit a ballot by **mid February**. Students will be informed of the outcome of the first phase by mid March. Specific dates will be announced during the fall term. Ballots can be obtained on the Department of Psychology, Neuroscience & Behaviour web site at: <http://pnb.mcmaster.ca/>.
- Either PSYCH 1FF3 or 1XX3 is required for Admission but PSYCH 1XX3 is recommended. Completion of one of PSYCH 1F03 or 1X03 is required by the end of Level II but PSYCH 1X03 is recommended in Level I.
- It is recommended that students take BIOLOGY 1M03 in Level I, and BIOLOGY 1A03 in Level II.

**COURSE LIST 2 (CAPSTONE COURSES)**

- PNB 4D06 A/B - Senior Thesis
- PNB 4J03 - Inquiry in Psychology, Neuroscience & Behaviour
- PNB 4Q03 A/B S - Senior Independent Library Study
- PNB 4QQ3 A/B S - Senior Independent Research
- PNB 4SC6 A/B - Science Communication in the Behavioural Sciences

**COURSE LIST 3 (PSYCHOLOGY COURSE LIST)**

- BIOLOGY 3P03 - Cell Physiology
- BIOLOGY 4T03 - Molecular and Cellular Neuroscience
- HTHSCI 4BB3 - Neuroimmunology
- HUMBEHV 3MD3 - Research Methods for Human Behaviour
- KINESIOL 3E03 - Neural Control of Human Movement
- LIFESCI 3BB3 - Neurobiology of Disease
- LIFESCI 3E03 - Reproductive Endocrinology
- LIFESCI 3K03 - Neural Control of Human Movement
- LINGUIST 2PS3 - Psycholinguistics
- LINGUIST 3C03 - Child Language Acquisition
- LINGUIST 3NL3 - Cognitive Neuroscience of Language
- MUSICCOG 2MP3 - Introduction to Music Cognition
- All Level III and IV MUSICCOG courses
- NEUROSCI 3J03 - Visual Neuroscience
- NEUROSCI 3SN3 - Neural Circuits
- PNB 2A03 - Python for PNB
- All Level III and IV PNB courses

**AND**

all Level III and IV PSYCH courses **except**:

- PSYCH 3AB3 - Adolescent Psychology
- PSYCH 3AC3 - Human Sexuality
- PSYCH 3AG3 - Aging
- PSYCH 3BA3 - Positive Psychology
- PSYCH 3CB3 - Attitudes and Persuasion
- PSYCH 3CD3

**REQUIREMENTS (EFFECTIVE 2020-2021)**

*120 units total (Levels I to IV), of which no more than 48 units may be Level I*

**LEVEL I: 30 UNITS**

- (See *Admission* above)



**LEVEL II: 30 UNITS**18 units

- PNB 2XA3 - Human Perception & Cognition
- PNB 2XB3 - Neuroanatomy & Neurophysiology
- PNB 2XC3 - Animal Behaviour & Evolution
- PNB 2XD3 - Integrative PNB Through Scientific Writing
- PNB 2XE3 - Descriptive Statistics and Research Methods
- PNB 2XF3 - Perspectives in PNB
- PNB 2XT0 - PNB Tutorial

0-3 units

- PSYCH 1F03 - Survey of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

if not completed in Level I (See *Note 6* above)

9-12 units

- Electives

**LEVEL III: 30 UNITS**3 units

- PNB 3XE3 - Inferential Statistics and Research Methods

3 units

from

- PNB 3EE3 - Perception Laboratory
- PNB 3EV3 - Evolutionary Psychology Lab
- PNB 3L03 - Neurodevelopment & Plasticity Lab
- PNB 3MM3 - Cognitive Neuroscience Lab
- PNB 3QQ3 A/B S - Intermediate Independent Research
- PNB 3S03 - Animal Behaviour Lab
- PNB 3V03 - Laboratory in Human Memory and Cognition

9 units

from

- *Course List 3*

15 units

- Electives  
(See *Note 4* above)

**LEVEL IV: 30 UNITS**6 units

from

- *Course List 3*

9 units

- PNB 4D09 A/B - Senior Honours Thesis or
- 6 units from *Course List 2* and 3 units from *Course List 3*  
(See *Note 5* above)

15 units

- Electives  
(See *Note 4* above)

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2020**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I**30 units

- (See *Admission* above)

**LEVEL II: 30 UNITS**18 units

- PNB 2XA3 - Human Perception & Cognition
- PNB 2XB3 - Neuroanatomy & Neurophysiology
- PNB 2XC3 - Animal Behaviour & Evolution
- PNB 2XD3 - Integrative PNB Through Scientific Writing
- PNB 2XE3 - Descriptive Statistics and Research Methods
- PNB 2XF3 - Perspectives in PNB
- PNB 2XT0 - PNB Tutorial

0-3 units

- PSYCH 1F03 - Survey of Psychology or

- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour if not completed in Level I (See *Note 6* above)

9-12 units

- Electives (See *Note 5* above.)

**LEVEL III: 30 UNITS**3 units

- PNB 3XE3 - Inferential Statistics and Research Methods

3 units

from

- HUMBEHV 3MD3 - Research Methods for Human Behaviour
- PNB 3EE3 - Perception Laboratory
- PNB 3EV3 - Evolutionary Psychology Lab
- PNB 3L03 - Neurodevelopment & Plasticity Lab
- PNB 3MM3 - Cognitive Neuroscience Lab
- PNB 3QQ3 A/B S - Intermediate Independent Research
- PNB 3RM3
- PNB 3S03 - Animal Behaviour Lab
- PNB 3V03 - Laboratory in Human Memory and Cognition

9 units

from

- *Course List 3*

15 units

Electives

- (See *Note 4* above)

**LEVEL IV: 30 UNITS**6 units

from

- *Course List 3*

9 units

- PNB 4D09 A/B - Senior Honours Thesis or
- 6 units from *Course List 2* and 3 units from *Course List 3*

(See *Note 5* above)

15 units

Electives

- (See *Notes 4* above)

**HONOURS PSYCHOLOGY, NEUROSCIENCE & BEHAVIOUR - MENTAL HEALTH SPECIALIZATION (B.A.)****ADMISSION**

**Enrolment in this program is limited and possession of the published minimum requirements does not guarantee admission.** Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0; a grade of at least B- in PSYCH 1FF3 or 1XX3 (See *Note 3* below); credit in one of BIOLOGY 1A03, 1M03, 1P03 or Grade 12 Biology U (See *Note 4* below); and credit in one of MATH 1A03, 1LS3 or 1M03 (See *Note 1* below).

**NOTES**

- Students with Grade 12 Calculus and Vectors U must take one of MATH 1A03, 1LS3 or 1M03. Students with Grade 12 Advanced Functions U must complete MATH 1F03 prior to completing one of MATH 1A03, 1LS3 or 1M03. Students with Grade 11 Math must first take MATH 1K03. Students who obtain at least a B- in MATH 1K03, may then take MATH 1M03. Students who obtain less than B- in MATH 1K03 must take MATH 1F03 prior to taking one of MATH 1A03, 1LS3 or 1M03.
- The Department of Psychology, Neuroscience & Behaviour pre-registration ballot will include the thesis course (PNB 4D09 A/B) and the Independent Research and Library courses (PNB 3Q03 A/B S, 3QM3 A/B S, 3QQ3 A/B S, 4Q03 A/B S, 4QQ3 A/B S). Students wishing to take these courses must complete and submit a ballot by mid February. Students will be informed of the outcome of the first phase by mid

March. Specific dates will be announced during the fall term. Ballots can be obtained on the Department of Psychology, Neuroscience & Behaviour web site at: <http://pnb.mcmaster.ca/>.

- Either PSYCH 1FF3 or 1XX3 is required for Admission but PSYCH 1XX3 is recommended. Completion of one of PSYCH 1F03 or 1X03 is required by the end of Level II but PSYCH 1X03 is recommended in Level I.
- It is recommended that students take BIOLOGY 1M03 in Level I and BIOLOGY 1A03 in Level II.

#### **COURSE LIST (MENTAL HEALTH COURSE LIST)**

- HUMBEHV 3MD3 - Research Methods for Human Behaviour
- PNB 2A03 - Python for PNB
- PNB 3EE3 - Perception Laboratory
- PNB 3EV3 - Evolutionary Psychology Lab
- PNB 3I06 A/B - Practica in Psychology
- PNB 3L03 - Neurodevelopment & Plasticity Lab
- PNB 3MM3 - Cognitive Neuroscience Lab
- PNB 3S03 - Animal Behaviour Lab
- PNB 3V03 - Laboratory in Human Memory and Cognition
- PSYCH 3AB3 - Adolescent Psychology
- PSYCH 3AC3 - Human Sexuality
- PSYCH 3AG3 - Aging
- PSYCH 3BA3 - Positive Psychology
- PSYCH 3CC3 - Forensic Psychology
- PSYCH 3D03 - The Multisensory Mind
- PSYCH 3EV3 - Evolution and Mental Health
- PSYCH 3F03 - Evolution and Human Behaviour
- PSYCH 3H03 - The Arts and The Brain
- PSYCH 3JJ3 - Socio-Emotional Development
- PSYCH 3M03 - Motivation and Emotion
- PSYCH 3T03 - Behavioural Ecology
- PSYCH 3UU3 - Psychology of Language
- PSYCH 3VV3 - Human Memory
- PSYCH 4S03
- PSYCH 4Y03

#### **REQUIREMENTS (EFFECTIVE 2020-2021)**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

##### **LEVEL I: 30 UNITS**

See *Admission* above.

##### **LEVEL II: 30 UNITS**

18 units

- PNB 2XA3 - Human Perception & Cognition
- PNB 2XB3 - Neuroanatomy & Neurophysiology
- PNB 2XC3 - Animal Behaviour & Evolution
- PNB 2XD3 - Integrative PNB Through Scientific Writing
- PNB 2XE3 - Descriptive Statistics and Research Methods
- PNB 2XF3 - Perspectives in PNB
- PNB 2XT0 - PNB Tutorial

6 units

- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 2B03 - Personality

0-3 units

from

- PSYCH 1F03 - Survey of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

if not completed in Level I (See *Note 3* above)

3-6 units

- Electives

##### **LEVEL III: 30 UNITS**

9 units

- PNB 3HP3 - History of Psychology
- PNB 3XE3 - Inferential Statistics and Research Methods

- PSYCH 3GG3 - Essentials of Developmental Psychology

3 units

from

- PNB 3EE3 - Perception Laboratory
- PNB 3EV3 - Evolutionary Psychology Lab
- PNB 3L03 - Neurodevelopment & Plasticity Lab
- PNB 3MM3 - Cognitive Neuroscience Lab
- PNB 3QM3 A/B S - Independent Research in Mental Health
- PNB 3S03 - Animal Behaviour Lab
- PNB 3V03 - Laboratory in Human Memory and Cognition

9 units

from

- *Mental Health List*

9 units

- Electives

##### **LEVEL IV: 30 UNITS**

9 units

- PNB 4A03 - Assessment in Children
- PSYCH 3B03 - Special Populations
- PSYCH 3MT3 - Psychometrics

3 units

from

- *Mental Health List*

9 units

- PNB 4D09 A/B - Senior Honours Thesis

(See *Note 2* above)

9 units

- Electives

#### **REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2020**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

##### **LEVEL I**

30 units

See *Admission* above.

##### **LEVEL II: 30 UNITS**

18 units

- PNB 2XA3 - Human Perception & Cognition
- PNB 2XB3 - Neuroanatomy & Neurophysiology
- PNB 2XC3 - Animal Behaviour & Evolution
- PNB 2XD3 - Integrative PNB Through Scientific Writing
- PNB 2XE3 - Descriptive Statistics and Research Methods
- PNB 2XF3 - Perspectives in PNB
- PNB 2XT0 - PNB Tutorial

6 units

- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 2B03 - Personality

0-3 units

from

- PSYCH 1F03 - Survey of Psychology or
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

if not completed in Level I (See *Note 3* above)

3-6 units

- Electives

##### **LEVEL III: 30 UNITS**

9 units

- PNB 3HP3 - History of Psychology
- PNB 3XE3 - Inferential Statistics and Research Methods
- PSYCH 3GG3 - Essentials of Developmental Psychology

3 units

from

- HUMBEHV 3MD3 - Research Methods for Human Behaviour

- PNB 3EE3 - Perception Laboratory
- PNB 3EV3 - Evolutionary Psychology Lab
- PNB 3L03 - Neurodevelopment & Plasticity Lab
- PNB 3MM3 - Cognitive Neuroscience Lab
- PNB 3QM3 A/B S - Independent Research in Mental Health
- PNB 3RM3
- PNB 3S03 - Animal Behaviour Lab
- PNB 3V03 - Laboratory in Human Memory and Cognition

9 units

from

- *Mental Health List*

9 units

- Electives

#### LEVEL IV: 30 UNITS

9 units

- PNB 4A03 - Assessment in Children
- PSYCH 3B03 - Special Populations
- PSYCH 3MT3 - Psychometrics

3 units

from

- *Mental Health List*

9 units

- PNB 4D09 A/B - Senior Honours Thesis

(See *Note 2* above)

9 units

- Electives

## HONOURS PSYCHOLOGY, NEUROSCIENCE & BEHAVIOUR - MUSIC COGNITION SPECIALIZATION (B.A.)

### ADMISSION

**Enrolment in this program is limited and possession of the published minimum requirements does not guarantee admission.** Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0; a grade of at least B- in PSYCH 1FF3 or 1XX3 (See *Note 10* below); credit in one of BIOLOGY 1A03, 1M03, 1P03 or Grade 12 Biology U (See *Note 11* below); credit in one of MATH 1A03, 1LS3 or 1M03 (See *Note 1* below); and credit in MUSIC 1A03 or 1AA3. (See *Note 3* below)

### NOTES

- Students with Grade 12 Calculus and Vectors U must take one of MATH 1A03, 1LS3 or 1M03. Students with Grade 12 Advanced Functions U must complete MATH 1F03 prior to completing one of MATH 1A03, 1LS3 or 1M03. Students with Grade 11 Math must first take MATH 1K03. Students who obtain at least a B- in MATH 1K03, may then take MATH 1M03. Students who obtain less than B- in MATH 1K03, must take MATH 1F03 prior to taking one of MATH 1A03, 1LS3 or 1M03.
- Students wishing to take more advanced MATH courses are required to have at least a B- in MATH 1M03 or credit in MATH 1A03 or 1LS3.
- MUSIC 1A03 or 1AA3 is required for admission, however, completion of both are required by the end of Level IV.
- Students who have completed Grade 3 History (History 1) or Grade 5 History (History 3) from the Royal Conservatory of Music, with a grade of at least 70%, are not required to complete MUSIC 1AA3, and those students who have similarly obtained at least 70% on RCM Grade 4 History (History 2) are not required to complete MUSIC 1A03 either for admission to the Music Cognition Specialization or to fulfill their degree requirements
- Entrance into MUSIC 1CB3 requires Advanced Rudiments (formerly Grade 2 Rudiments) from the Royal Conservatory of Music (a grade of 80% or above, within the last two years) or a grade of 70% or above on

a qualifying music theory exam administered by the School of the Arts (SOTA). Appointments can be made with SOTA to write the exam on specific dates between February and May. The content of the exam is summarized at: <https://sota.humanities.mcmaster.ca>. Students not meeting these requirements will be required to take MUSIC 1CR3 - prior to MUSIC 1CA3.

- Students considering applying to graduate school should complete a course with a strong research component such as MUSICCOG 3QQ3 A/B S, 4D06 A/B, 4QQ3 A/B S; PNB 3QQ3 A/B S, 4D06 A/B, 4D09 A/B, 4QQ3 A/B S.
- PSYCH 3AB3, 3AC3, 3AG3, 3BA3, 3CB3, 3CD3 may only be used as electives.
- The Department of Psychology, Neuroscience & Behaviour pre-registration ballot will include the thesis courses (PNB 4D06 A/B, 4D09 A/B) and the Independent Research and Library courses (PNB 3Q03 A/B S, 3QQ3 A/B S, 4Q03 A/B S, 4QQ3 A/B S). Students wishing to take these courses must complete and submit a ballot by **mid February**. Students will be informed of the outcome of the first phase by mid March. Specific dates will be announced during the fall term. Ballots can be obtained on the Department of Psychology, Neuroscience & Behaviour web site at: <http://www.science.mcmaster.ca/pnb/>.
- Students are encouraged to complete both PSYCH 3A03 and 3H03 as part of the *Psychology Course List* requirement.
- Either PSYCH 1FF3 or 1XX3 is required for Admission but PSYCH 1XX3 is recommended. Completion of one of PSYCH 1F03 or 1X03 is required by the end of Level II but PSYCH 1X03 is recommended in Level I.
- It is recommended that students take BIOLOGY 1M03 in Level I, and BIOLOGY 1A03 in Level II.

### COURSE LIST 2 (CAPSTONE COURSES)

- MUSICCOG 4D06 A/B - Thesis in Music Cognition
- MUSICCOG 4QQ3 A/B S - Experimental Laboratory in Music Cognition II
- PNB 4D06 A/B - Senior Thesis
- PNB 4J03 - Inquiry in Psychology, Neuroscience & Behaviour
- PNB 4Q03 A/B S - Senior Independent Library Study
- PNB 4QQ3 A/B S - Senior Independent Research
- PNB 4SC6 A/B - Science Communication in the Behavioural Sciences

### COURSE LIST 3 (PSYCHOLOGY COURSE LIST)

- BIOLOGY 3P03 - Cell Physiology
- BIOLOGY 4T03 - Molecular and Cellular Neuroscience
- HTHSCI 4BB3 - Neuroimmunology
- HUMBEHV 3MD3 - Research Methods for Human Behaviour
- KINESIOL 3E03 - Neural Control of Human Movement
- LIFESCI 3BB3 - Neurobiology of Disease
- LIFESCI 3E03 - Reproductive Endocrinology
- LIFESCI 3K03 - Neural Control of Human Movement
- LINGUIST 2PS3 - Psycholinguistics
- LINGUIST 3C03 - Child Language Acquisition
- LINGUIST 3NL3 - Cognitive Neuroscience of Language
- MUSIC 2CB3 - Theory and Analysis III
- MUSIC 2MT3 - Introduction to the Practice of Music Therapy
- MUSICCOG 3QQ3 A/B S - Experimental Laboratory in Music Cognition I
- NEUROSCI 3J03 - Visual Neuroscience
- NEUROSCI 3SN3 - Neural Circuits
- PNB 2A03 - Python for PNB
- All Level III and IV PNB courses,

### AND,

All Levels III and IV PSYCH courses **except:**

- PSYCH 3AB3 - Adolescent Psychology
- PSYCH 3AC3 - Human Sexuality
- PSYCH 3AG3 - Aging
- PSYCH 3BA3 - Positive Psychology

- PSYCH 3CB3 - Attitudes and Persuasion
- PSYCH 3CD3

**REQUIREMENTS (EFFECTIVE 2020-2021)**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I: 30 UNITS**

(See *Admission* above)

**LEVEL II: 30 UNITS**

18 units

- PNB 2XA3 - Human Perception & Cognition
- PNB 2XB3 - Neuroanatomy & Neurophysiology
- PNB 2XC3 - Animal Behaviour & Evolution
- PNB 2XD3 - Integrative PNB Through Scientific Writing
- PNB 2XE3 - Descriptive Statistics and Research Methods
- PNB 2XF3 - Perspectives in PNB
- PNB 2XT0 - PNB Tutorial

3 units

- MUSIC 1CB3 - Theory and Analysis I

(See *Note 5* above)

3 units

- MUSICCOG 2MP3 - Introduction to Music Cognition

0-3 units

from

- PSYCH 1F03 - Survey of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

if not completed in Level I (See *Note 10* above)

3-6 units

- Electives  
(See *Notes 3* and *5* above)

**LEVEL III: 30 UNITS**

3 units

- PNB 3XE3 - Inferential Statistics and Research Methods

3 units

- MUSICCOG 3QQ3 A/B S - Experimental Laboratory in Music Cognition I
- PNB 3EE3 - Perception Laboratory
- PNB 3EV3 - Evolutionary Psychology Lab
- PNB 3L03 - Neurodevelopment & Plasticity Lab
- PNB 3MM3 - Cognitive Neuroscience Lab
- PNB 3QQ3 A/B S - Intermediate Independent Research
- PNB 3S03 - Animal Behaviour Lab
- PNB 3V03 - Laboratory in Human Memory and Cognition

3 units

from

- *Course List 3*  
(See *Note 9* above)

3 units

- MUSIC 2CA3 - Theory and Analysis II

3-6 units

from

- MUSICCOG 3MP3
- MUSICCOG 3SP3 - The Science of Performance
- MUSICCOG 4MP3 - Neuroscience of Music

12-15 units

- Electives  
(See *Notes 3* and *7* above)

**LEVEL IV: 30 UNITS**

6 units

from

- *Course List 3*  
(See *Note 9* above)

0-3 units

from

- MUSICCOG 3MP3
- MUSICCOG 3SP3 - The Science of Performance
- MUSICCOG 4MP3 - Neuroscience of Music

9 units

- PNB 4D09 A/B - Senior Honours Thesis or
- 6 units from *Course List 2* and 3 units from *Course List 3*  
(See *Notes 6* and *8* above)

12-15 units

- Electives  
(See *Notes 3* and *7* above)

**REQUIREMENTS FOR STUDENTS WHO ENTERED PRIOR TO SEPTEMBER 2019**

120 units total (Levels I to IV), of which no more than 48 units may be Level I

**LEVEL I**

30 units

(See *Admission* above)

**LEVEL II: 30 UNITS**

18 units

- PNB 2XA3 - Human Perception & Cognition
- PNB 2XB3 - Neuroanatomy & Neurophysiology
- PNB 2XC3 - Animal Behaviour & Evolution
- PNB 2XD3 - Integrative PNB Through Scientific Writing
- PNB 2XE3 - Descriptive Statistics and Research Methods
- PNB 2XF3 - Perspectives in PNB
- PNB 2XT0 - PNB Tutorial

6 units

- MUSIC 1CB3 - Theory and Analysis I

3 units

- MUSICCOG 2MA3
- MUSICCOG 2MP3 - Introduction to Music Cognition

0-3 units

from

- PSYCH 1F03 - Survey of Psychology or
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

if not completed in Level I (See *Note 10* above)

0-3 units

- Electives  
(See *Note 3* above)

**LEVEL III: 30 UNITS**

3 units

- PNB 3XE3 - Inferential Statistics and Research Methods

3 units

from

- HUMBEHV 3MD3 - Research Methods for Human Behaviour
- MUSICCOG 3QQ3 A/B S - Experimental Laboratory in Music Cognition I
- PNB 3EE3 - Perception Laboratory
- PNB 3EV3 - Evolutionary Psychology Lab
- PNB 3L03 - Neurodevelopment & Plasticity Lab
- PNB 3MM3 - Cognitive Neuroscience Lab
- PNB 3QQ3 A/B S - Intermediate Independent Research
- PNB 3RM3
- PNB 3S03 - Animal Behaviour Lab
- PNB 3V03 - Laboratory in Human Memory and Cognition

3 units

from

- *Course List 3*  
(See *Note 9* above)

3 units

- MUSIC 2CA3 - Theory and Analysis II

3-6 units

from



- MUSICCOG 3MP3
- MUSICCOG 3SP3 - The Science of Performance
- MUSICCOG 4MP3 - Neuroscience of Music

12-15 units

- Electives  
(See *Notes 3 and 7* above)

**LEVEL IV: 30 UNITS**6 units

from

- *Course List 3*  
(See *Note 9* above)

0-3 units

from

- MUSICCOG 3MP3
- MUSICCOG 3SP3 - The Science of Performance
- MUSICCOG 4MP3 - Neuroscience of Music

9 units

- PNB 4D09 A/B - Senior Honours Thesis or
- 6 units from *Course List 2* and 3 units from *Course List 3*

(See *Notes 6 and 8* above)12-15 units

- Electives  
(See *Notes 3 and 7* above)

## Bachelor of Arts

### PSYCHOLOGY (B.A.)

**ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 3.5 and a grade of at least C- in PSYCH 1F03 or 1X03.

**NOTES**

- One of MATH 1A03, 1F03, 1K03, 1LS3 or 1M03 must be completed by the end of Level II. Completion in Level I is recommended.
- SOCSOI 2J03 must be completed by the end of Level II.
- PSYCH 1FF3 or 1XX3 and one of BIOLOGY 1A03, 1M03 or 1P03 or Grade 12 Biology U are recommended and serve as prerequisites for some upper-level Psychology courses. Students are encouraged to check requisites carefully.
- Students wishing to take PNB 3Q03 A/B S and 3Q03 A/B S must complete and submit a pre-registration ballot by **mid February**. Students will be informed of the outcome by **mid March**. Specific dates will be announced during the fall term. Ballots can be obtained on the Department of Psychology, Neuroscience & Behaviour web site at: <http://pnb.mcmaster.ca/>.

**COURSE LIST 1 (PSYCHOLOGY COURSE LIST)**

- LINGUIST 2PS3 - Psycholinguistics
- LINGUIST 3C03 - Child Language Acquisition
- PNB 3Q03 A/B S - Independent Library Study
- PNB 3Q03 A/B S - Intermediate Independent Research
- PSYCH 2AA3 - Child Development
- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 2B03 - Personality
- PSYCH 2C03 - Social Psychology
- PSYCH 2GG3 - Learning, Measuring, and Shaping Behaviour
- PSYCH 3AB3 - Adolescent Psychology
- PSYCH 3AC3 - Human Sexuality
- PSYCH 3AG3 - Aging
- PSYCH 3B03 - Special Populations
- PSYCH 3BA3 - Positive Psychology
- PSYCH 3C03 - Child Language Acquisition

- PSYCH 3CB3 - Attitudes and Persuasion
- PSYCH 3CC3 - Forensic Psychology
- PSYCH 3CD3
- PSYCH 3F03 - Evolution and Human Behaviour
- PSYCH 3FA3 - The Neurobiology of Learning and Memory
- PSYCH 3M03 - Motivation and Emotion
- PSYCH 3MT3 - Psychometrics
- PSYCH 3SE3 - Comparative Social Evolution
- PSYCH 3T03 - Behavioural Ecology
- PSYCH 3UU3 - Psychology of Language
- PSYCH 3VV3 - Human Memory

**REQUIREMENTS**

90 units total (Levels I to III), of which 42 units may be Level I

**LEVEL II: 30 UNITS**3 units

- SOCSOI 2J03 - Introduction to Statistics

(See *Note 2* above.)9 units

Level II Psychology, where at least six units must be from:

- PSYCH 2AA3 - Child Development
- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 2B03 - Personality
- PSYCH 2C03 - Social Psychology
- PSYCH 2GG3 - Learning, Measuring, and Shaping Behaviour

3 units

from

- MATH 1A03 - Calculus For Science I
- MATH 1F03 - Introduction to Calculus and Analytic Geometry
- MATH 1K03 - Advanced Functions & Introductory Calculus for Humanities and the Social Sciences
- MATH 1LS3 - Calculus for the Life Sciences I
- MATH 1M03 - Calculus for Business, Humanities and the Social Sciences

(If requirement completed in Level I, these units will be taken as non-psychology electives.) (See *Note 1* above.)

9 units

- Electives, excluding Psychology

6 units

- Electives

**LEVEL III: 30 UNITS**12 units

from

- *Course List 1*, of which at least nine units must be from Level III

12 units

- Electives, excluding Psychology

6 units

- Electives

## Department of Religious Studies

<http://www.religiousstudies.mcmaster.ca>

**Faculty as of January 15, 2020**

CHAIR

**Daniel Machiela**

PROFESSORS

**Ellen Amster**/B.A. (Chicago), Ph.D. (Pennsylvania)

**Ellen Badone**/B.A., M.A. (Toronto), Ph.D. (California-Berkeley)

**James Benn**/B.A., M.A. (Cambridge), M.A. (London), Ph.D. (California-Los Angeles)

**P. Travis Kroeker**/B.A. (Winnipeg), M.A. (Manitoba), Ph.D. (Chicago)

**Liyakat Takim**/B.Sc. (City University, London), M.A. (Virginia), Ph.D. (London)

**ASSOCIATE PROFESSORS****Shayne Clarke**/B.A., M.A. (*Canterbury*), Ph.D. (*California-Los Angeles*)**Dana Hollander**/B.A. (*Oberlin College*), M.A., Ph.D. (*Johns Hopkins*)**Daniel Machiela**/B.A. (*Grand Valley State*), M.A. (*Jerusalem University College*), Ph.D. (*Notre Dame*)**Zdravko Planinc**/B.A., M.A. (*York*), A.M., Ph.D. (*Harvard*)**Celia Rothenberg**/B.A. (*Wellesley College*), M.S. (*Oxford*), Ph.D. (*Toronto*)**Mark Rowe**/B.A. (*McGill*), M.A., Ph.D. (*Princeton*)**Matthew Thiessen**/B.R.S. (*Tyndale*), M.A. (*Trinity Western*), M.St. (*Oxford*), Ph.D. (*Duke*)**ASSISTANT PROFESSORS****Philippa Carter**/B.A. (*Toronto*), M.A. (*McMaster*), M.A. (*Sheffield*), Ph.D. (*McMaster*)**Hanna Tervanotko**/B.A., M.A. (*Helsinki*), Ph.D. (*Vienna*), Th.D. (*Helsinki*)**Bachelor of Arts (Honours)****COMBINED HONOURS IN SOCIETY, CULTURE & RELIGION AND ANOTHER SUBJECT (B.A.)****ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 5.0 including a grade of at least C in three units from SCAR 1B03, 1R03, 1SC3&nbsp;(or Level 1 Religious Studies); student will be required to complete three more units of Level 1 Society, Culture & Religion prior to the completion of their degree. Satisfaction of the admission requirements for the Honours program in the other B.A. subject. For continuation in the program, see the section on *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the Faculty of Social Sciences Academic Regulations.

**NOTES**

- Subject to meeting admission requirements, students may combine two subjects and be graduated with a combined Honours B.A. degree. These combinations are available within the Faculty, with programs in the Faculty of Humanities and with the Arts and Science Program.
- All Society, Culture and Religion students will be assigned a faculty mentor upon entering the program. It is the responsibility of the student to consult with the mentor at least once each academic year to discuss their academic goals and course options.
- Students must consult both departments to determine the manner in which the Research Methods/Statistics requirement is to be satisfied.
- SCAR 4R06 A/B&nbsp;is strongly recommended for students considering graduate work in Religious Studies. Students are encouraged to consider language training that supports their studies in Society, Culture & Religion. The Department of Religious Studies offers courses in Arabic, Hebrew and Sanskrit. The study of other languages, including Chinese, Farsi, French, German, Greek, Japanese and Latin, is also available at McMaster.

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

from

- the Level I program completed prior to admission to the program. (See *Admission* above.)

**9 UNITS**

- (minimum) Level II Society, Culture & Religion or Religious Studies

**12 UNITS**

- (minimum) Level III Society, Culture & Religion or Religious Studies

**3 UNITS**

- SCAR 3F03 - Approaches to the Study of Religion
- RELIGST 3F03

**12 UNITS**

- Levels II, III or IV Society, Culture & Religion or Religious Studies

**3 UNITS**

- Level IV Society, Culture & Religion or Religious Studies

**36 UNITS**

- courses specified for the other subject

**3 UNITS**

If requirement completed in Level I, these units will be taken as electives. from

- Either SOCSOCI 2J03, three units of a language other than English, or the three-unit Research Methods/Statistics course specified for the other subject. (See *Notes* above.)

**0-3 UNITS**

If requirement completed in Level I, these units will be taken as elective.

- SCAR 1B03 - What on Earth is Religion?
- SCAR 1R03 - Introduction to Anthropology: Race, Religion and Conflict
- SCAR 1SC3 - The Big Questions: Introduction to Society, Culture & Religion
- RELIGST 1AB3
- RELIGST 1B03
- RELIGST 1I03
- RELIGST 1J03
- RELIGST 1L03
- RELIGST 1R03

**9-12 UNITS**

- Electives

**HONOURS SOCIETY, CULTURE & RELIGION (B.A.)****ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 5.0 including a grade of C in three units from SCAR 1B03, 1R03, 1SC3&nbsp;(or Level 1 Religious Studies); students will be required to complete three more units of Level 1 Society, Culture & Religion prior to the completion of their degree. For continuation in the program, see the section on *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the Faculty of Social Sciences Academic Regulations.

**NOTES**

- All Society, Culture & Religion students will be assigned a faculty mentor upon entering the program. It is the responsibility of the student to consult with the mentor at least once each academic year to discuss their academic goals and course options.
- SCAR 4R06 A/B is strongly recommended for students considering graduate work in Religious Studies.
- SCAR 4AE3 A/B and 4SC3 are offered each year. Note that Level IV seminars have the following prerequisite: Enrolment in Level III and above or by permission of the instructor.
- Students are encouraged to consider language training that supports their studies in Society, Culture & Religion. The Department of Religious Studies offers courses in Arabic, Hebrew and Sanskrit. The study of other languages, including Chinese, Farsi, French, German, Greek, Japanese and Latin, is also available at McMaster.

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

from

- the Level I program completed prior to admission to the program (See *Admission* above)

**12 UNITS**

- Level II Society, Culture & Religion or Religious Studies

**15 UNITS**

- Level III Society, Culture & Religion or Religious Studies

**3 UNITS**

- SCAR 3F03 - Approaches to the Study of Religion
- RELIGST 3F03

**21 UNITS**

- Levels II, III or IV Society, Culture & Religion or Religious Studies.  
(See *Notes* above)

**6 UNITS**

- Level IV Society, Culture & Religion or Religious Studies  
(See *Notes* above)

**3 UNITS**

If requirement completed in Level I, these units will be taken as electives from

- Either SOCSCI 2J03 or three units of a language other than English  
(See *Notes* above)

**0-3 UNITS**

If requirement completed in Level I, these units will be taken as electives.

- SCAR 1B03 - What on Earth is Religion?
- SCAR 1R03 - Introduction to Anthropology: Race, Religion and Conflict
- SCAR 1SC3 - The Big Questions: Introduction to Society, Culture & Religion
- RELIGST 1AB3
- RELIGST 1B03
- RELIGST 1I03
- RELIGST 1J03
- RELIGST 1L03
- RELIGST 1R03

**27-30 UNITS**

- Electives, of which at least six units must be taken from outside of Society, Culture & Religion or Religious Studies

## Bachelor of Arts

### SOCIETY, CULTURE & RELIGION (B.A.)

**ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 3.5 and a grade of at least C- in three units from SCAR 1B03, 1R03, 1SC3 (or Level 1 Religious Studies); students will be required to complete three more units of Level 1 Society, Culture & Religion prior to the completion of their degree.

**NOTES**

- All Society, Culture & Religion students will be assigned a faculty mentor upon entering the program. It is the responsibility of the student to consult with the mentor at least once each academic year to discuss their academic goals and course options.
- Students are encouraged to consider language training that supports their studies in Society, Culture & Religion. The Department offers courses in Arabic, Hebrew and Sanskrit. The study of other languages, including Chinese, Farsi, French, German, Greek, Japanese and Latin, is also available at McMaster.

**REQUIREMENTS**

90 units total (Levels I to III), of which 42 units may be Level I

**30 UNITS**

from

- the Level I program completed prior to admission to the program.  
(See *Admission* above.)

**9 UNITS**

- Level II Society, Culture & Religion or Religious Studies

**9 UNITS**

- Level III Society, Culture & Religion or Religious Studies

**3 UNITS**

- SCAR 3F03 - Approaches to the Study of Religion
- RELIGST 3F03

**6 UNITS**

- Levels II, III or IV Society, Culture & Religion or Religious Studies  
(See *Notes* above.)

**0-3 UNITS**

If requirement completed in Level I, these units will be taken as electives.

- SCAR 1B03 - What on Earth is Religion?
- SCAR 1R03 - Introduction to Anthropology: Race, Religion and Conflict
- SCAR 1SC3 - The Big Questions: Introduction to Society, Culture & Religion
- RELIGST 1AB3
- RELIGST 1B03
- RELIGST 1I03
- RELIGST 1J03
- RELIGST 1L03
- RELIGST 1R03

**30-33 UNITS**

- Electives, of which at least 6 units must be taken outside of Society, Culture & Religion or Religious Studies.

## Minor(s):

### MINOR IN ASIAN STUDIES

**REQUIREMENTS**

24 units total, with no more than six units from Level I

**12-15 UNITS**

from

- CHINESE 1Z06 A/B - Mandarin Chinese for Beginners
- JAPANESE 1Z06 A/B S - Beginner's Intensive Japanese
- SCAR 2F03 - Storytelling in Asian Religions
- SCAR 2GB3 - Great Books in Asian Religions
- SCAR 2IR3 - Hollywood/Bollywood and Indian Religions
- SCAR 2K03 - Introduction to Buddhism
- SCAR 2MT3 - Asian Meditation Traditions
- SCAR 2TT3 - Religion and Popular Culture in Contemporary Japan

**9-12 UNITS**

from

- SCAR 3BE3 - Buddhist Ethics
- SCAR 3E03 - Japanese Film and Religion
- SCAR 3S03 - The East Asian Religious Tradition
- SCAR 3U03 - The Buddhist Tradition in India
- SCAR 3UU3 - Buddhism in East Asia
- JAPANESE 2Z03 - Intermediate Intensive Japanese I
- JAPANESE 2ZZ3 - Intermediate Intensive Japanese II
- SANSKRIT 3A06 A/B - Introduction to Sanskrit Grammar
- SANSKRIT 4B06 A/B - Readings in Sanskrit Texts

### MINOR IN HEALTH, WELL-BEING & RELIGION

**REQUIREMENTS**

24 units total

**15 UNITS:****9-12 units**

from

- SCAR 2M03 - Death and Dying: Comparative Views
- SCAR 2N03 - Death and Dying: The Western Experience

- SCAR 2WW3 - Health, Healing and Religion: Western Perspectives
- SCAR 2WX3 - Health, Healing and Religion: Comparative Views
- RELIGST 2M03
- RELIGST 2N03
- RELIGST 2WW3
- RELIGST 2WX3

**3-6 units**

from

- SCAR 2ER3 - Religion, the Body, and the Machine
- SCAR 2GR3 - Evil
- SCAR 2MT3 - Asian Meditation Traditions
- SCAR 2SP3 - Sport and/as Religion
- SCAR 2UD3 - Utopias, Dystopias
- SCAR 2VR3 - Violence and Religion
- SCAR 3EE3 - Sacred Journeys
- SCAR 3GH3 - Interdisciplinary Global Health Field Course: Maternal and Infant Health in Morocco
- SCAR 3X03 - Mysticism
- SCAR 3Y03 - Love
- RELIGST 2ER3
- RELIGST 2GR3
- RELIGST 2MT3
- RELIGST 2SP3
- RELIGST 2UD3
- RELIGST 2VR3
- RELIGST 3EE3
- RELIGST 3FA3
- RELIGST 3GH3
- RELIGST 3X03
- RELIGST 3Y03

**9 units**

from

- Society, Culture & Religion or Religious Studies at Levels II, III, IV

**MINOR IN JAPANESE STUDIES**

The minor in Japanese Studies administered by the Department of Religious Studies in the Faculty of Social Sciences. is being phased out effective September 2023. Interested students should see the Minor in Asian Studies.

**REQUIREMENTS**

24 units total

**6 UNITS**

- JAPANESE 1Z06 A/B S - Beginner's Intensive Japanese

**3 UNITS**

from

- JAPAN ST 2P03
- JAPAN ST 2P06
- RELIGST 2P03
- RELIGST 2P06
- RELIGST 2TT3
- SCAR 2TT3 - Religion and Popular Culture in Contemporary Japan

**15 UNITS**

- ARTHIST 2Z03 - Art and Visual Culture in East and South Asia
- HISTORY 3EC3 - Chinese Intellectual Traditions
- Levels II, III, IV JAPANESE
- JAPANST 2TT3
- JAPANST 3E03
- JAPANST 3H03
- JAPANST 3S03
- JAPANST 3U03
- RELIGST 2F03

- RELIGST 2MT3
- RELIGST 3E03
- RELIGST 2S03
- RELIGST 3UU3
- SCAR 2F03 - Storytelling in Asian Religions
- SCAR 2MT3 - Asian Meditation Traditions
- SCAR 3E03 - Japanese Film and Religion
- SCAR 3S03 - The East Asian Religious Tradition
- SCAR 3UU3 - Buddhism in East Asia

**MINOR IN RELIGION & DIVERSITY****REQUIREMENTS**

24 units total

**3 UNITS**

from

- SCAR 1B03 - What on Earth is Religion?
- SCAR 1SC3 - The Big Questions: Introduction to Society, Culture & Religion
- RELIGST 1B03

**3 UNITS**

from

- SCAR 2RD3 - Religion and Diversity
- RELIGST 2RD3

**3 UNITS**

from

- INDIGST 2A03 - Indigenous Peoples' Spirituality
- SCAR 2M03 - Death and Dying: Comparative Views
- SCAR 2TT3 - Religion and Popular Culture in Contemporary Japan
- SCAR 2WW3 - Health, Healing and Religion: Western Perspectives
- SCAR 2WX3 - Health, Healing and Religion: Comparative Views
- RELIGST 2M03
- RELIGST 2TT3
- RELIGST 2WW3
- RELIGST 2WX3

**6 UNITS**

from

- CMST 3RR3 - Race, Religion and Media
- SCAR 3AR3 - Culture and Religion
- SCAR 3C03 - Islam in the Modern World
- SCAR 3FF3 - Gender and Religion
- SCAR 3GH3 - Interdisciplinary Global Health Field Course: Maternal and Infant Health in Morocco
- SCAR 3S03 - The East Asian Religious Tradition
- SCAR 3X03 - Mysticism
- SCAR 3ZZ3 - Judaism in the Modern World
- RELIGST 3RA3
- RELIGST 3C03
- RELIGST 3FF3
- RELIGST 3GH3 (or ANTHROP 3GH3 or HISTORY 3GH3) in combination with ARABIC 3GH3
- RELIGST 3KK3
- RELIGST 3L03
- RELIGST 3RH3
- RELIGST 3S03
- RELIGST 3ZZ3

**9 UNITS**

from

- Level II, III, IV Society, Culture & Religion or Religious Studies



## MINOR IN SOCIETY, CULTURE & RELIGION

### REQUIREMENTS

24 units total

#### 24 UNITS

- Society, Culture & Religion or Religious Studies courses with no more than six units from Level I

## Social Psychology Program

Kenneth Taylor Hall, Room 212, ext. 22241

<https://socialpsychology.mcmaster.ca>

#### DIRECTOR

**Tara Marshall**/(Health and Aging) B.A. (Queens), M.A., Ph.D (Toronto)

#### COMMITTEE OF INSTRUCTORS

**Luca Berardi**/(Sociology) B.A., M.A. (Toronto), Ph.D. (Alberta)

**Meridith Griffin**/(Health and Aging) B.Kin. (McMaster), M.A. (British Columbia), Ph.D. (Exeter)

**Jeffrey Denis**/(Sociology) B.A. (Toronto), M.A., Ph.D. (Harvard)

**Tara Marshall**/(Health and Aging) B.A. (Queens), M.A., Ph.D (Toronto)

**Sarah Clancy**/(Health and Aging) B.A. (McMaster), M.A. (Guelph), Ph.D. (McMaster)

Students study various aspects of Social Psychology from a multidisciplinary perspective to gain an understanding of how individuals behave, how small groups and communities interact, and how societies form practices and priorities. Students will learn how to locate themselves in the complex fabrics of their cultures, their geographies and their power relationships. Students who are interested in many social science perspectives on how people develop over the lifespan and how they behave in different environments and circumstances should consider this program.

## Bachelor of Arts (Honours)

### HONOURS SOCIAL PSYCHOLOGY (B.A.)

#### ADMISSION

**Enrolment in this program is limited and possession of the published minimum requirements does not guarantee admission.** Selection is based on academic achievement but requires, as a minimum, completion of any Level I program with a Grade Point Average of at least 5.0 including a grade of at least C in SOCPSY 1Z03 and successful completion of one of PSYCH 1F03, PSYCH 1X03, or SOCIOLOG 1Z03 (or SOCIOLOG 1A06 A/B). Completion of SOCIOLOG 1Z03 and one of PSYCH 1F03, PSYCH 1X03 is required by the end of the first term in Level II. Completion of both requirements in Level I is strongly recommended. For continuation in the program, see the section on *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the Faculty of Social Sciences Academic Regulations.

#### NOTES

- Students must have completed both an introductory Psychology course (either PSYCH 1F03 and PSYCH 1X03) and an introductory Sociology course (SOCIOLOG 1Z03 (or SOCIOLOG 1A06 A/B)) by the end of the first term in Level II.
- Students are responsible for ensuring that they meet the prerequisites for any course they wish to take from the course lists.
- Students considering a graduate program should consult a departmental advisor to plan a program of study that meets admission requirements for such programs. Additional courses may be required.
- This program does not normally provide the appropriate preparation for students to enter graduate studies in clinical psychology. Please refer to the Honours Psychology, Neuroscience & Behaviour (B.A.) program in this section of the calendar.

- Students may take a maximum of 12 units of Level IV courses.
- Social Psychology at McMaster encompasses a broad area. The program is flexible in that students are able to select from a wide range of courses those that interest them most. However, for those students who wish to give their studies a tighter focus, there are several thematic areas to consider in making course selections.
- Students interested in a concentration in Psychology may complete the Minor in Psychology provided they do not have more than 6 units of Psychology courses above Level 1 overlapping with the Honours Social Psychology degree requirements.
- Students interested in a concentration in Sociology may complete the Minor in Sociology provided they do not have more than 6 units of Sociology courses above Level 1 overlapping with the Honours Social Psychology degree requirements.

#### MENTAL HEALTH

- ANTHROP 3HI3 - Medical Anthropology
- ANTHROP 3Y03 - Indigenous Community Health and Wellbeing
- ECON 2CC3 - Health Economics and its Application to Health Policy
- ENVSOCTY 2HI3 - Health and Place
- GEOG 2HI3
- HLTHAGE 1CC3 - Introduction to Mental Health and Illness
- HLTHAGE 2GG3 - Mental Health and Society
- HLTHAGE 2L03 - Drugs, Sex and Alcohol: Society and its Addictions
- HLTHAGE 3M03 - Approaches to Mental Health and Resilience
- HLTHAGE 3N03 - Aging and Mental Health
- HLTHAGE 4I03 - Aging and Health
- HLTHAGE 4O03 - Soundscapes of Wellbeing in Popular Music
- HLTHAGE 4Q03 - Representations of Mental Illness
- INDIGST 2F03 - Residential Schools in Canada: History and Impact
- PSYCH 2AA3 - Child Development
- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 2B03 - Personality
- PSYCH 3AB3 - Adolescent Psychology
- PSYCH 3B03 - Special Populations
- PSYCH 3BA3 - Positive Psychology
- PSYCH 3CC3 - Forensic Psychology
- PSYCH 3JJ3 - Socio-Emotional Development
- PSYCH 3MT3 - Psychometrics
- RELIGST 2WW3
- RELIGST 2WX3
- SCAR 2WW3 - Health, Healing and Religion: Western Perspectives
- SCAR 2WX3 - Health, Healing and Religion: Comparative Views
- SOCIOLOG 2QQ3 - Dynamics and Transitions in Intimate Relationships and Families
- SOCIOLOG 2BB3 - Sociology of Deviance
- SOCIOLOG 2CC3 - Constructing Deviance
- SOCIOLOG 3G03 - Sociology of Health Care
- SOCIOLOG 3HH3 - Sociology of Health
- SOCPSY 2B03 - Psychology of Well-Being
- SOCPSY 2D03 - Making and Breaking Rules
- SOCPSY 3A03 - Mental Health
- SOCPSY 3B03 - Understanding Lived Experiences
- SOCPSY 3C03 - Regimes of Social Control
- SOCPSY 3RR3 - Imprisonment
- SOCWORK 3C03 - Social Aspects of Health and Illness
- SOCWORK 3S03 - Social Work, Disability and Dis/Ableism
- SOCWORK 4Y03 - Critical Issues in Mental Health & Addiction: Mad & Critical Disability Studies Perspectives for SW

#### LAW, JUSTICE, CRIME AND DEVIANCE

- ANTHROP 3FA3 - Forensic Anthropology
- ECON 2Q03 - Economics of Bad Behaviour

- GLOBALZN 3A03 - Globalization, Social Justice, and Human Rights
- HISTORY 3JJ3 - Crime, Criminal Justice and Punishment in Modern History
- HISTORY 3XX3 - Human Rights in History
- INDIGST 2G03 - Indigenous Perspectives on Peace and Conflict
- INDIGST 3K03 - Indigenous Human Rights
- PHILOS 1B03 - Philosophy, Law and Society
- POLSCI 2C03 - Force and Fear, Crime and Punishment
- POLSCI 3CL3 - Constitutional and Public Law in Canada
- POLSCI 3RF3 - The Charter of Rights and Freedoms
- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 3CC3 - Forensic Psychology
- SOCIO 1C03 - Canadian Society: Social Problems, Social Policy, and the Law
- SOCIO 2BB3 - Sociology of Deviance
- SOCIO 2CC3 - Constructing Deviance
- SOCIO 3GG3 - Special Topics in the Sociology of Deviance
- SOCIO 3KK3 - Genocide: Sociological and Political Perspectives
- SOCIO 4GG3 - Special Topics in the Sociology of Deviance
- SOCPSY 2D03 - Making and Breaking Rules
- SOCPSY 3C03 - Regimes of Social Control
- SOCPSY 3RR3 - Imprisonment
- SOCWORK 3H03
- SOCWORK 3L03 - Violence: Social Justice Perspectives and Responses
- SOCWORK 4B03
- SOCWORK 4Y03 - Critical Issues in Mental Health & Addiction: Mad & Critical Disability Studies Perspectives for SW

#### HEALTH AND WELL-BEING

- ANTHROP 3HI3 - Medical Anthropology
- ANTHROP 3Y03 - Indigenous Community Health and Wellbeing
- ECON 2CC3 - Health Economics and its Application to Health Policy
- ECON 2P03 - Economics of Professional Sports
- ENVSOCY 2HI3 - Health and Place
- ENVSOCY 4HH3 - Environment and Health
- ENVSOCY 4HD3 - Disability, Society and Environment
- GEOG 2HI3
- GEOG 4HD3
- GEOG 4HH3
- HLTHAGE 2C03 - Health Economics and its Application to Health Policy
- HLTHAGE 2GG3 - Mental Health and Society
- HLTHAGE 3D03 - Perspectives on Disability, Chronic Illness and Aging
- HLTHAGE 3M03 - Approaches to Mental Health and Resilience
- HLTHAGE 3N03 - Aging and Mental Health
- HLTHAGE 4B03 - Death and Dying in Later Life
- HLTHAGE 4I03 - Aging and Health
- HLTHAGE 4O03 - Soundscapes of Wellbeing in Popular Music
- HLTHAGE 4P03 - Leisure and Recreation in Later Life
- HLTHAGE 4T03 - Gender, Sex and Health
- INDIGST 3H03 - Indigenous Medicine I - Philosophy
- INDIGST 3P03 - Haudenosaunee Health, Diet and Traditional Botany
- KINESIO 3V03 - Sport Psychology
- PHILOS 3D03 - Philosophy of Science
- POLSCI 4RR3 - Health Policy in the Industrialized World
- RELIGST 2WW3
- RELIGST 2WX3
- SCAR 2WW3 - Health, Healing and Religion: Western Perspectives
- SCAR 2WX3 - Health, Healing and Religion: Comparative Views
- SOCIO 2T03 - Sociology of Sport
- SOCIO 3G03 - Sociology of Health Care
- SOCIO 3HH3 - Sociology of Health
- SOCPSY 2B03 - Psychology of Well-Being

- SOCPSY 2C03 - Social Psychology of Popular Culture
- SOCPSY 3B03 - Understanding Lived Experiences
- SOCPSY 3D03
- SOCWORK 3C03 - Social Aspects of Health and Illness
- SOCWORK 3S03 - Social Work, Disability and Dis/Ableism

#### FAMILY AND THE LIFE COURSE

- SOCPSY 2C03 - Social Psychology of Popular Culture
- SOCPSY 3ZZ3 - Small Worlds: Children and Childhood
- HLTHAGE 2M03 - Aging in Modern (and Post-Modern) Families
- HLTHAGE 3N03 - Aging and Mental Health
- HLTHAGE 3P03
- HLTHAGE 4B03 - Death and Dying in Later Life
- HLTHAGE 4I03 - Aging and Health
- HLTHAGE 4L03 - Social Policy and Aging
- HLTHAGE 4P03 - Leisure and Recreation in Later Life
- RELIGST 2M03
- RELIGST 3Y03
- SCAR 2M03 - Death and Dying: Comparative Views
- SCAR 3Y03 - Love
- PSYCH 2AA3 - Child Development
- PSYCH 3AB3 - Adolescent Psychology
- PSYCH 3AG3 - Aging
- SOCIO 2PP3 - Sociology of Families
- SOCIO 2QQ3 - Dynamics and Transitions in Intimate Relationships and Families
- SOCIO 3CC3 - Sociology of the Family and the Life Cycle
- SOCIO 3X03 - Sociology of Aging
- SOCIO 4UU3 - Global Family and Sexual Politics
- SOCSCI 2CC3 - Children and Family in Canada
- SOCSCI 2O03 - Canadian Children
- SOCSCI 2P03 - Canadian Adolescents

#### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

##### 30 UNITS

from

- the Level I program completed prior to admission to the program.  
(See *Admission* above.)

##### 0-3 UNITS

from

- PSYCH 1F03 - Survey of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour

##### 0-3 UNITS

from

- SOCIO 1Z03 - An Introduction to Sociology

##### 6 UNITS

- SOCPSY 2K03 - Research Methods in Social Psychology
- SOCPSY 2YY3 - Theories in Social Psychology

##### 3 UNITS

- SOCSCI 2J03 - Introduction to Statistics

##### 3 UNITS

from

- SOCPSY 2B03 - Psychology of Well-Being
- SOCPSY 2D03 - Making and Breaking Rules

##### 3 UNITS

- SOCPSY 3Y03 - Social Psychology in Action

##### 9 UNITS

from

- SOCPSY 2C03 - Social Psychology of Popular Culture
- SOCPSY 3A03 - Mental Health
- SOCPSY 3B03 - Understanding Lived Experiences
- SOCPSY 3C03 - Regimes of Social Control

- SOCPSY 3E03 - Big Ideas/Great Thinkers in Social Psychology
- SOCPSY 3F03 - Who Am I? Self and Identity
- SOCPSY 3L03 - Advanced Research Methods
- SOCPSY 3RR3 - Imprisonment
- SOCPSY 3ZZ3 - Small Worlds: Children and Childhood

**6 UNITS**

- SOCPSY 4ZZ6 A/B - Social Psychology Research Project

**3 UNITS**

- SOCPSY 4B03 - Special Topics in Social Psychology
- SOCPSY 4E03 - Special Topics in Social Psychology
- SOCPSY 4D03 - Contemporary Social Issues
- SOCPSY 4MM3 - Public Social Psychology

**3 UNITS**

- from the Level 4 Course List

**9 UNITS**

- Psychology from the Psychology - Sociology Course List

**9 UNITS**

- Sociology from the Psychology - Sociology Course List

**9 UNITS**

from

- the Multidisciplinary Course List of which at least six units must be from Level III

**27 UNITS**

- Electives

**PSYCHOLOGY - SOCIOLOGY COURSE LIST**

Students are responsible for ensuring that they have successfully completed any prerequisite courses and are strongly encouraged to consult with an academic advisor in planning their course of studies.

- PSYCH 2AA3 - Child Development
- PSYCH 2AP3 - Abnormal Psychology: Fundamentals and Major Disorders
- PSYCH 2B03 - Personality
- PSYCH 2C03 - Social Psychology
- PSYCH 3AB3 - Adolescent Psychology
- PSYCH 3AC3 - Human Sexuality
- PSYCH 3AG3 - Aging
- PSYCH 3B03 - Special Populations
- PSYCH 3BA3 - Positive Psychology
- PSYCH 3CB3 - Attitudes and Persuasion
- PSYCH 3CC3 - Forensic Psychology
- PSYCH 3CD3
- PSYCH 3JJ3 - Socio-Emotional Development
- PSYCH 3MT3 - Psychometrics
- PSYCH 3WA3 - The Mind as a Work of Art
- SOCIOLOG 2BB3 - Sociology of Deviance
- SOCIOLOG 2C06 A/B
- SOCIOLOG 2CC3 - Constructing Deviance
- SOCIOLOG 2D06 A/B
- SOCIOLOG 2DD3 - Immigration and the Canadian Mosaic
- SOCIOLOG 2E06 A/B
- SOCIOLOG 2EE3 - Introduction to Indigenous-Settler Relations in Canada
- SOCIOLOG 2FF3 - The Sociology of 'Race' and Ethnicity
- SOCIOLOG 2HH3 - Sociology of Gender
- SOCIOLOG 2JJ3 - Race, Class, Gender, and Sexuality
- SOCIOLOG 2PP3 - Sociology of Families
- SOCIOLOG 2Q06 A/B
- SOCIOLOG 2QQ3 - Dynamics and Transitions in Intimate Relationships and Families
- SOCIOLOG 2T03 - Sociology of Sport
- SOCIOLOG 2UU3 - Indigenous Ontologies and Ways of Knowing
- SOCIOLOG 2U06 A/B
- SOCIOLOG 3C03

- SOCIOLOG 3CC3 - Sociology of the Family and the Life Cycle
- SOCIOLOG 3G03 - Sociology of Health Care
- SOCIOLOG 3GG3 - Special Topics in the Sociology of Deviance
- SOCIOLOG 3HH3 - Sociology of Health
- SOCIOLOG 3KK3 - Genocide: Sociological and Political Perspectives
- SOCIOLOG 3NN3 - Popular Culture and Inequality
- SOCIOLOG 3U03 - Sociology of Sexualities
- SOCIOLOG 3X03 - Sociology of Aging
- SOCIOLOG 3Z03 - Ethnic Relations

**MULTIDISCIPLINARY COURSE LIST**

- ANTHROPO 2EE3 - Sport and/as Religion
- ANTHROPO 2F03 - Listening across Difference: An Introduction to Cultural Anthropology
- ANTHROPO 2MA3 - Media, Art and Anthropology
- ANTHROPO 2R03 - Religion, Magic and Witchcraft
- ANTHROPO 3AR3 - Culture and Religion
- ANTHROPO 3FA3 - Forensic Anthropology
- ANTHROPO 3F03 - Anthropology and the 'Other'
- ANTHROPO 3GG3 - Anthropology of Contemporary Europe
- ANTHROPO 3HE3
- ANTHROPO 3HI3 - Medical Anthropology
- ANTHROPO 3P03 - Doing Ethnography: Theory and Research Methods
- ANTHROPO 3Y03 - Indigenous Community Health and Wellbeing
- CMTYENGA 2A03 - Foundations of Community Engagement
- ECON 2A03 - Economics of Labour-Market Issues
- ECON 2CC3 - Health Economics and its Application to Health Policy
- ECON 2F03
- ECON 2P03 - Economics of Professional Sports
- ECON 2Q03 - Economics of Bad Behaviour
- ECON 2T03 - Economics of Trade Unionism and Labour
- ECON 3BE3 - Behavioural Economics
- ENVSOCTY 2HI3 - Health and Place
- ENVSOCTY 2EI3 - Environment & Society: Challenges and Solutions
- ENVSOCTY 2TS3 - Society and Space
- ENVSOCTY 2UI3 - The Urban Experience
- ENVSOCTY 3LT3 - Transportation Geography
- ENVSOCTY 3TG3 - Geographies of Globalization
- ENVSOCTY 3UP3 - Urban Planning
- ENVSOCTY 3UR3 - Urban Social Geography
- GEOG 2EI3
- GEOG 2HI3
- GEOG 2TS3
- GEOG 2UI3
- GEOG 3HH3
- GEOG 3HH3
- GEOG 3LT3
- GEOG 3TG3
- GEOG 3TP3
- GEOG 3UP3
- GEOG 3UR3
- GLOBALZN 3A03 - Globalization, Social Justice, and Human Rights
- HLTHAGE 2C03 - Health Economics and its Application to Health Policy
- HLTHAGE 2G03
- HLTHAGE 2GG3 - Mental Health and Society
- HLTHAGE 2M03 - Aging in Modern (and Post-Modern) Families
- HLTHAGE 3D03 - Perspectives on Disability, Chronic Illness and Aging
- HLTHAGE 3M03 - Approaches to Mental Health and Resilience
- HLTHAGE 3N03
- HISTORY 3JJ3 - Crime, Criminal Justice and Punishment in Modern History
- HISTORY 3UA3 - The History of the Future

- HISTORY 3WW3 - Women in Canada and the U.S. from 1920
  - HISTORY 3XX3 - Human Rights in History
  - INDIGST 2A03 - Indigenous Peoples' Spirituality
  - INDIGST 2B03 - History of Indigenous Peoples' Sovereignty
  - INDIGST 2C03 - Current Issues in Indigenous Studies: Selected Topics
  - INDIGST 2D03 - Traditional Indigenous Ecological Knowledge
  - INDIGST 2F03 - Residential Schools in Canada: History and Impact
  - INDIGST 2G03 - Indigenous Perspectives on Peace and Conflict
  - INDIGST 2H03 - Indigenous Celebrity
  - INDIGST 2J03 - Indigenous Experiential Education
  - INDIGST 2K03 - Indigenous Futurisms and Wonderworks
  - INDIGST 2M03 - Indigenous Research Methods and Ethics
  - INDIGST 2MM3 - Indigenous Ways of Knowing: Theory
  - INDIGST 3C03 - Study of Iroquois First Nations in Contemporary Times
  - INDIGST 3CC3 - Contemporary Indigenous Societies: Selected Topics
  - INDIGST 3D03 - Contemporary Native Literature in Canada
  - INDIGST 3E03 - Contemporary Native Literature in the United States
  - INDIGST 3EE3 - Indigenous Representations in Film
  - INDIGST 3G03 - Indigenous Creative Arts and Drama: Selected Topics
  - INDIGST 3H03 - Indigenous Medicine I - Philosophy
  - INDIGST 3J03 - Government and Politics of Indigenous People
  - INDIGST 3K03
  - INDIGST 3N03 - Indigenous Women: Land, Rights, and Politics
  - INDIGST 3P03 - Haudenosaunee Health, Diet and Traditional Botany
  - INDIGST 3Q03 - Histories of Indigenous Sport and Recreation
  - INDIGST 3R03 - **Ogweho:weh** Experiential Land-Based Learning
  - INDIGST 3S03 - Other-than-Human Worlds and Relations
  - INDIGST 3T03
  - KINESIOL 3V03 - Sport Psychology
  - LABRST 2C03
  - LABRST 2E03
  - LABRST 2G03 - Labour and Globalization
  - LABRST 2J03 - Work and Racism
  - LABRST 2K03
  - LABRST 2M03 - Pop Culture, Media and Work
  - LABRST 3D03 - Work: Dangerous to your Health?
  - LABRST 3E03 - Gender, Sexuality and Work
  - LABRST 3K03 - On the Move: Workers in a Global World
  - LABRST 3L03 - Labour Policy and Advocacy
  - PEACEST 2A03 - Conflict Transformation: Theory and Practice
  - PEACEST 2C03 - Peace and Popular Culture
  - PHILOS 1B03 - Philosophy, Law and Society
  - PHILOS 2TT3 - Ethical Issues in Communication
  - PHILOS 2D03 - Bioethics
  - PHILOS 2F03 - Philosophical Psychology
  - PHILOS 2G03 - Social and Political Issues
  - POLSCI 2C03 - Force and Fear, Crime and Punishment
  - POLSCI 2F03 - Politics, Power and Influence in Canada
  - POLSCI 2MN3 - Reel Politics
  - POLSCI 2PF3 - Politics of Funny
  - POLSCI 3BB3 - Political Communication: Canada and the World
  - POLSCI 3FG3 - Public Service Leadership
  - POLSCI 3G03 - Ethnicity and Multiculturalism: Theory and Practice
  - POLSCI 3K03 - Migration and Citizenship: Canadian, Comparative and Global Perspectives
  - POLSCI 3KK3 - Genocide: Sociological and Political Perspectives
  - POLSCI 3CL3 - Constitutional and Public Law in Canada
  - POLSCI 3Q03 - The Causes of War
  - POLSCI 3RF3 - The Charter of Rights and Freedoms
  - POLSCI 3V03 - Gender and Politics
  - RELIGST 2H03
  - RELIGST 2HR3
  - RELIGST 2J03
  - RELIGST 2K03
  - RELIGST 2M03
  - RELIGST 2N03
  - RELIGST 2Q03
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  - RELIGST 2TT3
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  - RELIGST 3EE3
  - RELIGST 3F03
  - RELIGST 3FF3
  - RELIGST 3LL3
  - RELIGST 3UU3
  - RELIGST 3Y03
  - RELIGST 3ZZ3
  - SCAR 2HR3 - Humour and Religion
  - SCAR 2J03 - Introduction To Judaism
  - SCAR 2K03 - Introduction to Buddhism
  - SCAR 2M03 - Death and Dying: Comparative Views
  - SCAR 2N03 - Death and Dying: The Western Experience
  - SCAR 2Q03 - Cults, Conspiracies and Close Encounters
  - SCAR 2RD3 - Religion and Diversity
  - SCAR 2SP3 - Sport and/as Religion
  - SCAR 2TT3 - Religion and Popular Culture in Contemporary Japan
  - SCAR 2UD3 - Utopias, Dystopias
  - SCAR 2WW3 - Health, Healing and Religion: Western Perspectives
  - SCAR 2WX3 - Health, Healing and Religion: Comparative Views
  - SCAR 3AR3 - Culture and Religion
  - SCAR 3C03 - Islam in the Modern World
  - SCAR 3EE3 - Sacred Journeys
  - SCAR 3FF3 - Gender and Religion
  - SCAR 3F03 - Approaches to the Study of Religion
  - SCAR 3RB3 - Ethnicity, Race, and the Bible
  - SCAR 3UU3 - Buddhism in East Asia
  - SCAR 3Y03 - Love
  - SCAR 3ZZ3 - Judaism in the Modern World
  - SOCSCI 2CC3 - Children and Family in Canada
  - SOCSCI 2O03 - Canadian Children
  - SOCSCI 2P03 - Canadian Adolescents
  - SOCWORK 3B03 - Transnational Lives in a Globalizing World
  - SOCWORK 3C03 - Social Aspects of Health and Illness
  - SOCWORK 3I03 - Social Work and Indigenous Peoples
  - SOCWORK 3H03
  - SOCWORK 3L03 - Violence: Social Justice Perspectives and Responses
  - SOCWORK 3O03 - Social Work and Sexualities
  - SOCWORK 3S03 - Social Work, Disability and Dis/Ableism
  - SOCWORK 3T03 - Poverty and Homelessness
  - THTRFLM 3PC3 - Performance and Community Engagement
- LEVEL 4 COURSE LIST**
- ANTHROP 4D03 - Practicing Anthropology: Ethics, Theory, Engagement
  - ENVSOCY 4HD3 - Disability, Society and Environment
  - ENVSOCY 4HH3 - Environment and Health
  - ENVSOCY 4UD3 - Special Topics in Urban Planning



- GEOG 4HC3
- GEOG 4HD3
- GEOG 4HH3
- GEOG 4UD3
- GEOG 4UH3
- HLTHAGE 4B03 - Death and Dying in Later Life
- HLTHAGE 4H03 - History and Culture of Aging
- HLTHAGE 4I03 - Aging and Health
- HLTHAGE 4L03 - Social Policy and Aging
- HLTHAGE 4O03 - Soundscapes of Wellbeing in Popular Music
- HLTHAGE 4P03 - Leisure and Recreation in Later Life
- HLTHAGE 4R03 - Beyond the Social: Determinants of Indigenous Peoples Health
- HLTHAGE 4Q03 - Representations of Mental Illness
- HLTHAGE 4T03 - Gender, Sex and Health
- INDIGST 4B03 - Indigenous Literary Governance and Resistance
- LABRST 4F03 - Work and the Environment
- LABRST 4H03 - Working Precariously: Labour Strategies, Labour Renewal
- RELIGST 4SR3
- SOCPYSY 4IS3 - Independent Research
- SOCPYSY 4IS6 A/B - Independent Research
- SOCSCI 4ID3 - Addressing Social Problems Through Business, Engineering and the Social Sciences
- SOCWORK 4B03
- SOCWORK 4C03 - Critical Perspectives on Race, Racialization, Racism and Colonialism in Canadian Society
- SOCWORK 4I03
- SOCWORK 4J03 - Social Change: Social Movements and Advocacy
- SOCWORK 4Y03 - Critical Issues in Mental Health & Addiction: Mad & Critical Disability Studies Perspectives for SW
- SOCIOLOG 4A03 - Ethnic/Racial Tensions
- SOCIOLOG 4DD3 - Social Movements and Social Change
- SOCIOLOG 4E03 - Self and Identity
- SOCIOLOG 4EE3 - Selected Topics in the Sociology of Culture
- SOCIOLOG 4GG3 - Special Topics in the Sociology of Deviance
- SOCIOLOG 4R03 - Individual and Society
- SOCIOLOG 4RR3 - Indigenous Peoples and Canada
- SOCIOLOG 4SR3 - Topics in the Sociology of Religion
- SOCIOLOG 4UU3 - Global Family and Sexual Politics
- SOCIOLOG 4U03 - Special Topics in the Sociology of Women
- SOCIOLOG 4W03 - Social Problems
- SOCIOLOG 4XX3 - Sociology of At-Risk Youth

## School of Social Work

<http://www.socialwork.mcmaster.ca>

**Faculty as of January 15, 2020**

### DIRECTOR

**Saara Greene** (Acting)

### PROFESSORS

**Saara Greene**/B.A., B.S.W. (Manitoba), M.S.W. (McGill), Ph.D. (Edinburgh)

**Christina Sinding**/(Health, Aging and Society) B.A. (Western Ontario), M.A. (McMaster), Ph.D. (Toronto)

**Y. Rachel Zhou**/(Institute on Globalization and the Human Condition) B.A., LL.M. (Wuhan, China), M.A., Ph.D. (Toronto)

### ASSOCIATE PROFESSORS

**Stephanie Baker Collins**/B.A. (Calvin College), M.A., S.W.P. (McMaster), Ph.D. (Toronto)

**Mirna E. Carranza**/B.S.W. (El Salvador), M.T.S. (Wilfrid Laurier), Ph.D. (Guelph)

**Gary C. Dumbrill**/B.Sc. (South Bank, London), M.S.W. (York), Ph.D. (Toronto)

**Ameil Joseph**/B.A. (Waterloo), M.S.W. (Laurier), Ph.D. (York)

**Ann Fudge Schormans**/B.P.E., B.A. (McMaster), B.S.W. (York), M.S.W. (McMaster)

### ASSISTANT PROFESSORS

**Janice Chaplin**/ B.A. (Mount Allison), B.S.W., M.S.W. (McMaster)

**Bonnie Freeman**/B.A., B.S.W., M.S.W. (McMaster) Ph.D. (Laurier)

**Randy Jackson**/(Health, Aging and Society) B.A. (Ottawa), M.A. (Manitoba)

**Tara La Rose**/B.S.W. (Ryerson), M.S.W. (Dalhousie), Ph.D. (Toronto)

**Sandra Preston**/B.A., M.A., Ph.D. (McMaster)

**Jennie Vengris**/B.A., B.S.W., M.S.W. (McMaster)

### ADJUNCT ASSOCIATE PROFESSOR

**Adrienn Chambon**/ (Faculty of Social Work, Toronto), B.A., M.A. (University of Paris-X), B.S.W. (Haifa), Ph.D. (Chicago)

**Ken Moffatt**/(School of Social Work, Ryerson), B.E.S. (Waterloo), M.S.W., Ph.D. (Toronto)

### ASSOCIATE MEMBERS

**Karen A. Balcom**/(History), B.A. (Carleton), M.A. (Dalhousie), Ph.D. (Rutgers)

**James Gillett**/(Health, Aging & Society), B.A. (Calgary), M.A. (McMaster), Ph.D. (McMaster)

**Amanda Grenier**/(Health, Aging & Society), B.S.W. (Windsor), M.S.W., Ph.D. (McGill)

**Wayne Lewchuk**/(Economics) B.A., M.A. (Toronto), Ph.D. (Cambridge)

**Robert D. Wilton**/(Geography and Earth Sciences) B.A. (Hull), M.A., Ph.D. (Southern California)

## Bachelor of Arts/Bachelor of Social Work

### COMBINED BACHELOR OF ARTS/BACHELOR OF SOCIAL WORK (B.A./B.S.W.)

This program has been closed and is no longer accepting applications. The School of Social Work introduced the Honours Bachelor of Social Work degree program which started in September 2016. The required Social Work courses and professional accreditation are identical for both programs. The programs are differentiated only by the number of courses taken outside of the School of Social Work. For the new Honours Bachelor of Social Work program, see Honours Bachelor of Social Work in this section of the Calendar.

Program requirements for students currently enrolled in the Combined Bachelor of Arts/Bachelor of Social Work (B.A./B.S.W.) may be found below.

### COURSE LIST

- ANTHROP 1AA3 - Introduction to Anthropology: Sex, Food and Death
- ANTHROP 1AB3 - Introduction to Anthropology: Race, Religion, and Conflict
- CAYUGA 1Z03 - Introduction to Cayuga Language and Culture
- CMST 1A03 - Introduction to Communication
- ECON 1B03 - Introductory Microeconomics
- ECON 1BB3 - Introductory Macroeconomics
- GEOG 1HA3
- GEOG 1HB3
- GLOBALZN 1A03 - Global Citizenship
- HLTHAGE 1AA3 - Introduction to Health and Society
- HLTHAGE 1BB3 - Introduction to Aging and Society
- HLTHAGE 1CC3 - Introduction to Mental Health and Illness
- INDIGST 1A03 - Introduction to Indigenous Studies
- INDIGST 1AA3 - Introduction to Contemporary Indigenous Studies
- MOHAWK 1Z03 - Introduction to Mohawk Language and Culture
- OJIBWE 1Z03 - Introduction to Ojibwe Language and Culture
- PEACEST 1A03 - Introduction to Peace Studies
- POLSCI 1G06 A/B

- POLSCI 1AA3 - Government, Politics, and Power
- POLSCI 1AB3 - Politics and Power in a Globalizing World
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour
- PSYCH 1F03 - Survey of Psychology
- SOCPSY 1Z03 - An Introduction to Social Psychology
- SOCSCI 1SS3 - Inquiry in the Social Sciences
- SOCSCI 1T03 - Life, the University, and Everything
- SOCWORK 1AA3 - So You Think You Can Help? Introduction to Social Work I
- SOCWORK 1BB3 - Re-Imagining Help: Introduction to Social Work II
- SOCIOL 1C03 - Canadian Society: Social Problems, Social Policy, and the Law
- SOCIOL 1Z03 - An Introduction to Sociology
- SOCIOL 1A06 A/B
- WOMENST 1A03 - Women, Culture, Power
- WOMENST 1AA3 - Women Transforming the World

### PROGRAM NOTES

- **Course Groupings:** There are two groups of courses in the Social Work program:
- Foundations of Social Work includes core courses which are required and are available to social work students only;
- Social and Political Context of Social Work: Social Work students must take 12 units from the Social and Political Context of Social Work group of courses, including SOCWORK 4J03. Social and Political Context of Social Work courses are also available for elective credit by undergraduates in Level III or above of a non-Social Work program. All Social and Political Context of Social Work courses have limited enrolment.

### FOUNDATIONS OF SOCIAL WORK

- SOCWORK 2A06 A/B - Theory, Process and Communication Skills for Social Work
- SOCWORK 2B03 - Social Welfare: General Introduction
- SOCWORK 2BB3 - Anti-Oppressive Social Work
- SOCWORK 3D06 A/B S - General Social Work I
- SOCWORK 3DD6 A/B S - Field Practicum I
- SOCWORK 3E03 - Individual Practice Across the Lifespan
- SOCWORK 3F03 - Social Work with Groups
- SOCWORK 4D06 A/B S - General Social Work II
- SOCWORK 4DD6 A/B S - Field Practicum II
- SOCWORK 4O03
- SOCWORK 4X03 - Social Work with Families

### SOCIAL AND POLITICAL CONTEXT OF SOCIAL WORK

- SOCWORK 3B03 - Transnational Lives in a Globalizing World
- SOCWORK 3C03 - Social Aspects of Health and Illness
- SOCWORK 3H03 - Justice and Social Welfare
- SOCWORK 3O03 - Social Work and Sexualities
- SOCWORK 3Q03 - Indigenizing Social Work Practice Approaches
- SOCWORK 3S03 - Social Work, Disability and Dis/Ableism
- SOCWORK 3T03 - Poverty and Homelessness
- SOCWORK 4B03 - Violence in Intimate Relationships
- SOCWORK 4C03 - Critical Perspectives on Race, Racialization, Racism and Colonialism in Canadian Society
- SOCWORK 4G03 - Selected Topics
- SOCWORK 4I03 - Social Work and Indigenous Peoples
- SOCWORK 4J03 - Social Change: Social Movements and Advocacy
- SOCWORK 4L03 - Social Work with an Aging Population
- SOCWORK 4R03 - Feminist Approaches to Social Work and Social Justice
- SOCWORK 4SA3 - Critical Child Welfare: From Theory to Practice Part I
- SOCWORK 4SB3 - Critical Child Welfare: From Theory to Practice Part II

- SOCWORK 4U03 - Immigration, Settlement and Social Work
- SOCWORK 4W03 - Child Welfare
- SOCWORK 4Y03 - Critical Issues in Mental Health & Addiction: Mad & Critical Disability Studies Perspectives for SW

**2. Progression Within Program:** Students must achieve a minimum grade of C+ in each of SOCWORK 2A06 A/B, 2B03, 2BB3, 3D06 A/B S, 3E03, 3F03, 4D06 A/B S, 4J03, 4O03 and 4X03, a *Pass* in their field placements SOCWORK 3DD6 A/B S and 4DD6 A/B S, and a GPA of at least 6.0. If a student fails to meet the minimum grade requirements in these required social work courses or a *Pass* designation in either field placement (SOCWORK 3DD6 A/B S and 4DD6 A/B S), the student may not proceed in the program; however, the student may make a request in writing to the Director of the School of Social Work to be allowed to repeat the course in which the minimum grade or *Pass* requirement has not been met. Such requests will be reviewed by the Director of the School of Social Work in consultation with the Chair of the Undergraduate Studies Committee and/or the Chair of the Field Education Program and the course instructor. These courses and/or placements may only be repeated when approval is given by the Director of the School of Social Work following consultation as described above. Students who subsequently fail to meet the minimum grade or *Pass* requirement after repeating the course or placement may not continue in the program.

3. Students who have completed SOC WORK 2E03 but not 3A03 must take both SOCWORK 3E03 and 3F03 and reduce their selections from the Social and Political Context Group to 9 units (selection must still include SOCWORK 4J03). Those students who have taken SOC WORK 3A03 but not 2E03 must contact the School of Social Work for guidance on completion of program requirements.

4. Students must complete three units of Social Sciences Research Methods (e.g. SOCIOL 2Z03, SOCPSY 2K03 or HLTHAGE 2A03). A statistics course may not substitute for a research methods course.

**5. Graduation:** The B.S.W will be granted only if the student has achieved a grade of at least C+ in each of SOCWORK 2A06 A/B, 2B03, 2BB3, 3D06 A/B S, 3E03, 3F03, 4D06 A/B S, 4J03, 4O03 and 4X03, a *Pass* in SOCWORK 3DD6 A/B S and 4DD6 A/B S, and a GPA of at least 6.0.

6. Students are expected to assume the cost of travelling to and from field practice agencies and for any related expenses.

7. Students in the social work program must apply for third and fourth year field placements (SOCWORK 3DD6 A/B S and 4DD6 A/B S), and are able to rank their placements in terms of preference. While efforts are made to match placements with student preferences, the final assignment of placement settings is constrained by many factors, including the availability of settings and field and faculty resources. Students may therefore be required to complete a field placement in an agency that is not among their preferred options.

### REQUIREMENTS

*138 units total (Levels I to IV), of which 48 units may be Level I*

#### 30 UNITS

from

- the Level I program completed prior to admission to the program. (See *Admission* above.)

#### 12 UNITS

- SOCWORK 2A06 A/B - Theory, Process and Communication Skills for Social Work
- SOCWORK 2B03
- SOCWORK 2BB3 - Anti-Oppressive Social Work

(SOCWORK 2A06 A/B, SOCWORK 2B03 and SOCWORK 2BB3 must be completed prior to enrolling in SOCWORK 3D06 A/B S and SOCWORK 3DD6 A/B S)

#### 12 UNITS

- SOCWORK 3D06 A/B S - General Social Work I
- SOCWORK 3DD6 A/B S - Field Practicum I

(which must be completed prior to enrolling in SOCWORK 4D06 A/B S and SOCWORK 4DD6 A/B S)

#### 12 UNITS

- SOCWORK 4D06 A/B S - General Social Work II
- SOCWORK 4DD6 A/B S - Field Practicum II

#### 12 UNITS

- SOCWORK 3E03 - Individual Practice Across the Lifespan
- SOCWORK 3F03 - Social Work with Groups
- SOCWORK 4X03 - Social Work with Families

(See *Program Note 3* above.)

#### 12 UNITS

- SOCWORK 4J03 - Social Change: Social Movements and Advocacy
- Nine additional units selected from the Social and Political Context of Social Work courses

(See *Program Note 1* above.)

#### 3 UNITS

- Social Sciences Research Methods. (These units will be taken as electives for the B.A.)
- (See *Program Note 4* above.)

#### 24 UNITS

- courses specified for the B.A. (This may vary according to the B.A. program.)

#### 21 UNITS

- Electives. (Other requirements may be specified by the B.A. program.)

## Bachelor of Social Work

### BACHELOR OF SOCIAL WORK (B.S.W.)

#### ADMISSION

**Enrolment in this program is limited.** Eligibility is dependent upon completion of an undergraduate degree from a recognized university, including a total of six units of introductory Social Work or introductory Sociology and six additional units of introductory level courses from the Course List below (or equivalent) Students who are interested in the B.S.W. (post degree) are strongly encouraged to take both SOCWORK 1AA3 and SOCWORK 1BB3 during their first degree. Students are also encouraged to take INDIGST 1A03 - Introduction to Indigenous Studies, in their first degree, as completion of this course will be required for completion of the B.S.W. To be considered for admission, students must normally have a minimum average of 6.0 on the most recent 30 units (five full credits) of university-level courses completed and evidence of personal suitability which may be evaluated by one or a combination of written statements, tests or interviews.

#### COURSE LIST

- ANTHROP 1AA3 - Introduction to Anthropology: Sex, Food and Death
- ANTHROP 1AB3 - Introduction to Anthropology: Race, Religion, and Conflict
- CAYUGA 1Z03 - Introduction to Cayuga Language and Culture
- CMST 1A03 - Introduction to Communication
- ECON 1B03 - Introductory Microeconomics
- ECON 1BB3 - Introductory Macroeconomics
- ENVSOCY 1HA3 - Society, Culture and Environment
- ENVSOCY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3
- GLOBALZN 1A03 - Global Citizenship
- HLTHAGE 1AA3 - Introduction to Health and Society
- HLTHAGE 1BB3 - Introduction to Aging and Society
- HLTHAGE 1CC3 - Introduction to Mental Health and Illness
- INDIGST 1A03 - Introduction to Indigenous Studies
- INDIGST 1AA3 - Introduction to Contemporary Indigenous Studies

- LABRST 1A03
- LABRST 1C03
- LABRST 1D03 - Will Robots Take All Our Jobs?
- LABRST 1E03 - Navigating the World of Work
- MOHAWK 1Z03 - Introduction to Mohawk Language and Culture
- OJIBWE 1Z03 - Introduction to Ojibwe Language and Culture
- PEACEST 1A03 - Introduction to Peace Studies
- POLSCI 1AA3 - Government, Politics, and Power
- POLSCI 1AB3 - Politics and Power in a Globalizing World
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour
- PSYCH 1F03 - Survey of Psychology
- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- RELIGST 1AB3
- RELIGST 1B03
- RELIGST 1I03
- RELIGST 1J03
- RELIGST 1L03
- RELIGST 1R03
- SCAR 1B03 - What on Earth is Religion?
- SCAR 1R03 - Introduction to Anthropology: Race, Religion and Conflict
- SCAR 1SC3 - The Big Questions: Introduction to Society, Culture & Religion
- SOCPSY 1Z03 - An Introduction to Social Psychology
- SOCSCI 1SS3 - Inquiry in the Social Sciences
- SOCSCI 1T03 - Life, the University, and Everything
- SOCWORK 1AA3 - So You Think You Can Help? Introduction to Social Work I
- SOCWORK 1BB3 - Re-Imagining Help: Introduction to Social Work II
- SOCIOL 1C03 - Canadian Society: Social Problems, Social Policy, and the Law
- SOCIOL 1Z03 - An Introduction to Sociology
- WOMENST 1A03 - Women, Culture, Power
- WOMENST 1AA3 - Women Transforming the World

#### ADMISSION NOTES

- Students who have successfully completed the two-year College of Applied Arts and Technology Social Services Diploma with a minimum Grade Point Average of 3.0 on a 4.0 scale (75%) are considered to have completed the equivalent of SOCWORK 1AA3 and SOCWORK 1BB3. Students who have successfully completed this diploma **with a cumulative average of 3.4 - 4.0 (85%-100%)** are not required to complete six additional units of introductory level courses from the Course List above to be eligible for admission.
- An applicant is required to complete the prerequisite undergraduate degree work by April of the year in which application is made.
- Indigenous students (includes First Nations, Métis & Inuit) may select an alternate application process. Those who wish to do so should consult the School of Social Work for details.
- **Enrolment in the B.S.W. program is limited.** Students who intend to apply to the B.S.W. program must follow the application instructions as found on the School of Social Work website: <http://www.socialwork.mcmaster.ca>. Applicants **must also apply** to the University.
- **All applications** for admission to the School of Social Work are considered annually and must be made **directly to the School well before February 1** for the Fall/Winter term.

#### TWO-TIER APPLICATIONS - DEADLINE FOR BOTH IS FEBRUARY 1

Individuals interested in the B.S.W. program must complete **two** application forms as follows:

**GENERAL APPLICATION**

- If you wish to study full-time, you must complete the 105 on-line application form at <http://www.ouac.on.ca/> or, if you are a McMaster graduate, obtain the McMaster Returning Student Application at <http://future.mcmaster.ca/admission/process/returning>.

**SUPPLEMENTARY APPLICATION**

- Students must follow the application instructions as found on the School of Social Work web site: <http://www.socialwork.mcmaster.ca>.
- It is **impossible** to consider applicants whose Supplementary Application arrives after the February 1 deadline. Questions or concerns may be directed to the School of Social Work.

Offers of acceptance cannot be deferred; students must complete a required social work course in the year of admission.

**PROGRAM NOTES**

- Course Groupings:** There are two groups of courses in the Social Work program:
- Foundation of Social Work.** This category includes core courses which are required by social work students, most of which are available to social work students only. Exceptions to this include SOCWORK 2BB3 and SOCWORK 2CC3 which have a limited number of seats for undergraduates in a Labour Studies program and SOCWORK 4J03 which has a limited number of seats for undergraduates in a Labour Studies program and undergraduates in Level III or above of a non-Social Work/Labour Studies program who have completed SOCWORK 1AA3 or SOCWORK 1BB3.
- Social and Political Context of Social Work.** Social Work students must take 3-9 units from the Social and Political Context of Social Work group of courses, depending on if INDIGST 1A03 - Introduction to Indigenous Studies, and Social Research methods were completed in the first degree. All Social and Political Context of Social Work courses except SOCWORK 4SA3 and SOCWORK 4SB3 are available for credit by undergraduates in the Labour Studies program and as elective credit for undergraduates in Level III or above of a non-Social Work/Labour Studies program who have completed SOCWORK 1AA3 or SOCWORK 1BB3. Registration in SOCWORK 4SA3 and SOCWORK 4SB3 is restricted to Social Work students who have received permission of the School of Social Work. All Social and Political Context of Social Work courses have limited enrolment.

**FOUNDATION OF SOCIAL WORK**

- SOCWORK 2A06 A/B - Theory, Process and Communication Skills for Social Work
- SOCWORK 2BB3 - Anti-Oppressive Social Work
- SOCWORK 2CC3 - Introduction to Community Practice
- SOCWORK 3D06 A/B S - General Social Work I
- SOCWORK 3DD6 A/B S - Field Practicum I
- SOCWORK 3E03 - Individual Practice Across the Lifespan
- SOCWORK 3F03 - Social Work with Groups
- SOCWORK 4D06 A/B S - General Social Work II
- SOCWORK 4DD6 A/B S - Field Practicum II
- SOCWORK 4J03 - Social Change: Social Movements and Advocacy
- SOCWORK 4O03
- SOCWORK 4X03 - Social Work with Families
- SOCWORK 4ZZ3 - Social Welfare: Practice Implications and Advocacy

**SOCIAL AND POLITICAL CONTEXT OF SOCIAL WORK**

- SOCWORK 3B03 - Transnational Lives in a Globalizing World
- SOCWORK 3C03 - Social Aspects of Health and Illness
- SOCWORK 3I03 - Social Work and Indigenous Peoples
- SOCWORK 3L03 - Violence: Social Justice Perspectives and Responses
- SOCWORK 3O03 - Social Work and Sexualities
- SOCWORK 3S03 - Social Work, Disability and Dis/Ableism
- SOCWORK 3T03 - Poverty and Homelessness

- SOCWORK 4C03 - Critical Perspectives on Race, Racialization, Racism and Colonialism in Canadian Society
- SOCWORK 4G03 - Selected Topics
- SOCWORK 4I03 - Social Work and Indigenous Peoples
- SOCWORK 4QQ3 - Indigenizing Social Work Practice Approaches
- SOCWORK 4R03 - Feminist Approaches to Social Work and Social Justice
- SOCWORK 4SA3 - Critical Child Welfare: From Theory to Practice Part I
- SOCWORK 4SB3 - Critical Child Welfare: From Theory to Practice Part II
- SOCWORK 4U03 - Immigration, Settlement and Social Work
- SOCWORK 4W03 - Child Welfare
- SOCWORK 4Y03 - Critical Issues in Mental Health & Addiction: Mad & Critical Disability Studies Perspectives for SW
- Progression Within Program:** Students must achieve a minimum grade of C+ in each of SOCWORK 2A06 A/B, 2BB3, 2CC3, 3D06 A/B S, 3E03, 3F03, 4D06 A/B S, 4J03, 4X03 and 4ZZ3, a *Pass* in their field placements SOCWORK 3DD6 A/B S and 4DD6 A/B S, and a Grade Point Average of at least 6.0. If a student fails to meet the minimum grade requirements in these required social work courses or a *Pass* designation in either field placement (SOCWORK 3DD6 A/B S and 4DD6 A/B S), the student may not proceed in the program; however, the student may make a request in writing to the Director of the School of Social Work to be allowed to repeat the course in which the minimum grade or *Pass* requirement has not been met. Such requests will be reviewed by the Director of the School of Social Work in consultation with the Chair of the Undergraduate Studies Committee and/or the Chair of the Field Education Program and the course instructor. These courses and/or placements may only be repeated when approval is given by the Director of the School of Social Work following consultation as described above. Students who subsequently fail to meet the minimum grade or *Pass* requirement after repeating the course or placement may not continue in the program.
- Students who have completed SOCWORK 2E03 but not 3A03 must take both SOCWORK 3E03 and 3F03 and reduce their selections from the Social and Political Context Group to 9 units (selection must still include SOCWORK 4J03). Those students who have taken SOCWORK 3A03 but not 2E03 must contact the School of Social Work for guidance on completion of program requirements.
- Students who were admitted to this program in 2017-2018 or later must complete INDIGST 1A03 - Introduction to Indigenous Studies. If this requirement was not completed prior to admission to the B.S.W. program, students must replace three units from the Social and Political Context of Social Work courses with INDIGST 1A03.
- Students must complete three units of Social Sciences Research Methods (e.g. SOCIOL 2Z03 or SOCPSY 2K03 or HLTHAGE 2A03, INDIGST 2M03, etc.). If this requirement was not completed prior to admission to the B.S.W. program, students must replace three units from the Social and Political Context of Social Work courses with a research methods course. A statistics course may not substitute for a research methods course.
- Graduation:** To qualify for the B.S.W. students must complete a total of 60 units. The B.S.W. will be granted only if the student has achieved a grade of at least C+ in each of SOCWORK 2A06 A/B, 2BB3, 2CC3, 3D06 A/B S, 3E03, 3F03, 4D06 A/B S, 4J03, 4X03 and 4ZZ3, a *Pass* in SOCWORK 3DD6 A/B S and 4DD6 A/B S, and a Grade Point Average of at least 6.0.
- Students are expected to assume the cost of travelling to and from field practice agencies and for any related expenses.
- Students in the social work program must apply for third and fourth year field placements (SOCWORK 3DD6 A/B S and 4DD6 A/B S), and are able to rank their placements in terms of preference. While efforts are made



to match placements with student preferences, the final assignment of placement settings is constrained by many factors, including the availability of settings and field and faculty resources. Students may therefore be required to complete a field placement in an agency that is not among their preferred options.

## REQUIREMENTS

60 units total

### 12 UNITS

- SOCWORK 2A06 A/B - Theory, Process and Communication Skills for Social Work
- SOCWORK 2BB3 - Anti-Oppressive Social Work
- SOCWORK 2CC3 - Introduction to Community Practice

(SOCWORK 2A06 A/B, SOCWORK 2BB3 and SOCWORK 2CC3 must be completed prior to enrolling in SOCWORK 3D06 A/B S and SOCWORK 3DD6 A/B S)

### 12 UNITS

- SOCWORK 3D06 A/B S - General Social Work I
- SOCWORK 3DD6 A/B S - Field Practicum I

(SOCWORK 3D06 A/B S and SOCWORK 3DD6 A/B S must be completed prior to enrolling in SOCWORK 4D06 A/B S and SOCWORK 4DD6 A/B S)

### 12 UNITS

- SOCWORK 4D06 A/B S - General Social Work II
- SOCWORK 4DD6 A/B S - Field Practicum II

### 15 UNITS

- SOCWORK 3E03 - Individual Practice Across the Lifespan
- SOCWORK 3F03 - Social Work with Groups
- SOCWORK 4J03 - Social Change: Social Movements and Advocacy
- SOCWORK 4X03 - Social Work with Families
- SOCWORK 4ZZ3 - Social Welfare: Practice Implications and Advocacy

(See *Program Note 3* above.)

### 3-9 UNITS

- from the *Social and Political Context of Social Work* courses (See *Program Notes 4 and 5* above)

### 3 UNITS

- INDIGST 1A03 - Introduction to Indigenous Studies

Note: If this requirement was completed prior to admission, these units must be chosen from the *Social and Political Context of Social Work* courses. (See *Program Note 4* above)

### 3 UNITS

- Social Sciences Research Methods. If requirement was completed prior to admission, these units must be chosen from the Social and Political Context of Social Work courses. (See *Program Note 5* above.)

## Bachelor of Social Work (Honours)

### HONOURS BACHELOR OF SOCIAL WORK (B.S.W.)

#### ADMISSION

**Enrolment in this program is limited.** Eligibility is dependent upon completion of any Level I program including a total of six units of introductory Social Work or introductory Sociology and six additional units of introductory level courses from the Course List below (or equivalent). Students who are interested in the Honours B.S.W. are strongly encouraged to take both SOCWORK 1AA3 and SOCWORK 1BB3. Students are also encouraged to take INDIGST 1A03: Introduction to Indigenous Studies, in level I as this course will be required for completion of the B.S.W. Admission requires, as a minimum, completion of any level I program with a grade point average of at least 6.0 and evidence of personal suitability which may be evaluated by one or a combination of written statements, tests or interviews.

#### COURSE LIST

- ANTHROP 1AA3 - Introduction to Anthropology: Sex, Food and Death
- ANTHROP 1AB3 - Introduction to Anthropology: Race, Religion, and Conflict
- CAYUGA 1Z03 - Introduction to Cayuga Language and Culture
- CMST 1A03 - Introduction to Communication
- ECON 1B03 - Introductory Microeconomics
- ECON 1BB3 - Introductory Macroeconomics
- ENVSOCTY 1HA3 - Society, Culture and Environment
- ENVSOCTY 1HB3 - Population, Cities and Development
- GEOG 1HA3
- GEOG 1HB3
- GLOBALZN 1A03 - Global Citizenship
- HLTHAGE 1AA3 - Introduction to Health and Society
- HLTHAGE 1BB3 - Introduction to Aging and Society
- HLTHAGE 1CC3 - Introduction to Mental Health and Illness
- INDIGST 1A03 - Introduction to Indigenous Studies
- INDIGST 1AA3 - Introduction to Contemporary Indigenous Studies
- LABRST 1A03
- LABRST 1C03
- LABRST 1D03 - Will Robots Take All Our Jobs?
- LABRST 1E03 - Navigating the World of Work
- MOHAWK 1Z03 - Introduction to Mohawk Language and Culture
- OJIBWE 1Z03 - Introduction to Ojibwe Language and Culture
- PEACEST 1A03 - Introduction to Peace Studies
- POLSCI 1AA3 - Government, Politics, and Power
- POLSCI 1AB3 - Politics and Power in a Globalizing World
- PSYCH 1F03 - Survey of Psychology
- PSYCH 1FF3 - Survey of Biological Basis of Psychology
- PSYCH 1X03 - Introduction to Psychology, Neuroscience & Behaviour
- PSYCH 1XX3 - Foundations of Psychology, Neuroscience & Behaviour
- RELIGST 1AB3
- RELIGST 1B03
- RELIGST 1I03
- RELIGST 1J03
- RELIGST 1L03
- RELIGST 1R03
- SCAR 1B03 - What on Earth is Religion?
- SCAR 1R03 - Introduction to Anthropology: Race, Religion and Conflict
- SCAR 1SC3 - The Big Questions: Introduction to Society, Culture & Religion
- SOCPSY 1Z03 - An Introduction to Social Psychology
- SOCSCI 1SS3 - Inquiry in the Social Sciences
- SOCSCI 1T03 - Life, the University, and Everything
- SOCWORK 1AA3 - So You Think You Can Help? Introduction to Social Work I
- SOCWORK 1BB3 - Re-Imagining Help: Introduction to Social Work II
- SOCIOL 1C03 - Canadian Society: Social Problems, Social Policy, and the Law
- SOCIOL 1Z03 - An Introduction to Sociology
- WOMENST 1A03 - Women, Culture, Power
- WOMENST 1AA3 - Women Transforming the World

#### ADMISSION NOTES

- Students who have successfully completed the two-year College of Applied Arts and Technology Social Services Diploma with a minimum cumulative average Grade Point Average of 3.0 on a 4.0 scale (75%) are considered to have completed the equivalent of SOCWORK 1AA3 and SOCWORK 1BB3. Students who completed this diploma **with a cumulative average of 3.4 - 4.0 (85%-100%)** will receive 24 units of unspecified transfer credit upon admission to the program and are not required to complete six additional units of introductory level courses

from the Course List above to be eligible for admission.

- An applicant must complete Level I by April of the year in which application is made.
- Students who intend to apply for this program must follow the application instructions as found on the School of Social Work web site: [www.socialwork.mcmaster.ca](http://www.socialwork.mcmaster.ca). Students who are unable to access this web site must consult the School of Social Work prior to the application deadline.
- **All applications** for admission to the School of Social Work are considered annually and must be made **directly to the School by February 1** for the Fall/Winter term.
- Indigenous students (includes First Nations, Métis & Inuit) may select an alternate application process. Those who wish to do so should consult the School of Social Work for details.
- Applicants **transferring** from other universities (See *Two-Tier Applications* below) **must also apply** through the Ontario Universities' Application Centre (OUAC) and must normally complete a total of six units of Introductory Sociology or introductory Social Work and six additional units from the *Course List*. (See *Admission* above.)

### TWO-TIER APPLICATIONS - DEADLINE FOR BOTH IS FEBRUARY 1

If you are transferring from a university other than McMaster, or a college, you must complete two application forms as follows:

#### GENERAL APPLICATION

- Complete the OUAC 105 on-line application at <http://www.ouac.on.ca/>

#### SUPPLEMENTARY APPLICATION

- Students must follow the application instructions as found on the School of Social Work web site: [www.socialwork.mcmaster.ca/](http://www.socialwork.mcmaster.ca/). Students who are unable to access this web site must contact the School of Social Work prior to **February 1**.
- It is **impossible** to consider applicants miss the February 1 deadline. Questions or concerns may be directed to the School of Social Work.

Offers of acceptance cannot be deferred; students must complete a required social work course in the year of admission.

#### PROGRAM NOTES

- **Course Groupings:** There are two groups of courses in the Social Work program:
- **Foundation of Social Work.** This category includes core courses which are required by social work students, most of which are available to social work students only. Exceptions to this include SOCWORK 2BB3 and SOCWORK 2CC3 which have a limited number of seats for undergraduates in a Labour Studies program and SOCWORK 4J03 which has a limited number of seats for undergraduates in a Labour Studies program and undergraduates in Level III or above of a non-Social Work/Labour Studies program who have completed SOCWORK 1AA3 or SOCWORK 1BB3.
- **Social and Political Context of Social Work.** Social Work students must take 9 units from the Social and Political Context of Social Work group of courses. Social and Political Context of Social Work courses except SOCWORK 4SA3 and SOCWORK 4SB3 are also available for elective credit by undergraduates in the Labour Studies program and undergraduates in Level III or above of a non-Social Work program who have completed SOCWORK 1AA3 or SOCWORK 1BB3. Registration in SOCWORK 4SA3 and SOCWORK 4SB3 is restricted to Social Work students who have received permission of the School of Social Work. All Social and Political Context of Social Work courses have limited enrolment.
- **Foundations of Social Work**
- SOCWORK 2A06 A/B - Theory, Process and Communication Skills for Social Work
- SOCWORK 2BB3 - Anti-Oppressive Social Work
- SOCWORK 2CC3 - Introduction to Community Practice

- SOCWORK 3D06 A/B S - General Social Work I
- SOCWORK 3DD6 A/B S - Field Practicum I
- SOCWORK 3E03 - Individual Practice Across the Lifespan
- SOCWORK 3F03 - Social Work with Groups
- SOCWORK 4D06 A/B S - General Social Work II
- SOCWORK 4DD6 A/B S - Field Practicum II
- SOCWORK 4J03 - Social Change: Social Movements and Advocacy
- SOCWORK 4X03 - Social Work with Families
- SOCWORK 4ZZ3 - Social Welfare: Practice Implications and Advocacy
- **Social and Political Context of Social Work**
- SOCWORK 3B03 - Transnational Lives in a Globalizing World
- SOCWORK 3C03 - Social Aspects of Health and Illness
- SOCWORK 3I03 - Social Work and Indigenous Peoples
- SOCWORK 3L03 - Violence: Social Justice Perspectives and Responses
- SOCWORK 3O03 - Social Work and Sexualities
- SOCWORK 3S03 - Social Work, Disability and Dis/Ableism
- SOCWORK 3T03 - Poverty and Homelessness
- SOCWORK 4C03 - Critical Perspectives on Race, Racialization, Racism and Colonialism in Canadian Society
- SOCWORK 4G03 - Selected Topics
- SOCWORK 4QQ3 - Indigenizing Social Work Practice Approaches
- SOCWORK 4R03 - Feminist Approaches to Social Work and Social Justice
- SOCWORK 4SA3 - Critical Child Welfare: From Theory to Practice Part I
- SOCWORK 4SB3 - Critical Child Welfare: From Theory to Practice Part II
- SOCWORK 4U03 - Immigration, Settlement and Social Work
- SOCWORK 4W03 - Child Welfare
- SOCWORK 4Y03 - Critical Issues in Mental Health & Addiction: Mad & Critical Disability Studies Perspectives for SW
- **Progression Within Program:** Students must achieve a minimum grade of C+ in each of SOCWORK 2A06 A/B, 2BB3, 2CC3, 3D06 A/B S, 3E03, 3F03, 4D06 A/B S, 4J03, 4X03 and 4ZZ3, a Pass in their field placements SOCWORK 3DD6 A/B S and 4DD6 A/B S, and a GPA of at least 6.0. If a student fails to meet the minimum grade requirements in these required social work courses or a Pass designation in either field placement (SOCWORK 3DD6 A/B S and 4DD6 A/B S), the student may not proceed in the program; however, the student may make a request in writing to the Director of the School of Social Work to be allowed to repeat the course in which the minimum grade or Pass requirement has not been met. Such requests will be reviewed by the Director of the School of Social Work in consultation with the Chair of the Undergraduate Studies Committee and/or the Chair of the Field Education Program and the course instructor. These courses and/or placements may only be repeated when approval is given by the Director of the School of Social Work following consultation as described above. Students who subsequently fail to meet the minimum grade or Pass requirement after repeating the course or placement may not continue in the program.
- Students who have completed **SOCWORK 2E03** but not **3A03** must take both SOCWORK 3E03 and 3F03 and reduce their selections from the Social and Political Context Group to 9 units (selection must still include SOCWORK 4J03). Those students who have taken **SOCWORK 3A03** but not **2E03** must contact the School of Social Work for guidance on completion of program requirements.
- Students who were admitted to this program in 2017-2018 or later must complete INDIGST 1A03 - Introduction to Indigenous Studies. If this course was taken in level I then students will be required to take an additional 3 units of electives.
- Students must complete three units of Social Sciences Research Methods (e.g. SOCIOL 2Z03, SOCPYSY 2K03 or HLTHAGE 2A03, INDIGST 2M03, etc.). A statistics course may not substitute for a research

methods course.

- **Graduation:** The B.S.W will be granted only if the student has achieved a grade of at least C+ in each of SOCWORK 2A06 A/B, 2BB3, 2CC3, 3D06 A/B S, 3E03, 3F03, 4D06 A/B S, 4J03, 4X03 and 4ZZ3, a Pass in SOCWORK 3DD6 A/B S and 4DD6 A/B S, and a GPA of at least 6.0.
- Students are expected to assume the cost of travelling to and from field practice agencies and for any related expenses.
- Students in the social work program must apply for third and fourth year field placements (SOCWORK 3DD6 A/B S and 4DD6 A/B S), and are able to rank their placements in terms of preference. While efforts are made to match placements with student preferences, the final assignment of placement settings is constrained by many factors, including the availability of settings and field and faculty resources. Students may therefore be required to complete a field placement in an agency that is not among their preferred options.

### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

#### 30 UNITS

from

- the Level I program completed prior to admission to the program. (See *Admission* above.)

#### 12 UNITS

- SOCWORK 2A06 A/B - Theory, Process and Communication Skills for Social Work
- SOCWORK 2BB3 - Anti-Oppressive Social Work
- SOCWORK 2CC3 - Introduction to Community Practice

(SOCWORK 2A06 A/B, SOCWORK 2BB3 and SOCWORK 2CC3 must be completed prior to enrolling in SOCWORK 3D06 A/B S and SOCWORK 3DD6 A/B S)

#### 12 UNITS

- SOCWORK 3D06 A/B S - General Social Work I
- SOCWORK 3DD6 A/B S - Field Practicum I

(SOCWORK 3D06 A/B S and SOCWORK 3DD6 A/B S must be completed prior to enrolling in SOCWORK 4D06 A/B S and SOCWORK 4DD6 A/B S)

#### 12 UNITS

- SOCWORK 4D06 A/B S - General Social Work II
- SOCWORK 4DD6 A/B S - Field Practicum II

#### 15 UNITS

- SOCWORK 3E03 - Individual Practice Across the Lifespan
- SOCWORK 3F03 - Social Work with Groups
- SOCWORK 4J03 - Social Change: Social Movements and Advocacy
- SOCWORK 4X03 - Social Work with Families
- SOCWORK 4ZZ3 - Social Welfare: Practice Implications and Advocacy

(See *Program Note 3* above.)

#### 9 UNITS

from

- the *Social and Political Context of Social Work* courses

#### 3 UNITS

- Social Sciences Research Methods (See *Program Note 5* above.)

#### 3 UNITS

- INDIGST 1A03 - Introduction to Indigenous Studies

Note: If this course was taken in level I then students must complete three additional elective units. (See *Program Note 4* above.)

#### 24-27 UNITS

- Electives \* A maximum of 12 additional units of Social and Political Context of Social Work courses can be taken as electives.

## Department of Sociology

<http://www.sociology.mcmaster.ca>

Faculty as of January 15, 2020

### CHAIR

**Tina Fetner**

### PROFESSORS

**Gregory Hooks**/B.A. (*Kent State*), M.S. (*Ohio State*), Ph.D. (*Wisconsin-Madison*)

**Cyril H. Levitt**/B.A., M.A. (*Waterloo*), Ph.D. (*Freie Universitat, Berlin*)

**Neil McLaughlin**/B.A., M.A. (*Cleveland State*), Ph.D. (*CUNY*)

**Victor Satzewich**/B.A., M.A. (*Saskatchewan*), Ph.D. (*Glasgow*)

### ASSOCIATE PROFESSORS

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**Tina Fetner**/B.A. (*California Santa Cruz*), M.A., Ph.D. (*New York*)

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**Melanie Heath**/B.A. (*California-Berkeley*), M.A. (*California State-Sacramento*), Ph.D. (*Southern California*)

**Dorothy Pawluch**/B.A. (*Laurentian*), M.A., Ph.D. (*McGill*)

**Karen Robson**/B.A. (*Alberta*), M.A. (*Calgary*), Ph.D. (*Essex*)

**Marisa Young**/B.A., M.A., (*Calgary*), Ph.D. (*Toronto*)

### ASSISTANT PROFESSORS

**Luca Berardi**/(*Social Psychology*), B.A., M.A. (*Toronto*), Ph.D. (*Alberta*)

**Phillipa Chong**/B.A., M.A., Ph.D. (*Toronto*)

**Sandra Colavecchia**/B.A., M.A., Ph.D. (*Toronto*)

**Lisa Kaida**/B.A., M.A. (*Tokyo*), M.A., Ph.D. (*Toronto*)

**Geraldina Polanco**/(*Labour Studies*), B.A. (*UBC*), M.A. (*Concordia*), Ph.D. (*UBC*)

**Vanessa Watts**/(*Indigenous Studies*), B.A. (*Trent*), M.A. (*Victoria*), Ph.D. (*Queen's*)

**David Young**/B.A., M.A. (*Queen's*), Ph.D. (*McMaster*)

### ADJUNCT PROFESSORS

**Arig al Shaibah**/B.A., M.A., Ph.D. (*Queen's*)

For the Honours Arts & Science and Sociology (B.Arts.Sc.) program, see *Arts & Science Program*

### FIELDS OF STUDY

Diversity and Equity

- SOCIOL 2DD3 - Immigration and the Canadian Mosaic
- SOCIOL 2EE3 - Introduction to Indigenous-Settler Relations in Canada
- SOCIOL 2FF3 - The Sociology of 'Race' and Ethnicity
- SOCIOL 2HH3 - Sociology of Gender
- SOCIOL 2JJ3 - Race, Class, Gender, and Sexuality
- SOCIOL 2PP3 - Sociology of Families
- SOCIOL 2QQ3 - Dynamics and Transitions in Intimate Relationships and Families
- SOCIOL 2R03 - Perspectives on Social Inequality
- SOCIOL 2RR3 - Case Studies of Social Inequality
- SOCIOL 2TA3 - Islam In North America
- SOCIOL 2UU3 - Indigenous Ontologies and Ways of Knowing
- SOCIOL 3NN3 - Popular Culture and Inequality
- SOCIOL 3U03 - Sociology of Sexualities
- SOCIOL 3X03 - Sociology of Aging
- SOCIOL 3Z03 - Ethnic Relations
- SOCIOL 4A03 - Ethnic/Racial Tensions
- SOCIOL 4DD3 - Social Movements and Social Change
- SOCIOL 4LL3 - Selected Topics in the Sociology of Immigration
- SOCIOL 4QQ3 - Women, Sexuality and the Welfare State
- SOCIOL 4RR3 - Indigenous Peoples and Canada
- SOCIOL 4SR3
- SOCIOL 4UU3 - Global Family and Sexual Politics

Gender, Sexualities and Families

- SOCIOL 2HH3 - Sociology of Gender
- SOCIOL 2JJ3 - Race, Class, Gender, and Sexuality
- SOCIOL 2PP3 - Sociology of Families
- SOCIOL 2QQ3 - Dynamics and Transitions in Intimate Relationships and

## Families

- SOCIOL 3CC3 - Sociology of the Family and the Life Cycle
- SOCIOL 3D03 - Special Topics in the Sociology of the Family
- SOCIOL 3U03 - Sociology of Sexualities
- SOCIOL 4AA3 - Selected Topics in the Sociology of the Family
- SOCIOL 4QQ3 - Women, Sexuality and the Welfare State
- SOCIOL 4UU3 - Global Family and Sexual Politics

## Immigration, Race Relations and Indigenous-Settler Relations

- SOCIOL 2DD3 - Immigration and the Canadian Mosaic
- SOCIOL 2EE3 - Introduction to Indigenous-Settler Relations in Canada
- SOCIOL 2FF3 - The Sociology of 'Race' and Ethnicity
- SOCIOL 2JJ3 - Race, Class, Gender, and Sexuality
- SOCIOL 2UU3 - Indigenous Ontologies and Ways of Knowing
- SOCIOL 3Z03 - Ethnic Relations
- SOCIOL 4A03 - Ethnic/Racial Tensions
- SOCIOL 4A03 - Ethnic/Racial Tensions
- SOCIOL 4LL3 - Selected Topics in the Sociology of Immigration

**LEVEL IV SEMINAR COURSE LIST**Courses open to students in any Honours Sociology Program

- SOCIOL 4A03 - Ethnic/Racial Tensions
- SOCIOL 4BB3 - Selected Topics in the Sociology of Education
- SOCIOL 4DD3 - Social Movements and Social Change
- SOCIOL 4E03 - Self and Identity
- SOCIOL 4EE3 - Selected Topics in the Sociology of Culture
- SOCIOL 4G03 - Advanced Topics in the Sociology of Health and Illness
- SOCIOL 4GG3 - Special Topics in the Sociology of Deviance
- SOCIOL 4J03 - Selected Topics in Sociology I
- SOCIOL 4K03 - Selected Topics in Sociology II
- SOCIOL 4KK3 - Sociology through Community Engagement and Service
- SOCIOL 4LL3 - Selected Topics in the Sociology of Immigration
- SOCIOL 4QQ3 - Women, Sexuality and the Welfare State
- SOCIOL 4RR3 - Indigenous Peoples and Canada
- SOCIOL 4SR3
- SOCIOL 4SS3 - The Sociology of the 1960s
- SOCIOL 4TT3 - The Sociology of Mass Media
- SOCIOL 4U03 - Special Topics in the Sociology of Women
- SOCIOL 4UU3 - Global Family and Sexual Politics
- SOCIOL 4V03 - Issues in the Sociology of Occupations and the Professions
- SOCIOL 4XX3 - Sociology of At-Risk Youth

**LEVEL IV LECTURE COURSE LIST**Courses open to students in an Honours Sociology Program

- SOCIOL 4AA3 - Selected Topics in the Sociology of the Family
- SOCIOL 4FF3 - Applications of Quantitative Methods in the Social Sciences \*
- SOCIOL 4HH3
- SOCIOL 4MM3 - Public Social Psychology
- SOCIOL 4R03 - Individual and Society
- SOCIOL 4W03 - Social Problems

\*SOCIOL 4FF3 is only open to students in the Honours Sociology (Specialist Option)

**LEVEL IV DIRECTED RESEARCH COURSE LIST**Courses open to students in an Honours Sociology Program

- SOCIOL 4M03 - Directed Research I for Honours Students
- SOCIOL 4MM6 A/B S - Directed Research for Honours Students \*
- SOCIOL 4N03 - Directed Research II for Honours Students

\*SOCIOL 4MM6 A/B S is only open to students in the Honours Sociology (Specialist Option)

## Bachelor of Arts (Honours)

### COMBINED HONOURS IN SOCIOLOGY (SPECIALIST OPTION) AND ANOTHER SUBJECT (B.A.)

**ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 5.0, including a grade of at least C in SOCIOL 1Z03 or SOCIOL 1A06 A/B.

Satisfaction of admission requirements for the Honours program in the other B.A. subject. For continuation in the program, see the section on *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the Faculty of Social Sciences Academic Regulations.

**NOTES**

- Subject to meeting admission requirements, students may combine two subjects and be graduated with a combined Honours B.A. degree. These combinations are available within the Faculty, with programs in the Faculty of Humanities, and with the Arts and Science Program.
- Students enrolled in Level II of the Combined Honours in Sociology and Another Subject (B.A.) in 2016-17 may request to transfer to the Combined Honours in Sociology (Specialist Option) and Another Subject (B.A.).
- Students must normally complete SOCIOL 2KK3, 2LL3 and 2Z03 before entering Level III courses.
- Students must normally complete 3 units of advanced theory, SOCIOL 3A03 or 3P03, before entering Level IV courses.
- Students must normally complete SOCIOL 3FF3 and 3 units of advanced methods, SOCIOL 3003 or 3W03, before entering Level IV courses.
- Students must take a maximum of 9 units of Level IV Sociology.
- Students will be given priority enrolment in SOCIOL 3A03, 3P03, 3003, and 3W03 as well as Level IV seminar courses.
- Students taking 6 units of independent research or thesis in their other program may not take SOCIOL 4M03, 4MM6 A/B S or 4N03.
- Students may take a maximum of 9 combined units of SOCIOL 3GG3 and 4GG3, depending on the topic.
- Students who previously completed SOCIOL 3PP3 may substitute this course for SOCIOL 3A03 or 3P03 to satisfy the advanced theory requirement.
- Students who previously completed SOCIOL 3I03 may substitute this course for 3003 or 3W03 to satisfy the advanced methods requirement.
- Students should check both this Calendar and the Departmental website for prerequisites and course descriptions.

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

from

- the Level I program completed prior to admission to the program (See *Admission* above)

**6 UNITS**

- SOCIOL 2KK3 - Introduction to Classical Sociological Theory
- SOCIOL 2LL3 - Introduction to Contemporary Sociological Theory

(See *Note 3* above)

**3 UNITS**

from

- SOCIOL 3A03 - Advanced Analysis of Classical Sociological Theory
- SOCIOL 3P03 - Advanced Analysis of Contemporary Sociological Theory

(See *Notes 4* and *10* above)

**3 UNITS**

from

- SOCIOL 3003 - Qualitative Research Methods
- SOCIOL 3W03 - Historical Methods in Sociology



(See *Notes 5 and 11* above)

**3 UNITS**

- SOCIOL 4FF3 - Applications of Quantitative Methods in the Social Sciences

(See *Note 5* above)

**6 UNITS**

from

- Level IV Sociology seminar course list (See *Notes 5 and 6* above.)

**15 UNITS**

- Levels II or III Sociology

**36 UNITS**

- Courses specified for the other subject

**6 UNITS**

- SOCIOL 2Z03 - Introduction to Sociological Research
- SOCIOL 3FF3 - Introductory Statistics for Sociology

or

- in combined programs within the Faculty of Social Sciences, the six units Research Methods/Statistics course specified for the other subject (See *Notes 3 and 5* above)

**12 UNITS**

- Electives, at least 6 units (above Level I) must be taken outside of Sociology

## COMBINED HONOURS IN SOCIOLOGY AND ANOTHER SUBJECT (B.A.)

### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 5.0, including a grade of at least C in SOCIOL 1Z03 or SOCIOL 1A06 A/B. Satisfaction of admission requirements for the Honours program in the other B.A. subject. For continuation in the program, see the section on Minimum Requirements for Entering and Continuing in a Program Beyond Level I in the Faculty of Social Sciences Academic Regulations.

### NOTES

- Subject to meeting admission requirements, students may combine two subjects and be graduated with a combined Honours B.A. degree. These combinations are available within the Faculty, with programs in the Faculty of Humanities, and with the Arts and Science Program.
- Students interested in graduate studies in sociology are advised to consider the Combined Honours in Sociology (Specialist Option) and Another Subject (B.A.)
- Students enrolled in Level II of the Combined Honours in Sociology and Another Subject (B.A.) in 2016-17 may request to transfer to the Combined Honours in Sociology (Specialist Option) and Another Subject (B.A.).
- Students must normally complete SOCIOL 2KK3, 2LL3 and 2Z03 before entering Level III courses.
- Students must normally complete SOCIOL 2FF3 before entering Level IV courses.
- Students will be given priority enrolment in Level IV lecture courses.
- Students must take a maximum of 6 units of Level IV Sociology.
- Students taking six units of independent research or thesis in their other program may not take SOCIOL 4M03, 4MM6 A/B S or 4N03.
- Students may take a maximum of nine combined units of SOCIOL 3GG3 and 4GG3, depending on the topic.
- Students should check both this Calendar and the Departmental website for prerequisites and course descriptions.

### REQUIREMENTS

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

- the Level I program completed prior to admission to the program (See *Admission* above)

**6 UNITS**

- SOCIOL 2KK3 - Introduction to Classical Sociological Theory
- SOCIOL 2LL3 - Introduction to Contemporary Sociological Theory

(See *Note 4* above)

**3 UNITS**

- Level IV Sociology lecture, seminar, or directed research course lists (See *Note 7* above)

**3 UNITS**

- Level IV Sociology seminar

**18 UNITS**

- Levels II or III Sociology, of which a maximum of 12 units may be Level II.

**36 UNITS**

- Courses specified for the other subject

**6 UNITS**

- SOCIOL 3FF3 - Introductory Statistics for Sociology

(See *Note 4* above)

- SOCIOL 2Z03 - Introduction to Sociological Research

(See *Note 5* above)

or

- in combined programs within the Faculty of Social Sciences, the six units Research Methods/Statistics course specified for the other subject (See *Notes 4 and 5* above).

**18 UNITS**

Electives, of which at least 6 units (above Level I) must be taken outside of Sociology

### REQUIREMENTS FOR STUDENTS ENTERING COMBINED HONOURS IN SOCIOLOGY AND ANOTHER SUBJECT (B.A.) PRIOR TO SEPTEMBER 2017

#### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 5.0, including a grade of at least C in SOCIOL 1A06 A/B. For continuation in the program, see the section on *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the Faculty of Social Sciences Academic Regulations.

#### NOTES

- Subject to meeting admission requirements, students may combine two subjects and be graduated with a combined Honours B.A. degree. These combinations are available within the Faculty, with programs in the Faculty of Humanities, and with the Arts and Science Program.
- Students enrolled in Level II of the Combined Honours in Sociology and Another Subject (B.A.) in 2016-17 may request to transfer to the Combined Honours in Sociology (Specialist Option) and Another Subject (B.A.).
- Students must normally complete SOCIOL 2S06 A/B (or SOCIOL 2KK3 and 2LL3) and 2Z03 before entering Level III courses.
- Students must normally complete 3 units of SOCIOL 3A03 or 3P03 before entering Level IV courses.
- Students must normally complete SOCIOL 3H06 A/B (or SOCIOL 3FF3) and 3 units of SOCIOL 3003 or 3W03 before entering Level IV courses.
- Students must take a maximum of 6 units of Level IV Sociology. Additional units of Level IV Sociology cannot be used towards degree requirements.
- Students taking six units of independent research or thesis in their other program may not take SOCIOL 4M03, 4MM6 A/B S or 4N03.
- Students may take a maximum of nine combined units of SOCIOL 3GG3 and 4GG3, depending on the topic.
- Students who previously completed SOCIOL 3PP3 may substitute this course for SOCIOL 3A03 or 3P03 to satisfy the advanced theory requirement.

- Students who previously completed SOCIOL 3103 may substitute this course for SOCIOL 3003 or 3W03 to satisfy the advanced methods requirement.
- Students should check both this Calendar and the Departmental website for prerequisites and course descriptions.

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

30 units

from

- the Level I program completed prior to admission to the program (See *Admission* above)

6 units

- SOCIOL 2S06 A/B

or

- SOCIOL 2KK3 - Introduction to Classical Sociological Theory

and

- SOCIOL 2LL3 - Introduction to Contemporary Sociological Theory

(See *Note 3* above)

3 units

from

- SOCIOL 3A03 - Advanced Analysis of Classical Sociological Theory
- SOCIOL 3P03 - Advanced Analysis of Contemporary Sociological Theory

(See *Notes 4* and *9* above)

3 units

from

- SOCIOL 3003 - Qualitative Research Methods
- SOCIOL 3W03 - Historical Methods in Sociology

(See *Note 5* and *10* above)

6 units

- Level IV Sociology (See *Note 6* above - Additional units of Level IV Sociology will not count towards the degree)

18 units

- Levels II or III Sociology

36 units

- Courses specified for the other subject

6-9 units

- SOCIOL 2Z03 - Introduction to Sociological Research

(See *Note 3* above)

and

- SOCIOL 3H06 A/B

or

- SOCIOL 3FF3 - Introductory Statistics for Sociology and
- SOCIOL 4FF3 - Applications of Quantitative Methods in the Social Sciences

or

in combined programs within the Faculty of Social Sciences, the six units Research Methods/Statistics course specified for the other subject (See *Notes 3* and *5* above.)

9-12 units

- Electives, of which no more than 9 units can be from Sociology (the maximum Sociology courses to be taken is 54 units).

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## HONOURS SOCIOLOGY (B.A.)

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**ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 5.0, including a grade of at least C in SOCIOL 1Z03 or SOCIOL 1A06 A/B. For continuation in the program, see the section on *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the Faculty of Social Sciences Academic Regulations.

**NOTES**

- Students interested in graduate studies in sociology are advised to consider Honours Sociology (Specialist Option) (B.A.).
- Students enrolled in Level II of the Honours Sociology (B.A.) in 2016-17 may request to transfer to the Honours Sociology (Specialist Option) (B.A.).
- Students must normally complete SOCIOL 2KK3, 2LL3 and 2Z03 before entering Level III courses.
- Students must normally complete SOCIOL 3FF3 before entering Level IV courses.
- Students must take a maximum of 12 units of Level IV Sociology.
- Students will be given priority enrolment in Level IV lecture courses.
- Students may take a maximum of 3 units of Level IV independent research (SOCIOL 4M03 or 4N03).
- Students may take a maximum of 9 combined units of SOCIOL 3GG3 and 4GG3 depending on the topic.
- Students should check both this Calendar and the Departmental website for prerequisites and course descriptions.

**REQUIREMENTS**

120 units total (Levels I to IV), of which 48 units may be Level I

**30 UNITS**

from

- the Level I program completed prior to admission to the program (See *Admission* above)

**6 UNITS**

- SOCIOL 2KK3 - Introduction to Classical Sociological Theory
- SOCIOL 2LL3 - Introduction to Contemporary Sociological Theory

(See *Note 3* above)

**3 UNITS**

- SOCIOL 2Z03 - Introduction to Sociological Research

(See *Note 3* above)

**3 UNITS**

- SOCIOL 3FF3 - Introductory Statistics for Sociology

(See *Note 4* above)

**6 UNITS**

from

- Level IV Sociology lecture course list

**3 UNITS**

from

- Level IV Sociology lecture, seminar, or directed research course lists

**3 UNITS**

- Level IV Sociology seminar

**18 UNITS**

- Levels II or III Sociology of which a maximum of 12 units may be Level II.

**48 UNITS**

- Electives, at least 6 units (above Level I ) must be taken outside of Sociology

### REQUIREMENTS FOR STUDENTS ENTERING THE HONOURS SOCIOLOGY (B.A.) PRIOR TO SEPTEMBER 2017

**ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 5.0, including a grade of at least C in SOCIOL 1A06 A/B. For continuation in the program, see the section on *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the Faculty of Social Sciences Academic Regulations.

**NOTES**

- Students enrolled in Level II of the Honours Sociology (B.A.) in 2016-17 may request to transfer to the Honours Sociology (Specialist Option) (B.A.).
- Students must normally complete SOCIOL 2S06 A/B (or SOCIOL 2KK3 and 2LL3) and 2Z03 before entering Level III courses.

- Students must normally complete 3 units of SOCIOL 3A03 or 3P03 before entering Level IV courses.
- Students must normally complete SOCIOL 3H06 A/B (or SOCIOL 3FF3) and 3 units of SOCIOL 3003 or 3W03 before entering Level IV courses.
- Students must take a maximum of 9 units of Level IV Sociology.
- Students may take a maximum of six units of Level IV independent research (SOCIOL 4M03, 4MM6 A/B S or 4N03).
- Students may take a maximum of nine combined units of SOCIOL 3GG3 and 4GG3, depending on the topic.
- Students who previously completed SOCIOL 3PP3 may substitute this course for SOCIOL 3A03 or 3P03 to satisfy the advanced theory requirement.
- Students who previously completed SOCIOL 3I03 may substitute this course for SOCIOL 3003 or 3W03 to satisfy the advanced methods requirement.
- Students should check both this Calendar and the Departmental website for prerequisites and course descriptions.

**REQUIREMENTS**

*120 units total (Levels I to IV), of which 48 units may be Level I*

30 units

from

- the Level I program completed prior to admission to the program (See *Admission* above)

6 units

- SOCIOL 2S06 A/B

or

- SOCIOL 2KK3 - Introduction to Classical Sociological Theory

and

- SOCIOL 2LL3 - Introduction to Contemporary Sociological Theory

(See *Note 2* above)

3 units

- SOCIOL 2Z03 - Introduction to Sociological Research

(See *Note 2* above)

3 units

from

- SOCIOL 3A03 - Advanced Analysis of Classical Sociological Theory
- SOCIOL 3P03 - Advanced Analysis of Contemporary Sociological Theory

(See *Notes 3* and *8* above)

6 units

- SOCIOL 3H06 A/B

or

- SOCIOL 3FF3 - Introductory Statistics for Sociology

and

- SOCIOL 4FF3 - Applications of Quantitative Methods in the Social Sciences

(See *Note 4* above)

3 units

from

- SOCIOL 3003 - Qualitative Research Methods
- SOCIOL 3W03 - Historical Methods in Sociology

(See *Note 4* and *9* above)

9 units

- Level IV Sociology (See *Note 5* above - Additional units of Level IV Sociology will not count towards the degree)

18 units

- Levels II or III Sociology

42 units

- Electives, of which no more than 12 units can be from Sociology (the maximum Sociology courses to be taken is 60 units).

**HONOURS SOCIOLOGY (SPECIALIST OPTION) (B.A.)****ADMISSION**

Completion of any Level I program with a Grade Point Average of at least 5.0, including a grade of at least C in SOCIOL 1Z03 or SOCIOL 1A06 A/B. For continuation in the program, see the section on *Minimum Requirements for Entering and Continuing in a Program Beyond Level I* in the Faculty of Social Sciences Academic Regulations.

**NOTES**

- The Honours Sociology (Specialist Option) (B.A.) program is the most appropriate program for students who are considering graduate studies in sociology.
- Students enrolled in Level II of the Honours Sociology (B.A.) in 2016-17 may request to transfer to the Honours Sociology (Specialist Option) (B.A.).
- Students must normally complete SOCIOL 2KK3, 2LL3 (or SOCIOL 2S06 A/B) and 2Z03 before entering Level III courses.
- Students must normally complete 3 units of advanced theory, SOCIOL 3A03 or 3P03, before entering Level IV courses.
- Students must normally complete SOCIOL 3FF3 (or SOCIOL 3H06 A/B) and 3 units of advanced methods, SOCIOL 3003 or 3W03, before entering Level IV courses.
- Students must take a maximum of 12 units of Level IV Sociology.
- Students will be given priority enrolment in SOCIOL 3A03, 3P03, 3003, and 3W03 as well as Level IV seminar courses.
- Students may take a maximum of 6 units of Level IV independent research (SOCIOL 4M03, 4MM6 A/B S or 4N03).
- Students may take a maximum of 9 combined units of SOCIOL 3GG3 and 4GG3, depending on the topic.
- Students who previously completed SOCIOL 3PP3 may substitute this course for SOCIOL 3A03 or 3P03 to satisfy the advanced theory requirement.
- Students who previously completed SOCIOL 3I03 may substitute this course for SOCIOL 3003 or 3W03 to satisfy the advanced methods requirement.
- Students should check both this Calendar and the Departmental website for prerequisites and course descriptions.

**REQUIREMENTS**

*120 units total (Levels I to IV), of which 48 units may be Level I*

**30 UNITS**

from

- the Level I program completed prior to admission to the program (See *Admission* above)

**6 UNITS**

- SOCIOL 2KK3 - Introduction to Classical Sociological Theory
- SOCIOL 2LL3 - Introduction to Contemporary Sociological Theory

(See *Note 3* above)

**3 UNITS**

- SOCIOL 2Z03 - Introduction to Sociological Research

(See *Note 3* above)

**3 UNITS**

from

- SOCIOL 3A03 - Advanced Analysis of Classical Sociological Theory
- SOCIOL 3P03 - Advanced Analysis of Contemporary Sociological Theory

(See *Notes 4, 7* and *10* above)

**3 UNITS**

- SOCIOL 3FF3 - Introductory Statistics for Sociology

(See *Note 5* above)

**3 UNITS**

from

- SOCIOL 3003 - Qualitative Research Methods

- SOCIOL 3W03 - Historical Methods in Sociology

(See *Notes 5 and 11* above)

### 3 UNITS

- SOCIOL 4FF3 - Applications of Quantitative Methods in the Social Sciences

(See *Note 5* above)

### 6 UNITS

- Level IV Sociology seminar or directed research course lists  
(See *Note 5 and 6* above)

### 3 UNITS

from

- Level IV Sociology seminar, lecture, or directed research course lists  
(See *Note 5 and 6* above)

### 18 UNITS

- Levels II or III Sociology

### 42 UNITS

- Electives, at least 6 units (above Level I) must be taken outside of Sociology

## Bachelor of Arts

### SOCIOLOGY (B.A.)

#### ADMISSION

Completion of any Level I program with a Grade Point Average of at least 3.5, including a grade of at least C- in SOCIOL 1Z03 (or SOCIOL 1A06 A/B).

#### NOTES

- Students must normally complete SOCIOL 2KK3 and 2LL3 (or SOCIOL 2S06 A/B) and 2Z03 before entering Level III courses.
- Students should check both this Calendar and the Departmental website for prerequisites and course descriptions.

#### REQUIREMENTS

90 units total (*Levels I to III*), of which 42 units may be Level I

#### 30 UNITS

from

- the Level I program completed prior to admission to the program  
(See *Admission* above)

#### 6 UNITS

- SOCIOL 2KK3 - Introduction to Classical Sociological Theory
- SOCIOL 2LL3 - Introduction to Contemporary Sociological Theory

or

- SOCIOL 2S06 A/B

#### 3 UNITS

- SOCIOL 2Z03 - Introduction to Sociological Research

(See *Note 1* above)

#### 9 UNITS

- Level II Sociology

#### 6 UNITS

- Level III Sociology

#### 36 UNITS

- Electives, of which no more than 12 units may be from Sociology (the maximum Sociology courses to be taken is 36 units)

## Minor(s):

### MINOR IN DIVERSITY AND EQUITY

#### NOTES

- Students who have already completed SOCIOL 2006 or SOCIOL 2S06 A/B may use these units towards this requirement of the minor.
- Students should check both this Calendar and the Departmental website

for prerequisites and course descriptions.

#### REQUIREMENTS

24 units total

#### 3-6 UNITS

- SOCIOL 1A06 A/B
- SOCIOL 1C03 - Canadian Society: Social Problems, Social Policy, and the Law
- SOCIOL 1Z03 - An Introduction to Sociology

#### 18-21 UNITS

- Levels II or III Sociology, of which at least 3 units must be Level III or IV from the course list below:
- SOCIOL 2DD3 - Immigration and the Canadian Mosaic
- SOCIOL 2EE3 - Introduction to Indigenous-Settler Relations in Canada
- SOCIOL 2FF3 - The Sociology of 'Race' and Ethnicity
- SOCIOL 2HH3 - Sociology of Gender
- SOCIOL 2JJ3 - Race, Class, Gender, and Sexuality
- SOCIOL 2PP3 - Sociology of Families
- SOCIOL 2QQ3 - Dynamics and Transitions in Intimate Relationships and Families
- SOCIOL 2R03 - Perspectives on Social Inequality
- SOCIOL 2RR3 - Case Studies of Social Inequality
- SOCIOL 2TA3 - Islam In North America
- SOCIOL 2UU3 - Indigenous Ontologies and Ways of Knowing
- SOCIOL 3NN3 - Popular Culture and Inequality
- SOCIOL 3U03 - Sociology of Sexualities
- SOCIOL 3X03 - Sociology of Aging
- SOCIOL 3Z03 - Ethnic Relations
- SOCIOL 4A03 - Ethnic/Racial Tensions
- SOCIOL 4DD3 - Social Movements and Social Change
- SOCIOL 4LL3 - Selected Topics in the Sociology of Immigration
- SOCIOL 4QQ3 - Women, Sexuality and the Welfare State
- SOCIOL 4RR3 - Indigenous Peoples and Canada
- SOCIOL 4SR3 - Topics in the Sociology of Religion
- SOCIOL 4UU3 - Global Family and Sexual Politics

#### NOTE

Students are permitted to take a Level 4 seminar

### MINOR IN GENDER, SEXUALITIES AND FAMILIES

#### NOTES

- Students who have already completed SOCIOL 2006 or SOCIOL 2S06 A/B may use these units towards this requirement of the minor.
- Students should check both this Calendar and the Departmental website for prerequisites and course descriptions.

#### REQUIREMENTS

24 units total

#### 3-6 UNITS

- SOCIOL 1A06 A/B
- SOCIOL 1C03 - Canadian Society: Social Problems, Social Policy, and the Law
- SOCIOL 1Z03 - An Introduction to Sociology

#### 18-21 UNITS

- Levels II or III Sociology, of which at least 3 units must be Level III or IV from the course list below:
- SOCIOL 2HH3 - Sociology of Gender
- SOCIOL 2JJ3 - Race, Class, Gender, and Sexuality
- SOCIOL 2PP3 - Sociology of Families
- SOCIOL 2QQ3 - Dynamics and Transitions in Intimate Relationships and Families
- SOCIOL 3CC3 - Sociology of the Family and the Life Cycle
- SOCIOL 3D03 - Special Topics in the Sociology of the Family



- SOCIOL 3U03 - Sociology of Sexualities
- SOCIOL 4AA3 - Selected Topics in the Sociology of the Family
- SOCIOL 4QQ3 - Women, Sexuality and the Welfare State
- SOCIOL 4UU3 - Global Family and Sexual Politics

**NOTE**

Students are permitted to take a Level 4 seminar

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**MINOR IN IMMIGRATION, RACE RELATIONS AND INDIGENOUS-SETTLER RELATIONS**


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**NOTES**

- Students who have already completed SOCIOL 2006 or SOCIOL 2S06 A/B may use these units towards this requirement of the minor.
- Students should check both this Calendar and the Departmental website for prerequisites and course descriptions.

**REQUIREMENTS**

24 units total

**3-6 UNITS**

- SOCIOL 1A06 A/B
- SOCIOL 1C03 - Canadian Society: Social Problems, Social Policy, and the Law
- SOCIOL 1Z03 - An Introduction to Sociology

**18-21 UNITS**

- Levels II, III or IV Sociology, of which at least 3 units must be Level III or IV Sociology from the course list below
- SOCIOL 2DD3 - Immigration and the Canadian Mosaic
- SOCIOL 2EE3 - Introduction to Indigenous-Settler Relations in Canada
- SOCIOL 2FF3 - The Sociology of 'Race' and Ethnicity
- SOCIOL 2JJ3 - Race, Class, Gender, and Sexuality
- SOCIOL 2UU3 - Indigenous Ontologies and Ways of Knowing
- SOCIOL 3Z03 - Ethnic Relations
- SOCIOL 4A03 - Ethnic/Racial Tensions
- SOCIOL 4LL3 - Selected Topics in the Sociology of Immigration
- SOCIOL 4RR3 - Indigenous Peoples and Canada

**NOTE**

Students are permitted to take a Level 4 seminar

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**MINOR IN SOCIOLOGY**


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**NOTES**

- Students who have already completed SOCIOL 2006 or SOCIOL 2S06 A/B may use these units towards this requirement of the minor.
- Students should check both this Calendar and the Departmental website for prerequisites and course descriptions.

**REQUIREMENTS**

24 units total

**3-6 UNITS**

- SOCIOL 1A06 A/B
- SOCIOL 1C03 - Canadian Society: Social Problems, Social Policy, and the Law
- SOCIOL 1Z03 - An Introduction to Sociology

**18-21 UNITS**

- Levels II, III, IV Sociology, of which at least 3 units must be Level III or IV Sociology

# Certificate and Diploma Programs

## McMaster University Continuing Education

- Certificate and Diploma Programs Approved for Advanced Credit
- Affiliated Associations and Institutes
- Program Offerings

Undergraduate students can use McMaster Continuing Education courses and programs as credit toward their degrees. For eligibility details, students should first consult their Faculty Academic Advisors.

Courses within Certificates and Diploma programs offered through McMaster Continuing Education are Senate-approved undergraduate-level courses. In particular, they have been approved for advanced credit toward McMaster undergraduate degrees. Information about advanced credit for degree study is provided below and in McMaster University's *Senate Policy on Diplomas and Certificates*.

McMaster University's *Senate Policy on Diplomas and Certificates* states "academic credits can be applied to another credential. Examples include, but are not limited to, transfer of credit from a certificate to a degree or from a degree to a diploma. Normally, credits can be applied to a maximum of two credentials." Further, "[pending approval by the student's Faculty office], up to 100% of the academic credit courses completed toward undergraduate diploma and certificate programs may be used for credit toward another credential at the discretion of and in accordance with the normal academic rules specified by academic unit offering the subsequent credential."

Through McMaster University Continuing Education, undergraduate students can use their elective credit within their degree programs to earn a career-focused Certificate or Diploma. Many of McMaster's Continuing Education programs are aligned with the requirements of professional associations - assisting students in working toward a professional designation such as CPA (Chartered Professional Accounting) or CHRP (Certified Human Resources Professional, for example. Students can work with their Academic Advisor to build a personal plan.

McMaster Continuing Education is located at One James North, downtown Hamilton. Courses are offered in the evenings, on weekends, and online to accommodate undergraduate students and working professionals. To learn more, please contact McMaster Continuing Education at 905-525-9140 x24321 or visit [mcmastercce.ca](http://mcmastercce.ca).

Continuing education programs and courses are offered in the following:

- Accounting
- Applied Clinical Research
- Big Data Analytics
- Business Administration
- Business of Golf & Resort Management
- Creative, Critical and Design Thinking
- Digital Marketing
- Foundations of Analytics
- Health and Social Service Skill Development
- Health Informatics
- Health Information Management
- Human Resources Management
- Marketing
- Metallurgy of Iron & Steel
- Payroll
- Professional Addictions Studies

- Surety
- Web Design

**Note:** Continuing Education courses are not eligible for OSAP. Payment must be made at the time of enrolment.

#### **AFFILIATED ASSOCIATIONS AND INSTITUTES**

- Many Continuing Education courses are recognized as course equivalencies and/or have been approved as professional development units (PDUs) by well recognized professional associations and institutes. Information about these professional associations and institutes is provided below.

#### **ACCOUNTING**

- Chartered Professional Accountant (CPA) - Chartered Professional Accountants Ontario

#### **BUSINESS ADMINISTRATION**

- Associate Institute of Canadian Bankers (AICB) - Canadian Securities Institute (formerly Institute of Canadian Bankers)
- Certified in Management and Administration (CIM) - Canadian Institute of Management
- Certified Administrative Manager (CAM) - Canadian Institute of Certified Administrative Managers (CICAM)
- Canadian Risk Management (CRM) - Global Risk Management Institute
- Fellow Chartered Insurance Professional (FCIP) - Insurance Institute of Canada
- Graduate Member Canadian Institute of Marketing (GCInst.M) - Canadian Institute of Marketing
- Project Management Professional (PMP)® - Project Management Institute (PMI)®
- Qualified Administrative Assistant (QAA) - Association of Administrative Assistants

#### **BUSINESS OF GOLF & RESORT MANAGEMENT**

- PGA of Canada - PGA Training Academy

#### **HEALTH INFORMATION**

- College of Canadian Health Information Management (CCHIM)

#### **HUMAN RESOURCES MANAGEMENT**

- Certified Human Resources Professional (CHRP™) - Human Resources Professional Association (HRPA)
- Certified Human Resources Leader (CHRL™) - Human Resources Professional Association (HRPA)

#### **PAYROLL**

- Payroll Compliance Practitioner - Canadian Payroll Association
- Certified Payroll Manager - Canadian Payroll Association

#### **PROFESSIONAL ADDICTION STUDIES**

- International Certified Alcohol and Drug Counsellor (ICADC) - Canadian Addiction Counsellors Certification Federation (CACCF)
- Canadian Certified Addiction Counsellor (CCAC) - Canadian Addiction Counsellors Certification Federation (CACCF)
- Associate Addiction Counsellor (AAC)

#### **PROJECT MANAGEMENT**

- Project Management Institute (PMI)

#### **RISK MANAGEMENT**

- Educational requirement for the CRM designation - Global Risk Management Institute
- Insurance Institute Fellow Chartered Insurance Professional (FCIP) designation

#### **SURETY - ASSOCIATESHIP IN CANADIAN SURETY BONDING**

- Surety Association of Canada

Please contact McMaster Continuing Education at ext. 24321 or visit [mcmastercce.ca](http://mcmastercce.ca) for more details.

## Certificate(s)

### **ADVANCED ACCOUNTING, CERTIFICATE**

*Maximum Credit toward Degree Studies - up to 18 units pending approval of the student's Faculty office*

This certificate is open to individuals with post-secondary education who have completed foundation/core-level accounting courses. To qualify for this Certificate, students must complete any 6 specialist courses. Courses offered in this program qualify as prerequisite requirements for entry into CPA PEP and/or exemptions from CPA PREP\*. The program is offered online or in person during the day, evenings, and weekends. Students can complete this program on a part-time basis or in 10 months with a Fast-Track schedule.

**Note:** Graduates of the Diploma in Accounting are not eligible for the Certificate in Advanced Accounting.

### **ADVANCED STRATEGIC MARKETING TECHNIQUES, CERTIFICATE**

*Maximum Credit Toward Degree Studies - up to 15 units pending approval of the student's Faculty office*

By utilizing already enhanced experience, students in this program will apply their experience to the theory and then back into their own workplace. As a five-course certificate program, students will expand on theoretical knowledge targeted at the experienced marketing professional. Each specific course will target areas within the functions of workplace marketing and will deliver a higher level of understanding for those practicing in the field.

### **APPLIED CLINICAL RESEARCH, CERTIFICATE**

*Maximum Credit Toward Degree Studies - up to 15 units pending approval of the student's Faculty office*

The Applied Clinical Research program, offered by McMaster University Continuing Education and affiliated with the Faculty of Health Sciences, is designed for individuals seeking to enter the field of clinical research. Program content is based on common areas of knowledge and skills for clinical research associates and managers and the competencies you were identified by the internationally-focused Association of Clinical Research Professionals (ACRP). This 5-course certificate is a fully online program.

### **ASSOCIATESHIP IN CANADIAN SURETY BONDING, CERTIFICATE**

*Maximum Credit Toward Degree Studies - up to 18 units pending approval of the student's Faculty office*

Offered in affiliation with the Surety Association of Canada, the Associateship in Canadian Surety Bonding Certificate examines surety bonds and the suretyship process and was designed as a learning vehicle for students who plan on embarking on a career in the surety industry. The program aims to provide students with a theoretical and in-depth practical understanding of suretyship. The program is composed of six courses and is offered online and in person.

### **BIG DATA ANALYTICS, CERTIFICATE**

*Maximum Credit Towards Degree Studies - up to 18 units pending approval of the student's Faculty office*

Designed in collaboration with McMaster University's MacDATA Institute and the DeGroote School of Business, the Certificate in Big Data Analytics gives you the tools and techniques to help guide organizations in the exploding field of big data and predictive analytics. You'll learn technical concepts from leading practitioners and benefit from hands-on training with the latest

industry tools.

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### **BUSINESS ADMINISTRATION, CERTIFICATE**

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*Maximum Credit Toward Degree Studies - up to 15 units pending approval of the student's Faculty office*

This Certificate is a 5-course program. The curricular areas covered by the program include finance, communications, marketing, and operational skills. The program is delivered online or in person. It can be taken on a part-time or full-time basis.

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### **CANADIAN PAYROLL MANAGER, CERTIFICATE**

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*Maximum Credit Toward Degree Studies - up to 15 units pending approval of the student's Faculty office*

The Canadian Payroll Association (CPA) offers the only payroll certifications in Canada. Through this payroll program, students can earn one or both CPA certifications. Students learn to manage the compliance requirements of an organization's annual payroll cycle, deliver clear and reliable payroll information, and contribute a payroll perspective to organizational policy and strategy discussions. The program is available online and in person. The student in this program must be a Payroll Compliance Practitioner before starting the Canadian Payroll Manager Certificate program.

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### **DIGITAL MARKETING, CERTIFICATE**

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*Maximum Credit Toward Degree Studies - up to 15 units pending approval of the student's Faculty office*

The Digital Marketing program explores the tools and tactical skills required to apply data, manage creative content, and implement and measure digital strategies to engage today's consumer. This fully online program is led by industry experts who use case studies, interactive discussions, experiential learning, and new media management frameworks throughout the program. A five course Certificate program, it is offered strictly online. Participants in this program should have prior education in a related field such as a degree or diploma in Marketing or Communications, or at least 3 years of marketing, communications, or web design experience. For individuals with no marketing background, it is recommended that they complete Continuing Education's Marketing Diploma or Business Administration Diploma prior to starting the Digital Marketing Certificate.

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### **FOUNDATIONS OF ANALYTICS, CERTIFICATE**

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*Maximum Credit Toward Degree Studies - up to 15 units pending approval of the student's Faculty office*

The Foundations of Analytics program presents an introductory level of content in the areas of Business Intelligence, Data Analysis and Data Science. No previous academic or work experience in these areas is required!

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### **GOLF AND RESORT MANAGEMENT, CERTIFICATE**

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*Maximum Credit Toward Degree Studies - up to 15 units pending approval of the student's Faculty office*

Courses are offered online and are designed for individuals who wish to develop or upgrade their knowledge, skills and abilities for an exciting career in golf and resort management. A rich and flexible environment to learn engages all participants by using leading-edge content and collaborative functionality. Students must complete any 5 courses (15 units) in order to qualify for the Certificate in Business of Golf and Resort Management.

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### **HEALTH AND SOCIAL SERVICES, CERTIFICATE**

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*Maximum Credit Toward Degree Studies - up to 15 units pending approval of the student's Faculty office*

Courses are designed to offer students a variety of courses within a specialized topic, such as Addiction, Health Information, and Workplace Health and Wellness. Students must complete any 5 courses (15 units) in order to qualify for the Certificate in Health and Social Services.

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### **HEALTH INFORMATION MANAGEMENT, CERTIFICATE**

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*Maximum Credit Toward Degree Studies - up to 15 units pending approval of the student's Faculty office*

This 5-course certificate explores the fundamental principles and practices for the collection, use, storage and destruction of health information. This fully online program is suitable to individuals seeking an introduction into information management in a health care setting, including privacy, security and confidentiality.

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### **METALLURGY OF IRON AND STEEL, CERTIFICATE**

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*Maximum Credit Toward Degree Studies - up to 15 units pending approval of the student's Faculty office*

Offered entirely online, this five-course program provides a foundation in the science of making and using steel. Equipping professionals with technical knowledge of steel-making processes, this program is the only Certificate in metallurgy available in North America.

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### **PAYROLL COMPLIANCE PRACTITIONER, CERTIFICATE**

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*Maximum Credit Toward Degree Studies - up to 15 units pending approval of the student's Faculty office*

The Payroll Compliance Practitioner Certificate enables payroll professionals to enhance operations, comply with legislative requirements, and utilize emerging technologies in the payroll industry. The program is offered online and in person. In addition to earning a McMaster Certificate, students in the program are also working towards their professional association credential.

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### **PROFESSIONAL ADDICTION STUDIES, CERTIFICATE**

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*Maximum Credit Toward Degree Studies - up to 15 units pending approval of the student's Faculty office*

The Professional Addiction Studies certificate program provides an opportunity for individuals seeking to enter the field of addiction to enhance their knowledge and skills required for employment and professional certification. The programs also serve as professional development for those already working in fields such as mental health, counselling, law enforcement, nursing, social work, child and family services. Upon successful completion of the 5 courses, participants will receive the McMaster University Certificate in Professional Addiction Studies. Students are given 5 years to complete all required components of the certificate program.

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### **WEB DESIGN, CERTIFICATE**

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*Maximum Credit Toward Degree Studies - up to 15 units pending approval of the student's Faculty office*

The program focuses on web design principles, hands-on skills in coding and programming, project management, information architecture, HTML5, and web strategy. The program is composed of five courses and is offered online.

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## **Diploma(s)**

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### **ACCOUNTING, DIPLOMA**

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*Maximum Credit toward Degree Studies - up to 24 units pending approval of the student's Faculty office*

Designed in collaboration with the DeGroot School of Business and industry

experts, this 11-course program is designed for individuals planning a career in managerial or financial accounting. Courses offered under this program serve as prerequisite requirements for entry into CPA PEP and/or exemptions from CPA PREP\*. Students can study online or in person during the day, evenings and weekends. The program can be taken on a part-time basis or in 10 months with a Fast-Track course load for students starting in September and/or students eligible for transfer of credits.

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### **BUSINESS ADMINISTRATION, DIPLOMA**

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*Maximum Credit Toward Degree Studies - up to 24 units pending approval of the student's Faculty office*

Developed in collaboration with the DeGroote School of Business, McMaster's Business Administration program is designed to help students gain, add, or refine business skills that are in high demand by employers. In the program, students develop their business skills while elective courses enable development of students' personal or professional areas of interest. This diploma is offered online and in person. It can be taken on a part-time or full-time basis.

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### **BUSINESS ADMINISTRATION, DIPLOMA WITH CONCENTRATION**

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*Maximum Credit Toward Degree Studies - up to 24 units pending approval of the student's Faculty office*

Concentrations in the Business Administration Diploma are available in Finance, Human Resources Management, Management, Marketing, Project Management, Risk Management, and Creative, Critical & Design Thinking. Many courses within the concentration options meet the requirements of professional associations, such as the Canadian Institute of Management and the Global Risk Management Institute. This diploma is offered online and in person. It can be taken on a part-time or full-time basis.

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### **BUSINESS OF GOLF & RESORT MANAGEMENT, DIPLOMA**

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*Maximum Credit Toward Degree Studies - up to 30 units pending approval of the student's Faculty office*

The Business of Golf and Resort Management Diploma program brings together management theory and industry. For those already working in the golf and resort industry as well as those aspiring to enter the golf and resort sector, this program provides knowledge, practical skills, and industry insights to help ensure success in starting, managing, and working in the golf and resort industry. Courses are taught by leading industry experts. This 10-course diploma is offered strictly online.

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### **HEALTH INFORMATICS, DIPLOMA**

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*Maximum Credit Toward Degree Studies - up to 27 units pending approval of the student's Faculty office*

The Health Informatics (HI) program is designed to develop and/or enhance the core competencies for professionals working in the field of health informatics. Using technology, clinical guidelines, information systems, and data management practices, health informatics professionals optimize the collection, storage, and use of information in healthcare. Health informatics applies to the areas of nursing, clinical care, dentistry, pharmacy, public health, occupational therapy, and medical research. All courses are delivered online.

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### **HEALTH INFORMATION MANAGEMENT PLUS, DIPLOMA**

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*Maximum Credit Toward Degree Studies - up to 45 units pending approval of the student's Faculty office*

An extension of the Health Information Management diploma, complete a series of additional courses in order to qualify to write the credentialing exam

set by the College of Canadian Health Information Management (CCHIM). Study coding, data analytics, management and complete a course within a healthcare facility to apply your skills and competencies to the working environment. All courses are delivered online.

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### **HEALTH INFORMATION MANAGEMENT, DIPLOMA IN**

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*Maximum Credit Toward Degree Studies - up to 24 units pending approval of the student's Faculty office*

Expand upon your post-secondary studies to discover your pathway to an exciting career in health information. As information technology evolves and health data is digitized, the health information manager is an integral member of the health care team. Learn and apply industry standards for the collection, use, and analysis of personal health data. Study information management's principles and practices for privacy, confidentiality and security, and how these are applicable to health information systems. All courses are delivered online.

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### **HUMAN RESOURCES MANAGEMENT, DIPLOMA**

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*Maximum Credit Toward Degree Studies - up to 27 units pending approval of the student's Faculty office*

The 27-unit program offers university-level knowledge and the applied skills required to succeed as a human resources practitioner. The program offers all courses required to fulfill the academic requirements of HRPATM to become eligible to write the comprehensive knowledge exam for the Certified Human Resources Leader (CHRLTM) and Human Resources Professional (CHRP™) designations. Courses are offered in person, blended and online. The program can be completed on a part-time basis over several terms or in less than 8 months with a Fast-Track course load.

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### **MARKETING, DIPLOMA**

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*Maximum Credit Toward Degree Studies - up to 24 units pending approval of the student's Faculty office*

The Marketing Diploma explores topics including but not limited to branding, social media, and consumer behavior. It is an eight-course program that is offered online and in person. It can be taken through part-time or full-time study. For students choosing to take a full-time load, it can be completed in less than 10 months.

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### **PROFESSIONAL ADDICTION STUDIES, DIPLOMA**

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*Maximum Credit Toward Degree Studies - up to 30 units pending approval of the student's Faculty office*

The Professional Addiction Studies diploma program provides an opportunity for individuals seeking to enter the field of addiction to enhance their knowledge and skills required for employment and professional certification. The programs also serve as professional development for those already working in fields such as mental health, counselling, law enforcement, nursing, social work, child and family services. Upon successful completion of the required 10 courses, participants will receive the McMaster University Diploma in Professional Addiction Studies. Students are given 5 years to complete all required components of the diploma program.

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## **Courses**

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### **CREATIVE, CRITICAL, AND DESIGN THINKING, COURSES**

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*Maximum Credit Toward Degree Studies - up to 9 units pending approval of the student's Faculty office*

These courses will assist students in the development of their creative, critical, and design thinking skills. Grounded in a humanistic paradigm, the courses also support the development of problem-solving skills as they are required



in contemporary organizational contexts including but not limited to business, health care, government, the arts and the technology sector. If a student takes all three courses, they are eligible for a Certificate of Completion.

## RISK MANAGEMENT, COURSES

*Maximum Credit Toward Degree Studies - up to 9 units pending approval of the student's Faculty office*

In these courses, students will learn how to assess, identify, communicate, and control exposure of risk in order to create and implement structured risk management programs. The three risk management courses can be taken as part of a Certificate of Completion program, the Diploma in Business Administration with a Concentration in Risk Management, or as individual courses. Courses are available online.

## Bachelor of Technology Program

<https://www.eng.mcmaster.ca/sept>

Engineering Technology Building (ETB), Room 509

Ext. 26401

## Certificate(s)

### TECHNOLOGY CERTIFICATE

*Maximum Credit Toward Degree Studies - 15 units*

This program consists of fifteen units comprising five courses in the corresponding Bachelor of Technology program. Students must select the five required courses in their discipline.

The McMaster University Technology Certificate is offered in four disciplines:

- Civil Engineering Infrastructure Technology
- Power and Energy Engineering Technology
- Manufacturing Engineering Technology
- Software Engineering Technology

### TECHNOLOGY LEADERSHIP CERTIFICATE

This five-course certificate program focuses on the additional skills needed by graduate technologists to enable them to be more effective in their positions and to advance professionally. The courses are held in the evenings and on Saturdays and are oriented towards the needs of technologists already working in industry.

## Concurrent Certificates

### Certificate(s)

#### CERTIFICATE IN BUSINESS TECHNOLOGY MANAGEMENT (BTM)

##### NOTE

- SFWRTECH 3IT3 and SFWRTECH 3PR3 are anti-requisites.

##### ADMISSION

Enrolment in an Honours Bachelor of Commerce (B.Com.) program is required for admission to the certificate.

##### REQUIREMENTS

*27 units total*

##### 21 UNITS

- COMMERCE 3KA3 - System Analysis and Design
- COMMERCE 3KD3 - Database Design Management and Applications
- COMMERCE 3KE3 - Management of Enterprise Data Analytics
- COMMERCE 4KF3 - Project Management
- COMMERCE 4KG3 - Data Mining For Business Analytics
- COMMERCE 4KH3 - Strategies for Electronic and Mobile Business
- COMMERCE 4KI3 - Business Process Management

##### 6 UNITS

from

- SFWRTECH 3CS3 - Computer Security
- SFWRTECH 3IT3 - Fundamentals of Networking
- SFWRTECH 3PR3 - Procedural and Object Oriented Programming Concepts
- SFWRTECH 3RQ3 - Software Requirements and Specification
- SFWRTECH 4SD3

#### CONCURRENT CERTIFICATE FOR APPLIED ETHICS AND POLICY (CAEP)

##### Department of Philosophy

University Hall, Room 310, ext. 24275

<http://philos.humanities.mcmaster.ca/>

The Certificate for Applied Ethics and Policy (CAEP) is designed to prepare undergraduate students from Health Sciences, Engineering, Business, Humanities, Science, and Social Sciences to work together on teams to identify and resolve the ethical, institutional, and policy challenges posed by novel technologies that are highly promising but also potentially disruptive. The Certificate will recognize students for having gained skills in ethics and critical reasoning, the development of policy recommendations, working within multi-disciplinary teams, and engaging with relevant stakeholders.

##### CERTIFICATE REQUIREMENTS

Any student in an undergraduate program at McMaster may declare the certificate at the time of graduation and upon satisfaction of each of the following requirements:

- The student must be accepted by the Certificate for Applied Ethics and Policy Committee (the CAEP Selection Committee). The CAEP Selection Committee will consider supplemental applications soon after the end of Winter term of each academic year, but only from students who are enrolled in an undergraduate program at McMaster University and who have completed PHILOS 2D03 or 2YY3 and either (or both) PHILOS 2S03 or PHILOS 2G03. The CAEP Selection Committee's selections will be made on the basis of the student's cumulative grades and answers to the supplemental application questions.
- The student must complete 15 units in accordance with the following requirements.

**NOTES**

- Students accepted and enrolled in the Justice, Political Philosophy, and Law Honours BA Program are not eligible to apply for the Certificate.
- Any student seeking a Philosophy Honours BA may satisfy no more than 2 courses (6 units) of the Philosophy Honours BA Program requirements with courses that the student has also designated as counting toward the satisfaction of the Certificate's requirements.
- Students who declare the certificate are precluded from declaring a philosophy minor.
- Transfer credits will not be accepted in lieu of PHILOS 4V03. Students accepted into the certificate program are free to request transfer credit in lieu of any other certificate course requirement. The student may submit such a request to the Selection Committee (via philadm@mcmaster.ca) at any time.
- Note that selection by the selection committee is distinct from the successful declaration of the certificate, and a student's selection does not imply that the candidate has satisfied all certificate requirements. It is the student's responsibility to make sure that at the time of graduation, all requirements of the certificate as enumerated above have been fulfilled.
- Integrated Business and Humanities students may substitute IBH 2BD3 for PHILOS 2D03.

**REQUIREMENTS**

*15 units total*

3 units

from

- PHILOS 2D03 - Bioethics
- PHILOS 2YY3 - Ethics

3 units

from

- PHILOS 2G03 - Social and Political Issues
- PHILOS 2S03 - History of Political Philosophy

3 units

from

- PHILOS 2N03 - Business Ethics
- PHILOS 2TT3 - Ethical Issues in Communication
- PHILOS 3C03 - Advanced Bioethics
- PHILOS 3CC3 - Advanced Ethics

3 units

from

- PHILOS 3I03 - Philosophy and Feminism
- PHILOS 3L03 - Environmental Philosophy
- PHILOS 3N03 - Political Philosophy
- PHILOS 3Q03 - Philosophy of Law

3 units

- PHILOS 4V03 - Multidisciplinary Workshop in Applied Ethics and Policy

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## CONCURRENT CERTIFICATE IN APPLIED SOCIAL SCIENCES RESEARCH

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**FACULTY OF SOCIAL SCIENCES**

**KENNETH TAYLOR HALL, ROOM 129**

<http://socialsciences.mcmaster.ca>

This certificate aims to provide opportunities for interested students to acquire broader exposure and competencies in applied research methods to meet the needs of the labour market and student interests. Upon completion, students will have had the opportunity to achieve a deeper understanding of the following competencies, along with ability to apply them in practice:

- Identify and define appropriate methods for studying a wide range of topics;

- Define and operationalize concepts;
- Statistical/quantitative data analysis (including the use of software);
- Qualitative data analysis (including the use of software);
- Create original surveys/questionnaires;
- Identify, gather and clean (original and secondary) data;
- Presentation of research findings.

**CERTIFICATE REQUIREMENTS**

Any McMaster student in an undergraduate degree program in the Faculty of Social Sciences or in a Combined Honours degree program with a Social Sciences subject may declare the certificate, at the time of graduation, and upon completion of the following courses. Non-McMaster credit may not be utilized in fulfilment of certificate requirements.

Students are advised to consult with the Undergraduate Chair or Academic Advisor for their program of study in Social Sciences to ensure individual courses (such as their project plan for an Independent Study course) meet the criteria of a research course.

**REQUIREMENTS**

*15-18 units total*

**3 UNITS****Foundations Course in Research Methods in the Social Sciences**

- SOCSCI 1RM3 - How do we Know? Doing Social Sciences Research

**6-9 UNITS****Research Methods and/or Analysis Courses**

- ANTHROP 3IS3 - Independent Study in Anthropology
- ANTHROP 3K03 - Archaeological Interpretation
- ANTHROP 3P03 - Doing Ethnography: Theory and Research Methods
- ECON 2B03 - Analysis of Economic Data
- ECON 3E03 - Applied Econometrics
- ECON 4F03 - Methods of Inquiry in Economics
- ECON 4FF3 - Research Methods in Economics
- ECON 4G03 - Econometrics II
- ENVSOCTY 2GI3 - Geographic Information Systems
- ENVSOCTY 3MA3 - Research Methods
- ENVSOCTY 3MB3 - Data Analysis
- ENVSOCTY 4GA3 - Applied Spatial Statistics
- GEOG 2GI3
- GEOG 3MA3
- GEOG 3MB3
- GEOG 4GA3
- HLTHAGE 2A03 - Research Methods in Health and in Aging I
- HLTHAGE 3B03 - Advanced Research Methods
- HLTHAGE 3G03 - Community Based Research
- HLTHAGE 3I03 - Independent Study in Health, Aging and Society
- INDIGST 2M03 - Indigenous Research Methods and Ethics
- INDIGST 2MM3 - Indigenous Ways of Knowing: Theory
- LABRST 3H03
- POLSCI 2NN3 - Politics by Design
- POLSCI 3NN3 - Statistical Analysis of Primary Data
- POLSCI 4SS3 - Public Opinion and Policy
- PNB 2XE3 - Descriptive Statistics and Research Methods
- PNB 3RM3
- PNB 3XE3 - Inferential Statistics and Research Methods
- PSYCH 3MT3 - Psychometrics
- PSYCH 4KK3 - Bayesian Inference
- RELIGST 3F03
- SCAR 3F03 - Approaches to the Study of Religion
- SOCPSPY 2K03 - Research Methods in Social Psychology
- SOCSCI 2J03 - Introduction to Statistics
- SOCIOL 2Z03 - Introduction to Sociological Research
- SOCIOL 3FF3 - Introductory Statistics for Sociology

- SOCIOL 3W03 - Historical Methods in Sociology
- SOCIOL 4FF3 - Applications of Quantitative Methods in the Social Sciences

**3-6 UNITS****Experiential/Capstone Courses**

- ANTHROP 3CC6 - Archaeological Field School
- ANTHROP 4D03 - Practicing Anthropology: Ethics, Theory, Engagement
- ANTHROP 4G03 - Independent Research I
- ANTHROP 4GG3 - Independent Research II
- ECON 4A03 - Honours Economic Analysis
- ECON 4AA3 - Economic Specialist Seminar
- GEOG 3ME3
- GEOG 3MF3
- GEOG 3MI3
- GEOG 4MF3
- GEOG 4MS3
- GEOG 4MT6 A/B
- ENVSOCY 3MF3 - Urban Field Camp
- ENVSOCY 3MI3 - Internship in Environment and Society
- ENVSOCY 4MF3 - Senior Urban Field Camp
- ENVSOCY 4MS3 - Independent Study
- ENVSOCY 4MT6 A/B - Senior Thesis
- HLTHAGE 3BB3 - Field Experience
- HLTHAGE 3EE3 - The Practice of Everyday Life: Observations and Inquiry
- HLTHAGE 4Z06 A/B - Health, Aging and Society Thesis
- INDIGST 4A03 - Storytelling and Environmental Conservation
- INDIGST 4T06 A/B - Honours Thesis
- LABRST 4A06 A/B - Labour Studies Practicum
- POLSCI 4Z06 A/B - Honours Essay
- POLSCI 4ZZ6 A/B - Experiential Learning in Research
- PNB 4D06 A/B - Senior Thesis
- PNB 4D09 A/B - Senior Honours Thesis
- PNB 4J03 - Inquiry in Psychology, Neuroscience & Behaviour
- PNB 4Q03 A/B S - Senior Independent Library Study
- PNB 4QQ3 A/B S - Senior Independent Research
- SOCPSY 4IS3 - Independent Research
- SOCPSY 4IS6 A/B - Independent Research
- SOCPSY 4ZZ6 A/B - Social Psychology Research Project
- SOCSCI 3F03 - Social Sciences in Action
- SOCIOL 4M03 - Directed Research I for Honours Students
- SOCIOL 4MM6 A/B S - Directed Research for Honours Students
- SOCIOL 4N03 - Directed Research II for Honours Students
- SOCIOL 4VV3

**CONCURRENT CERTIFICATE IN BIOMEDICAL SCIENCES (BMS)****Faculty of Health Sciences**

The Concurrent Certificate in Biomedical Sciences is administered by the Bachelor of Health Sciences (Honours) Program.  
Michael G. DeGroot Centre for Learning and Discovery, Room 3300, ext. 22815.  
bhsc.mcmaster.ca

The Concurrent Certificate in Biomedical Sciences (BMS Certificate) is designed to provide students with an interest in biomedical research with an opportunity to develop an academic focus in this area, with the BMS Certificate serving to recognize that they have gained core knowledge in this area through their coursework.

**NOTES**

- In order to obtain the BMS Certificate, at least 12 units (above Level 1) must be elective to the degree.

- No more than 6 units can be counted toward both the BMS Certificate and a Biochemistry Minor.

**CERTIFICATE REQUIREMENTS**

Any student in an undergraduate program at McMaster may declare the BMS Certificate at the time of graduation provided that they satisfy the following requirements.

**REQUIREMENTS**

*30-33 units*

6 units

from

- HTHSCI 3V03 - Research and Experimental Design
- HTHSCI 4AL3 - Model Systems
- LIFESCI 3L03 - Laboratory Methods in Life Sciences
- LIFESCI 3RP3 - Life Sciences Research Practicum

15 units

from

**Biochemistry:**

- BIOCHEM 3BP3 - Practical Bioinformatics in the Genomics Era
- BIOCHEM 3D03 - Metabolism and Regulation
- BIOCHEM 3EE3 - Research Advances in Cell Biology and Biochemistry
- BIOCHEM 3G03 - Proteins and Nucleic Acids
- BIOCHEM 4C03 - Inquiry in Biochemistry
- BIOCHEM 4E03 - Gene Regulation in Stem Cells and Development
- BIOCHEM 4H03 - Biotechnology and Drug Discovery
- BIOCHEM 4J03 - Immunological Principles in Practice
- BIOCHEM 4M03 - Cellular and Integrated Metabolism
- BIOCHEM 4N03 - Molecular Membrane Biology
- BIOCHEM 4Q03 - Biochemical Pharmacology
- BIOCHEM 4S03 - Introduction to Molecular Biophysics

**Health Sciences:**

- HTHSCI 3I03 - Introductory Immunology
- HTHSCI 3K03 - Introductory Virology
- HTHSCI 3SB3 - Superbugs: Bacterial Antibiotic Resistance
- HTHSCI 3U03 - Medical Genetics
- HTHSCI 3X03 - Pain: Perceptions, Mechanisms and Management
- HTHSCI 4BB3 - Neuroimmunology
- HTHSCI 4G03 - Pathoanatomy
- HTHSCI 4I03 - Advanced Concepts in Immunology
- HTHSCI 4J03 - Immunological Principles In Practice
- HTHSCI 4JJ3 - Building Undergraduate Research Capacity
- HTHSCI 4K03 - Human Pathophysiology
- HTHSCI 4KK3 - Pathophysiology of Infectious Diseases
- HTHSCI 4NU3 - Nutrition
- HTHSCI 4O03 - Principles of Virus Pathogenesis

**Molecular Biology:**

- MOLBIOL 4H03 - Molecular Biology of Cancer

**Life Sciences:**

- LIFESCI 3AA3 - Human Pathophysiology
- LIFESCI 3BB3 - Neurobiology of Disease
- LIFESCI 3BM3 - Implanted Biomaterials (CHEMBIO 3BM3)
- LIFESCI 3BP3 - Modelling Life (BIOPHYS 3G03)
- LIFESCI 3E03 - Reproductive Endocrinology
- LIFESCI 3M03 - Cellular Dynamics
- LIFESCI 3RC3 - Radioisotopes in Medicine (CHEM 3RC3)

9-12 units

from

- HTHSCI 4R09 A/B - Thesis in Biomedical Sciences
- HTHSCI 4R12 A/B S - Thesis in Biomedical Sciences
- LIFESCI 4B09 A/B S - Independent Project
- LIFESCI 4C12 A/B S - Independent Thesis
- LIFESCI 4D15 A/B S - Independent Thesis

or

- Equivalent senior thesis courses in the student's home program

## CONCURRENT CERTIFICATE IN ESSENTIAL FRENCH

### Department of French

Togo Salmon Hall, Room 532, ext. 24470

<http://french.humanities.mcmaster.ca/>

The Concurrent Certificate in Essential French is intended for those students seeking a solid foundation in essential French, including receptive linguistic skills in French (listening, reading, comprehension), and fundamental productive communication skills (speaking, writing). Students completing a degree program in French (Hons BA, BA, minor) are not eligible for the concurrent Certificate in Essential French.

### CERTIFICATE REQUIREMENTS

Any student in an undergraduate degree program at McMaster may declare the certificate, at the time of graduation, and upon completion of the following courses in French.

#### REQUIREMENTS

18 units total

- FRENCH 1Z06 A/B - Beginner's Intensive French I
- FRENCH 2Z06 A/B - Beginner's Intensive French II
- FRENCH 2M06 A/B - Introduction to French Studies: Advanced Level \*

### ALTERNATE PATHWAY TO CERTIFICATE

Those students who begin their French Studies at McMaster with FRENCH 2Z06 A/B may still complete the concurrent Certificate in Essential French, through fulfilment of the following alternate pathway.

#### REQUIREMENTS

15 units total

12 units

- FRENCH 2M06 A/B - Introduction to French Studies: Advanced Level
- FRENCH 2Z06 A/B - Beginner's Intensive French II

3 units

- Level II French

#### NOTE:

\*Students may replace FRENCH 2M06 A/B with equivalent language courses taken during the summer through the Explore program, or with other pre-approved exchange or study abroad courses. No more than 6 units of the Certificate, however, can come from non-McMaster courses.

The Department of French strongly recommends that an immersion experience be part of the work towards the certificate.

## CONCURRENT CERTIFICATE IN GEOGRAPHIC INFORMATION SCIENCE (GIS)

### School of Earth, Environment & Society

The Concurrent Certificate in Geographic Information Science is administered by the School of Earth, Environment & Society (Faculty of Science) (formerly the School of Geography and Earth Sciences).

General Science Building, Room 206, ext. 23534

[ugadmin@mcmaster.ca](mailto:ugadmin@mcmaster.ca)

The Concurrent Certificate in Geographic Information Science (GIS) will train students in the use and application of geographic information systems and remote sensing relevant to a breadth of disciplines, including environment and earth sciences, geography, biology, anthropology, civil engineering, health science and business.

### CERTIFICATE REQUIREMENTS

Any student in an undergraduate program at McMaster may declare the GIS Certificate at the time of graduation providing they satisfy the following requirements.

#### REQUIREMENTS

18 units total

12 units

- ENVSOCTY 2GI3 - Geographic Information Systems
- ENVSOCTY 3GI3 - Advanced Raster GIS
- ENVSOCTY 3GV3 - Advanced Vector GIS
- ENVSOCTY 3SR3 - Remote Sensing

6 units

from

- ENVSOCTY 4GA3 - Applied Spatial Statistics
- ENVSOCTY 4GS3 - GIS Programming
- ENVSOCTY 4GT3 - Special Topics in GIS
- ENVSOCTY 4SR3 - Advanced Remote Sensing

## CONCURRENT CERTIFICATE IN IMMUNOLOGY, MICROBIOLOGY, & VIROLOGY (IMV)

### Faculty of Health Sciences

The Concurrent Certificate in Immunology, Microbiology, & Virology is administered by the Bachelor of Health Sciences (Honours) Program. Michael G. DeGroote Centre for Learning and Discovery, Room 3300, ext. 22815.

[bhsc.mcmaster.ca](http://bhsc.mcmaster.ca)

The Concurrent Certificate in Immunology, Microbiology, & Virology (IMV Certificate) is designed to provide students from health sciences, biotechnology, biology, life sciences, or any other disciplines with an interest in immunology, host defense, microbiology, and virology with an opportunity to develop an academic focus in this area, with the IMV Certificate serving to recognize that they have gained core knowledge in this area through their coursework.

### CERTIFICATE REQUIREMENTS

Any student in an undergraduate program at McMaster may declare the IMV Certificate at the time of graduation provided that they satisfy the following requirements.

#### REQUIREMENTS

Completion of 15 units from *Course Lists A, B, and C*, with at least 3 units from *Course List A* and at least 3 units from *Course List B*.

#### COURSE LIST A

##### Foundational Microbiology & Virology

- BIOTECH 3IV3 - Immunology and Virology
- HTHSCI 3I03 - Introductory Immunology

#### COURSE LIST B

##### Foundational Microbiology & Virology

- BIOLOGY 2EE3 - Introduction to Microbiology and Biotechnology
- BIOTECH 2MB3 - Microbiology
- HTHSCI 2HH3 - Introductory Microbiology
- HTHSCI 3K03 - Introductory Virology

#### COURSE LIST C

##### Specialized Courses in Immunology, Virology, & Microbiology

- BIOCHEM 3MI3 - Microbial Interactions
- BIOCHEM 4J03 - Immunological Principles in Practice
- BIOLOGY 4PP3 - Environmental Microbiology and Biotechnology
- BIOTECH 3FM3 - Food Microbiology
- HTHSCI 1DT3 - Discover Immunology Today
- HTHSCI 3SB3 - Superbugs: Bacterial Antibiotic Resistance
- HTHSCI 4BB3 - Neuroimmunology
- HTHSCI 4I13 - Advanced Concepts in Immunology
- HTHSCI 4J03 - Immunological Principles In Practice
- HTHSCI 4KK3 - Pathophysiology of Infectious Diseases
- HTHSCI 4O03 - Principles of Virus Pathogenesis
- MOLBIOL 3O03 - Microbial Genetics
- MOLBIOL 4P03 - Medical Microbiology



**NOTE**

Transfer credits may be considered for credit toward the IMV Certificate by submitting a request to the Assistant Dean, Bachelor of Health Sciences (Honours) Program.

## CONCURRENT CERTIFICATE IN INTERNATIONAL ENGAGEMENT

**Faculty of Humanities**

Chester New Hall, Room 107

<http://www.humanities.mcmaster.ca>

[humanities@mcmaster.ca](mailto:humanities@mcmaster.ca)

This Certificate recognizes students' efforts to gain meaningful experiences outside the classroom while promoting the concept of international engagement through an emphasis on the development of linguistic and cultural awareness. The Certificate recognizes both academic and co-curricular efforts on the part of the student to gain an international perspective and to increase his or her knowledge of what it means to be a global citizen.

The Certificate is open to any student enrolled in an undergraduate program at the University and complements any undergraduate degree. Students may declare the Certificate in International Engagement at the time of graduation, and upon completion of the following courses.

**REQUIREMENTS**

*18 units total*

**12 UNITS**

- Language courses other than English, or 6 units in each of two languages other than English. Students are encouraged to consider the diversity of language offerings at McMaster, including Indigenous languages

**3 UNITS**

- International experience at home or abroad \*
- Credit received from an International Exchange Program ('XCH')
- INTENG 2A03 - International Engagement at Home

**3 UNITS**

- INTENG 3A03 - International Engagement Capstone

**NOTE**

\* 3 units of pre-approved, alternative relevant study abroad experience may replace this requirement. This may include independent study abroad experiences, approved on Letter of Permission, or existing placement coursework, such as in HISTORY 3GH3. Previously approved experiential courses may also be substituted for the 'International Engagement at Home' requirement, where deemed to have met appropriate learning objectives. No more than 6 units of the Certificate can come from non-McMaster courses.

## CONCURRENT CERTIFICATE IN LEADERSHIP & CROSS-CULTURAL LITERACY

**Faculty of Humanities**

Chester New Hall, Room 107

<http://www.humanities.mcmaster.ca>

[humanities@mcmaster.ca](mailto:humanities@mcmaster.ca)

The Certificate fills a critical need for undergraduate students to learn about and develop professional skills that are highly desirable for the pursuit of graduate studies, professional programs, and employment opportunities, following undergraduate studies. A key objective of the course sequence is to help students develop leadership skills within a rigorous academic framework that balances both theory and practice.

**CERTIFICATE REQUIREMENTS**

Any student in an undergraduate degree program at McMaster may declare the certificate, at the time of graduation, and upon completion of the following courses.

**NOTE**

- Eligible Wilson Leadership Scholars may replace HUMAN 4LC3 - Leadership Capstone: Theory and Practice with HUMAN 4WL3 A/B - Wilson Leadership Scholar Capstone toward this certificate requirement.

**REQUIREMENTS**

*15 units total*

3 units

from

**Ethics Requirement**

- PHILOS 2D03 - Bioethics
- PHILOS 2N03 - Business Ethics
- PHILOS 2TT3 - Ethical Issues in Communication
- PHILOS 2YY3 - Ethics

12 units

from

**Leadership & Cross-Cultural Literacy Requirement**

- HUMAN 3CM3 - Leadership: Cross-Cultural Mentoring Lab
- HUMAN 3LM3 - Foundations of Leadership
- HUMAN 4CM3 - Cross-cultural Mentoring and Coaching Practicum
- HUMAN 4LC3 - Leadership Capstone: Theory and Practice
- HUMAN 4RM3 - Leadership: Relationship Management

## CONCURRENT CERTIFICATE IN PROFESSIONAL FRENCH

**Department of French**

Togo Salmon Hall, Room 532, ext. 24470

<http://french.humanities.mcmaster.ca/>

The concurrent Certificate in Professional French provides students with substantial vocabulary from such fields as business, law, medicine, journalism and the hospitality industry. Through a focus on the study of sample cases, the certificate will help prepare students for possible real-life situations which they could encounter in their careers.

**NOTES**

- No more than 6 units of the Certificate may be completed using non-McMaster courses.
- Students majoring in any French program must complete the certificate requirements FRENCH 2I03 and FRENCH 3I13 as elective credit. These courses must be taken outside of the French (Honours B.A., Combined Honours B.A. or B.A.) degree requirements.
- Students uncertain as to whether language course prerequisites best reflect their linguistic ability are encouraged to consult the French department for a placement test.

**ADMISSION**

Any student in an undergraduate degree program at McMaster may declare the certificate, at the time of graduation, and upon completion of the following courses in French.

**REQUIREMENTS**

18 units

- FRENCH 1A06 A/B - Introduction to French Studies: Advanced Level
- or
- FRENCH 2M06 A/B - Introduction to French Studies: Advanced Level
  - FRENCH 2B03 - French Language Practice I
  - FRENCH 2BB3 - French Language Practice II
  - FRENCH 2I03 - Professional French I
  - FRENCH 3I13 - Professional French II

## CONCURRENT CERTIFICATE IN THE LANGUAGE OF MEDICINE AND HEALTH

**Department of Classics**

Togo Salmon Hall, Room 706, ext. 24311

<http://classics.humanities.mcmaster.ca>

This concurrent certificate provides students with formal recognition of competency in the etymology, word formation, and logic of medical terminology.

### CERTIFICATE REQUIREMENTS

Any student in an undergraduate degree program at McMaster may declare the certificate, at the time of graduation, and upon completion of the following courses.

#### REQUIREMENTS

*15 units total*

#### 6 units

- CLASSICS 2MT3 - Ancient Roots of Medical Terminology
- CLASSICS 3MT3 - Advanced Ancient Roots of Medical Terminology

#### 6 units

from

- GREEK 1Z03 - Beginner's Intensive Ancient Greek I
- GREEK 1ZZ3 - Beginner's Intensive Ancient Greek II
- LATIN 1Z03 - Beginner's Intensive Latin I
- LATIN 1ZZ3 - Beginner's Intensive Latin II

#### 3 units

from

- GREEK 1Z03 - Beginner's Intensive Ancient Greek I
- GREEK 1ZZ3 - Beginner's Intensive Ancient Greek II
- GREEK 2A03 - Intermediate Greek I
- LATIN 1Z03 - Beginner's Intensive Latin I
- LATIN 1ZZ3 - Beginner's Intensive Latin II
- LATIN 2A03 - Intermediate Latin I
- LINGUIST 1A03 - Introduction to Linguistics: Sounds, Speech and Hearing
- ENGLISH 2NH3 - Narratives of Health

#### NOTES

- Any student seeking a Classics program may satisfy no more than 2 courses (six units) of the Classics program's requirements with courses that the student counts toward the satisfaction of the Certificate's requirements.
- Any student wishing to declare a Minor in Classics, Latin, or Greek may satisfy no more than 2 courses (six units) of the Minor's requirements.
- Students who have Grade 12 Latin or Greek and are therefore not eligible to take Beginner's Intensive Latin or Greek can substitute the Intermediate Latin or Greek.

## CONCURRENT CERTIFICATE IN URBAN STUDIES AND PLANNING (USP)

### School of Earth, Environment & Society

The Concurrent Certificate in Urban Studies and Planning is administered by the School of Earth, Environment & Society (Faculty of Science) (formerly the School of Geography and Earth Sciences).

General Science Building, Room 206, ext. 23534

ugadmin@mcmaster.ca

The Concurrent Certificate in Urban Studies & Planning (USP) will provide students with an opportunity to develop expertise in the related fields of urban geography and urban planning.

### CERTIFICATE REQUIREMENTS

Any student in an undergraduate program at McMaster may declare the USP Certificate at the time of graduation providing they satisfy the following requirements.

#### REQUIREMENTS

*18 units total*

#### 3 units

- ENVSOCTY 2UI3 - The Urban Experience

#### 9 units

from

- ENVSOCTY 3MF3 - Urban Field Camp
- ENVSOCTY 3UP3 - Urban Planning
- ENVSOCTY 4UD3 - Special Topics in Urban Planning
- ENVSOCTY 4US3 - Sustainable Cities

#### 6 units

from

- ENVSOCTY 3UW3 - Cities of the Developing World
- ENVSOCTY 4LP3 - Transport Policy
- ENVSOCTY 4MS3 - Independent Study
- ENVSOCTY 4MT6 A/B - Senior Thesis
- HLTHAGE 4S03 - Health and the Unfairly Structured City

## Other Diploma Programs

For information concerning other Diploma programs offered at the University, please refer to the relevant Faculty section in this Calendar.

### FACULTY OF HEALTH SCIENCES

- Health Professional Entrance Preparation (HPEP) Undergraduate Certificate
- Occupational Therapy Examination and Practice Preparation Project (OTEPP)

### INDIGENOUS STUDIES

- **Ogweho:weh** Language Diploma (for more information please contact the Indigenous Studies Program Office, L.R. Wilson Hall Room 1010. 905-525-9140 ext. 27426)

### FACULTY OF HUMANITIES

- Diploma in Music Performance
- McMaster English Language Development Diploma (MELD)
- McMaster English Readiness for Graduate Excellence Certificate

# Interdisciplinary Minors and Thematic Areas

## Interdisciplinary Minors

The following five listings constitute University-sanctioned Minors in African and African Diaspora Studies, Archaeology, Globalization Studies, Jewish Studies and Sustainability.

No degree is granted for these programs of study, but students registered in four- or five- level programs can receive a Minor designation on their transcripts following graduation if their chosen Minor program is successfully completed. Please see the *Minor* subsection in the *General Academic Regulations* section of this Calendar for further information.

### NOTE:

**Students should note that not all courses listed are available each year. As well, it is the student's responsibility to check carefully for prerequisites, corequisites and enrolment restrictions.**

**All courses have enrolment capacities. The Faculty cannot guarantee registration in courses for minors, even when prerequisites have been met.**

## Thematic Areas

The Thematic Areas are designed to assist you in choosing courses in areas of study, in which there is currently no B.A. program.

### CANADIAN STUDIES

There is no B.A. in Canadian Studies, but students interested in this area may choose from among the following courses, subject to meeting the prerequisites.

#### HUMANITIES

- ARTHIST 3B03 - Aspects of Canadian Art
- ENGLISH 2C03 - Contemporary Canadian Fiction
- ENGLISH 3DD3
- FRENCH 2C03
- FRENCH 2E03 - Survey of Quebec Literature and Culture
- FRENCH 3AA3 - The Modern French-Canadian Novel
- FRENCH 4U03 - Topics in Literature and Culture of Quebec and Francophone Canada
- HISTORY 2T03 - Survey of Canadian History, Beginnings to 1885
- HISTORY 2TT3 - Survey of Canadian History, 1885 to the Present
- HISTORY 3CG3 - Canadians in a Global Age, 1914 to the Present
- HISTORY 3CW3 - Canada in a World of Empires, 1492-1919
- HISTORY 3G03
- HISTORY 3N03 - Poverty, Privilege and Protest in Canadian History
- HISTORY 3NN3
- HISTORY 3P03
- HISTORY 3W03 - Women in Canada and the U.S. to 1920
- HISTORY 3WW3 - Women in Canada and the U.S. from 1920
- MUSIC 2T03

#### SCIENCE

- ENVSOCY 2RC3 - Regional Geography of Canada
- ENVSOCY 3UP3 - Urban Planning
- GEOG 2RC3
- GEOG 3UP3
- GEOG 4UH3

#### SOCIAL SCIENCES

- ANTHROP 2003 - Themes in the Archaeological History of North America

- ANTHROP 3Y03 - Indigenous Community Health and Wellbeing
- ECON 2CC3 - Health Economics and its Application to Health Policy
- ECON 2K03 - Economic History of Canada
- INDIGST 2F03 - Residential Schools in Canada: History and Impact
- INDIGST 3J03 - Government and Politics of Indigenous People
- LABRST 1A03
- LABRST 3C03 - Labour and Employment Law
- POLSCI 1AA3 - Government, Politics, and Power
- POLSCI 1AB3 - Politics and Power in a Globalizing World
- POLSCI 2D03 - Canadian Democracy
- POLSCI 2F03 - Politics, Power and Influence in Canada
- POL SCI 2L03
- POLSCI 3FF3
- POLSCI 3GG3 - Federalism
- POLSCI 3J03 - Honours Issues in Canadian Politics and Canadian Public Policy
- POLSCI 3K03 - Migration and Citizenship: Canadian, Comparative and Global Perspectives
- POLSCI 3RF3 - The Charter of Rights and Freedoms
- POLSCI 3S03
- POLSCI 3SP3
- POLSCI 3NN6 A/B
- POLSCI 3Z03 - Canadian Public Sector Management
- POLSCI 4O06 A/B - Canadian Politics
- POLSCI 4T06 A/B
- SOCWORK 4C03 - Critical Perspectives on Race, Racialization, Racism and Colonialism in Canadian Society
- SOCWORK 4U03 - Immigration, Settlement and Social Work
- SOCWORK 4W03 - Child Welfare
- SOCIOL 3PP3 - Canadian Sociological Theory

### NOTE

Please see the *Course Listings* section for a detailed description of the above courses.

## INTERDISCIPLINARY MINOR IN AFRICAN AND AFRICAN DIASPORA STUDIES

The Interdisciplinary Minor in African and African Diaspora Studies is made up of courses spanning across more than 15 departments. A Minor in African and African Diaspora Studies provides students with in-depth understanding of African and African-diaspora peoples and societies around the world. Students are required to complete a minimum of 24 units from the list below. No more than 6 units of Level 1 courses may be applied towards the completion of the Minor. Some of the courses below are cross-listed. It is the student's responsibility to check carefully for prerequisites, co-requisites and enrolment restrictions of all courses in this list.

Students wishing to pursue African and African Diaspora Studies may obtain further information from Dr. Bonny Ibhawoh (CNH 604, ext. 24153) or Dr. Juliet Daniel (LS 331, ext. 23765).

### COURSE LIST

- ANTHROP 1AB3 - Introduction to Anthropology: Race, Religion, and Conflict
- ANTHROP 2E03 - Introduction to Biological Anthropology
- COLLAB 1G03 - Multiculturalism
- COLLAB 3B03 - Sociology: Diversity and Inequality
- CMST 2Q03
- CMST 2R03
- CSCT 3A03
- CMST 3BB3
- CMST 3JJ3 - The Rise of the Music Industry
- CSCT 3R06 A/B

- ENGLISH 3A03 - Critical Race Studies
- ENGLISH 3EE3 - African American Literature
- ENGLISH 3R06 A/B
- ENGLISH 3RR3
- ENGLISH 4AA3
- ENGLISH 4WL3 - Globalization and Postcolonial Fiction
- FRENCH 2AC3 - Introduction to Francophone Literatures and Cultures
- HTHSCI 1C06 A/B - Working Across Difference in Midwifery
- HISTORY 1B03
- HISTORY 1BB3
- HISTORY 2AA3
- HISTORY 2CS3 - Caribbean Slavery in the Atlantic World
- HISTORY 2EN3 - Caribbean History
- HISTORY 2J03 - Africa up to 1800
- HISTORY 2JJ3 - Africa since 1800
- HISTORY 2U03
- HISTORY 3BB3
- HISTORY 3J03 - The United States in the 1960s
- HISTORY 3N03 - Poverty, Privilege and Protest in Canadian History
- HISTORY 3RC3
- HISTORY 3W03 - Women in Canada and the U.S. to 1920
- HISTORY 4A06 A/B
- HISTORY 4BB3
- HISTORY 4DD6 A/B
- HISTORY 4G03
- LABRST 1C03
- LABRST 2BB3
- LABRST 2J03 - Work and Racism
- LINGUIST 2S03 - Language and Society
- LINGUIST 4M03
- LINGUIST 4R03 - Cross-Cultural Communication
- MUSIC 2A03 - Music of the World's Cultures
- MUSIC 2I13 - Popular Music in North America and the United Kingdom: Post-World War II
- MUSIC 2U03 - Jazz
- ORIGINS 3F03
- PEACEST 2AA3
- PEACEST 2J03
- PEACEST 2JJ3
- PEACEST 3A03
- PEACEST 3E06 A/B
- PEACEST 4GG3
- PHILOS 3I03 - Philosophy and Feminism
- POLSCI 3G03 - Ethnicity and Multiculturalism: Theory and Practice
- SOCWORK 4C03 - Critical Perspectives on Race, Racialization, Racism and Colonialism in Canadian Society
- SOCWORK 4U03 - Immigration, Settlement and Social Work
- SOCIOL 2E06 A/B
- SOCIOL 2FF3 - The Sociology of 'Race' and Ethnicity
- SOCIOL 3Z03 - Ethnic Relations
- SOCIOL 4A03 - Ethnic/Racial Tensions
- WOMENST 1A03 - Women, Culture, Power
- WOMENST 3G03
- WOMENST 3H03

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## INTERDISCIPLINARY MINOR IN ARCHAEOLOGY

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### COORDINATOR

Spencer Pope (*Classics*)

### COMMITTEE OF INSTRUCTION

Martin Beckmann (*Classics*)

Joe Boyce (*Geography and Earth Sciences*)

Aubrey Cannon (*Anthropology*)

Tristan Carter (*Anthropology*)

Michele George (*Classics*)

Shanti Morell-Hart (*Anthropology*)

Hendrik Poinar (*Anthropology*)

Spencer Pope (*Classics*)

Tracy Prowse (*Anthropology*)

Eduard Reinhardt (*Geography and Earth Sciences*)

Andrew Roddick (*Anthropology*)

Henry Schwarcz (*Geography and Earth Sciences*)

The Interdisciplinary Minor in Archaeology is based on archaeology and archaeology-related courses offered in the School of Earth, Environment & Society, and in the Departments of Classics and Anthropology. It requires students to gain knowledge and understanding of a broad range of arts and sciences relevant to the practice of archaeology, but also permits students the flexibility to specialize in topics of particular interest within related disciplines. Students planning a minor in Archaeology may wish to take CLASSICS 1M03 - History of Greece and Rome.

### COURSE LIST

- ANTHROP 2BB3 - Ancient Mesoamerica: Aztecs to Zapotecs
- ANTHROP 2C03 - Archaeology of Environmental Crisis and Response
- ANTHROP 2FF3 - Human Skeletal Biology and Bioarchaeology
- ANTHROP 2003 - Themes in the Archaeological History of North America
- ANTHROP 2PA3 - Introduction to Anthropological Archaeology
- ANTHROP 2PC3 - Aliens, Curses and Nazis: Archaeology and Hollywood
- ANTHROP 2RP3 - Religion and Power in the Past
- ANTHROP 2WA3 - Neanderthals to Pyramids: Introduction to World Archaeology
- ANTHROP 3AS3 - Archaeology and Society
- ANTHROP 3BB3 - Ancient Agriculture to Criminal Investigations: Paleoethnobotany in Practice
- ANTHROP 3BF3 - Bioarchaeological Field School
- ANTHROP 3CA3 - Ceramic Analysis
- ANTHROP 3CC6 - Archaeological Field School
- ANTHROP 3DD3 - Archaeology of Death
- ANTHROP 3E03 - Special Topics in Archaeology I
- ANTHROP 3EE3 - Special Topics in Archaeology II
- ANTHROP 3EM3 - Current Debates in Eastern Mediterranean Prehistory
- ANTHROP 3FF3 - Key Debates In Andean Archaeology
- ANTHROP 3K03 - Archaeological Interpretation
- ANTHROP 3LA3 - Lithics Analysis
- ANTHROP 3PP3 - Paleopathology
- ANTHROP 3X03 - Zooarchaeology
- ANTHROP 4AA3 - Materiality, Matter and Social Lives
- ANTHROP 4E03 - Advanced Topics in Archaeology I
- ANTHROP 4F03 - Current Debates in Archaeology
- ANTHROP 4HF3 - Archaeology of Hunter-Fisher-Gatherers
- ANTHROP 4HH3 - Archaeologies of Space and Place
- ANTHROP 4R03 - Advanced Bioarchaeology and Skeletal Biology
- CLASSICS 1A03 - Introduction to Classical Archaeology
- CLASSICS 2B03 - Greek Art
- CLASSICS 2C03 - Roman Art
- CLASSICS 3MA3 (*no longer offered*)
- CLASSICS 3Q03 - Greek Sanctuaries
- CLASSICS 3S03 - Pompeii, Herculaneum, and Ostia
- EARTHSC 1G03 - Earth and the Environment
- EARTHSC 2B03
- EARTHSC 2E03 - Earth History
- EARTHSC 2GG3 - Natural Disasters



- EARTHSC 2GI3
- EARTHSC 3CC3 - Earth's Changing Climate
- EARTHSC 3E03 - Clastic Sedimentary Environments
- EARTHSC 3GI3
- EARTHSC 3P03
- EARTHSC 3V03
- EARTHSC 4E03
- EARTHSC 4FF3 - Topics of Field Research
- EARTHSC 4G03 - Glacial Sediments and Environments
- ENVIRSC 2B03 - Soils and the Environment
- ENVSOCTY 2GI3 - Geographic Information Systems
- ENVSOCTY 3GI3 - Advanced Raster GIS
- GEOG 2GI3
- GEOG 3GI3
- INDIGST 2B03 - History of Indigenous Peoples' Sovereignty

### REQUIREMENTS

24 units total

#### 3 UNITS

from

- Level I Anthropology

#### 6 UNITS

from

- ANTHROP 2PA3 - Introduction to Anthropological Archaeology
- ANTHROP 2WA3 - Neanderthals to Pyramids: Introduction to World Archaeology
- EARTHSC 1G03 - Earth and the Environment
- ENVIRSC 1G03

#### 15 UNITS

from

- Course List (see above). At least nine of the 15 units must be selected from outside the student's own department

### NOTE

Please see the *Course Listings* section for a detailed description of the above courses.

## INTERDISCIPLINARY MINOR IN COMMUNITY ENGAGEMENT

Designed to provide a foundation of knowledge and skills for participation in communities regardless of one's primary field of study, the Interdisciplinary Minor in Community Engagement allows students to deepen and expand their understanding of communities and develop skills for principled and effective engagement. The interdisciplinary nature of the minor allows for a broad knowledge base from which to establish relationships with a range of communities both locally and globally. Students are required to take CMTYENGA 2A03 and 21 additional units from the three course lists below, selected from two or more Faculties. To ensure a mixture of theoretical and experiential courses, students must take a minimum of six units from Course List A (courses that focus on theory) and a minimum of six units from Course List B (courses that provide the student with relevant experiential learning) and/or Course List C (capstone courses that involve an advanced community-engaged project and/or community based research). Students are strongly encouraged to take courses from Course List C. More information about Community Engagement can be found at <http://community.mcmaster.ca>.

### COURSE LIST A (THEORY COURSES)

- ANTHROP 1AB3 - Introduction to Anthropology: Race, Religion, and Conflict
- ANTHROP 2MA3 - Media, Art and Anthropology
- ANTHROP 3F03 - Anthropology and the 'Other'
- ANTHROP 3PH3 - Dissent, Power and History
- ANTHROP 3Y03 - Indigenous Community Health and Wellbeing

- ANTHROP 4D03 - Practicing Anthropology: Ethics, Theory, Engagement
- CIVENG 2I03 - Communications in Civil Engineering
- COMMERCE 1B03 - Business Environment & Organization
- ENGLISH 4QA3 - Queerness in the Archives: Lesbian and Gay Writing, Art and Activism in Canada, 1969-1989
- ENVSOCTY 1HA3 - Society, Culture and Environment
- ENVSOCTY 1HB3 - Population, Cities and Development
- ENVSOCTY 2TS3 - Society and Space
- ENVSOCTY 2UI3 - The Urban Experience
- ENVSOCTY 3UR3 - Urban Social Geography
- ENVSOCTY 3UW3 - Cities of the Developing World
- ENVSOCTY 4HD3 - Disability, Society and Environment
- GEOG 1HA3
- GEOG 1HB3
- GEOG 2TS3
- GEOG 2UI3
- GEOG 3UR3
- GEOG 3UW3
- GEOG 4HD3
- HISTORY 4MM3 - White Supremacists and Human Rights Activists in Modern Canadian History
- HLTHAGE 1BB3 - Introduction to Aging and Society
- HLTHAGE 1CC3 - Introduction to Mental Health and Illness
- HLTHAGE 2GG3 - Mental Health and Society
- HLTHAGE 3AA3 - State, Civil Society and Health
- HLTHAGE 3D03 - Perspectives on Disability, Chronic Illness and Aging
- HLTHAGE 3K03 - Social Determinants of Population Health in Canada
- HTHSCI 2RR3 - Introduction to the Social Determinants of Health
- HTHSCI 2T03 - Sex, Gender, & Health
- HTHSCI 3AH3 - Indigenous Health
- HTHSCI 4DM3 - Demystifying Medicine
- HTHSCI 4SS6 A/B - Group Process Practicum
- HTHSCI 4Y03 - Science, Culture and Identity
- INDIGST 1A03 - Introduction to Indigenous Studies
- INDIGST 1AA3 - Introduction to Contemporary Indigenous Studies
- INDIGST 1B03 - Reconciling What? Indigenous Relations in Canada
- INDIGST 2C03 - Current Issues in Indigenous Studies: Selected Topics
- INDIGST 2D03 - Traditional Indigenous Ecological Knowledge
- INDIGST 2K03 - Indigenous Futurisms and Wonderworks
- INDIGST 2M03 - Indigenous Research Methods and Ethics
- INDIGST 2MM3 - Indigenous Ways of Knowing: Theory
- INDIGST 3CC3 - Contemporary Indigenous Societies: Selected Topics
- INDIGST 3J03 - Government and Politics of Indigenous People
- INDIGST 3P03 - Haudenosaunee Health, Diet and Traditional Botany
- INNOVATE 1X03 - The World of Entrepreneurship
- LABRST 2G03 - Labour and Globalization
- LABRST 2J03 - Work and Racism
- LABRST 3E03 - Gender, Sexuality and Work
- LIFESCI 2A03 - Research Methods in Life Sciences
- LIFESCI 4E03 - Science & Storytelling
- MATH 2UU3 - Numbers for Life
- NURSING 4H03 - Introduction to Concepts in Global Health
- PEACEST 2A03 - Conflict Transformation: Theory and Practice
- PEACEST 2B03 - Human Rights and Social Justice
- PEACEST 3GG3 - Theories of Decolonization and Resistance
- PHILOS 2CT3 - Critical Thinking
- PHILOS 2YY3 - Ethics
- PHILOS 4YY3 - Topics in Ethics
- POLSCI 2F03 - Politics, Power and Influence in Canada
- POLSCI 2U03 - Public Policy and Administration
- POLSCI 3F03

- POLSCI 3FG3 - Public Service Leadership
- POLSCI 3V03 - Gender and Politics
- RECONCIL 1A03
- SCAR 2RD3 - Religion and Diversity
- SCICOMM 2A03 - Foundations in Science Communication
- SCICOMM 2M03 - Engaging Your World: Science for the Global Citizen
- SCICOMM 3P03 - Science Communication in Life Sciences
- SEP 4EL3 - Leading Innovation
- SOCIOLOG 1C03 - Canadian Society: Social Problems, Social Policy, and the Law
- SOCIOLOG 1Z03 - An Introduction to Sociology
- SOCIOLOG 2RR3 - Case Studies of Social Inequality
- SOCIOLOG 3Z03 - Ethnic Relations
- SOCIOLOG 4E03 - Self and Identity
- SOCIOLOG 4QQ3 - Women, Sexuality and the Welfare State
- SOCIOLOG 4XX3 - Sociology of At-Risk Youth
- SOCWORK 1AA3 - So You Think You Can Help? Introduction to Social Work I
- SOCWORK 1BB3 - Re-Imagining Help: Introduction to Social Work II
- SOCWORK 3O03 - Social Work and Sexualities
- SOCWORK 3T03 - Poverty and Homelessness
- SOCWORK 3S03 - Social Work, Disability and Dis/Ableism
- SOCWORK 4C03 - Critical Perspectives on Race, Racialization, Racism and Colonialism in Canadian Society
- SOCWORK 4J03 - Social Change: Social Movements and Advocacy

#### **COURSE LIST B (EXPERIENTIAL COURSES)**

- ART 3FW3 - Field Work: On-Site Explorations
- BIOLOGY 3EP3 A/B S - Applied Biology Placement
- CHEM 3EP3 A/B S - Advanced Chemistry Placement
- CHEMBIO 3EP3 A/B S - Advanced Chemical Biology Placement
- CMTYENGA 2MC3 - Design and Creation of Engaged Learning for Community Youth
- CMTYENGA 2MD3 - Community-based Learning with McMaster Children and Youth University
- CMTYENGA 3A03 - The Art of Change
- COMMERCE 4EL3 - Experiential Learning in Business
- COMMERCE 4MG3 - Strategic Philanthropy and Leadership
- COMMERCE 4SG3 - Sustainability: Corporations and Society
- EARTHSC 3IN3
- EARTHSC 4IN3
- ENGINEER 3CX3 A/B - Experiential Learning in Complementary Studies
- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- ENGINEER 4EX3 A/B - Experiential Engineering Design
- ENGINEER 4IW3 - Inclusion in the Engineering Workplace
- ENVIRSC 3IN3 - Internship in Earth and Environmental Sciences
- ENVIRSC 4IN3
- ENVSOCTY 3MI3 - Internship in Environment and Society
- EXPLORE 3IE1 - Interdisciplinary Experiences
- EXPLORE 3IE2 - Interdisciplinary Experiences
- EXPLORE 3IE3 - Interdisciplinary Experiences
- EXPLORE 3IS3 - Interdisciplinary Science Field Camp
- GEOG 3MI3
- HLTHAGE 3BB3 - Field Experience
- HLTHAGE 3EE3 - The Practice of Everyday Life: Observations and Inquiry
- HLTHAGE 3G03 - Community Based Research
- HLTHAGE 4D03 - Health, Culture and Diversity
- HTHSCI 1K03 - Health Sciences in the Media
- HTHSCI 2DS3 - Global Health and the Complexities of Disease
- HTHSCI 3DD6 A/B - Engaging the City: An Introduction to Community-Based Research in Hamilton
- HTHSCI 3MH3 - Critical Examination of Mental Health

- HTHSCI 3MU3 - Music, Health, & the Community
- HTHSCI 3S03 - Communication Skills
- HTHSCI 4AC3 - Advanced Communication Skills
- HTHSCI 4D03 - Special Topics in Health Sciences
- HTHSCI 4F03 - Interdisciplinary Health & Wellness
- HTHSCI 4LD3 - Global Health Governance, Law and Politics
- HTHSCI 4PA3 - Global Health Innovation
- HTHSCI 4YY3 - Health Forum Practicum
- HTHSCI 4ZZ3 - Global Health Advocacy
- HUMAN 3CL3 - Community Leadership at McMaster
- HUMAN 3CM3 - Leadership: Cross-Cultural Mentoring Lab
- HUMAN 3LM3 - Foundations of Leadership
- HUMAN 4LM3
- HUMAN 4RM3 - Leadership: Relationship Management
- INDIGST 4L03 - Indigenous Community Research Experience
- INNOVATE 3EX3 - Experiential Learning in Innovation
- INNOVATE 3ZZ3 - Imagining and Navigating the Future
- LABRST 4A06 A/B - Labour Studies Practicum
- LIFESCI 3N03 - Human Nutritional Toxicology
- LIFESCI 3XX3 - Peer Mentoring in Science Communication
- LIFESCI 3YY3 - Peer Mentoring in Laboratory Skill Development
- LIFESCI 4Q03 - Research Seminar
- LIFESCI 4W03 - Advanced Topics in Nutrition
- LIFESCI 4X03 - The Biopsychology of Sex
- MATH 3ET3 A/B S - Mathematics Teaching Placement
- PEACEST 3P03 - Practicum: Practical Peace Building
- PEACEST 4MA3 - Forensic Archival Research in Conflict and Peace
- PEACEST 4MB3
- POLSCI 3PR3 - Practice of Politics
- POLSCI 3WP3 - Working in Politics
- PSYCH 2NF3 - Clinical Neuropsychology
- RELIGST 3RH3
- RELIGST 4AE3
- SCAR 4AE3 A/B - Academic Engagement in Society, Culture, Religion
- SCIENCE 1P03
- SCIENCE 2A03 - Peer Mentoring in Science
- SCIENCE 2P03 - Impactful Initiatives in Health
- SCIENCE 3EP3 A/B S - Applied Science Placement
- SCIENCE 3EX6 A/B S - Applied Science Placement
- SOCSCI 3EL3 - Leadership Through Experiential Learning
- SUSTAIN 1S03 - Introduction to Sustainability
- SUSTAIN 2S03 - Evaluating Problems & Sustainable Solutions
- WOMENST 1AA3 - Women Transforming the World

#### **COURSE LIST C (CAPSTONE COURSES)**

- CMTYENGA 4A06 - Semester at CityLAB: Design and Dialogue Inquiry
- CMTYENGA 4A09 - Semester at CityLAB: Applied Project Experience
- HTHSCI 3HN3 - Partnering with Hamilton Neighbourhoods for Health
- HTHSCI 4D06 A/B - Senior Project in Engaging the City
- HTHSCI 4D09 A/B - Thesis in Engaging the City
- HTHSCI 4D12 A/B - Thesis in Engaging the City
- SOCSCI 3F03 - Social Sciences in Action
- SOCSCI 4ID3
- SUSTAIN 3S03 - Implementing Sustainable Change
- SUSTAIN 3SS3 - Fostering Sustainable Communities through 100in1Day Hamilton
- SUSTAIN 4S06 A/B - Leadership in Sustainability

#### **REQUIREMENTS**

*24 units total (no more than 6 units from Level 1 courses)*

#### **3 UNITS**

- CMTYENGA 2A03 - Foundations of Community Engagement

**21 UNITS**

- Selected from two or more Faculties; must include a minimum of 6 units from *Course List A* and a minimum of 6 units from *Course List B and/or Course List C*

**NOTES**

- Please see the *Course Listings* section for a detailed description of the above courses.
- Courses that are not listed may be considered eligible for the Interdisciplinary Minor of Community Engagement if they meet the criteria of one of the three Course Lists above. Faculty, staff and/or students can submit a course for assessment to be considered as part of the Minor by contacting the Office of Community Engagement at [community@mcmaster.ca](mailto:community@mcmaster.ca).
- Students may submit a request to receive credit toward the Minor of Community Engagement if they successfully complete a course that is not listed in the course lists above but has a significant community engagement component. For example, a student taking a thesis course that normally does not require community engagement may decide to work in partnership with a community group to form the foundation of their thesis.
- CMTYENGA courses are administered by the Faculty of Social Sciences.
- It is the student's responsibility to check carefully for prerequisites, co-requisites and enrollment restrictions.
- Students are encouraged to speak to their Faculty academic advisors about Faculty-specific rules on double-counting courses for the minor.

**INTERDISCIPLINARY MINOR IN GLOBALIZATION STUDIES**

The minor in Globalization Studies provides students with the opportunity to explore the complex idea of globalization from a multi-disciplinary perspective. Students will have the opportunity to complete courses from the Social Sciences, Humanities, Health Sciences and Science faculties that cover a wide variety of themes related to globalization, and will be able to tailor their course selection according to their interests.

**NOTES**

- GLOBALZN 3A03 is strongly recommended to all students interested in pursuing a Minor in Globalization Studies.
- Students who began studies prior to September 2018 may still choose to complete the Minor under previous guidelines.

**REQUIREMENTS**

24 units total (of which no more than 6 units may be from Level 1 courses)

**3 UNITS**

from

- GLOBALZN 1A03 - Global Citizenship

**21 UNITS**

- from *Course Lists 1, 2, 3 and 4* (see below). At least 9 of these units must be selected from outside the student's own program. (See Note 1)

**THEMATIC COURSE LISTS****LIST 1 - ENVIRONMENT, SUSTAINABILITY, AND DEVELOPMENT**

- BIOLOGY 3DD3 - Communities and Ecosystems
- BIOLOGY 3HD3 - Human Disasters
- BIOLOGY 4AA3 - Conservation Biology
- EARTHSC 2WW3
- EARTHSC 3B03
- EARTHSC 3CC3 - Earth's Changing Climate
- ECON 2F03
- ECON 3H03 - International Monetary Economics
- ECON 3HH3 - International Trade
- ECON 3R03

- ECON 3T03 - Economic Development
- ENVIRSC 2EI3
- ENVIRSC 2WW3 - Water and the Environment
- ENVIRSC 3B03 - Ecosystems and Global Change
- ENVIRSC 3CC3
- ENVSOCY 1HB3 - Population, Cities and Development
- ENVSOCY 2RW3 - World Regional Geography
- ENVSOCY 2UI3 - The Urban Experience
- ENVSOCY 3EE3 - Energy and Society
- ENVSOCY 3LT3 - Transportation Geography
- ENVSOCY 3TG3 - Geographies of Globalization
- ENVSOCY 3UW3 - Cities of the Developing World
- GEOG 1HB3
- GEOG 2RW3
- GEOG 2TC3
- GEOG 2UI3
- GEOG 3EE3
- GEOG 3LT3
- GEOG 3TG3
- GEOG 3UG3
- GEOG 3UW3
- LABRST 1C03
- LABRST 2E03
- LABRST 2G03 - Labour and Globalization
- LABRST 3G03
- LABRST 3K03 - On the Move: Workers in a Global World
- LABRST 4E03
- LIFESCI 2X03 - Environmental Change and Human Health
- PEACEST 4J03
- POLSCI 2J03 - Global Political Economy
- POLSCI 2XX3 - Politics of the Developing World
- POLSCI 3EE3 - International Relations: North-South
- POLSCI 3LL3 - Development and Public Policy

**LIST 2 - PEACE, HUMAN RIGHTS, AND GLOBAL CITIZENSHIP**

- ARTSSCI 3GJ3 - Global Justice Inquiry
- BIOLOGY 4EE3 - Human Diversity and Human Nature
- GEOG 3TP3
- GLOBALZN 3A03 - Globalization, Social Justice, and Human Rights
- HISTORY 2UV3 - American Foreign Relations since 1898
- HISTORY 3XX3 - Human Rights in History
- HISTORY 4G03
- HISTORY 4JJ3 - U.S. Foreign Relations
- PEACEST 1A03 - Introduction to Peace Studies
- PEACEST 2B03 - Human Rights and Social Justice
- PEACEST 3D03 - Globalization and Peace
- PEACEST 3Y03 - Special Topics in Peace Studies
- PEACEST 3Z03
- PEACEST 4K03
- PHILOS 3N03 - Political Philosophy
- PHILOS 3P03 - Philosophies of War and Peace
- POLSCI 2H03 - Globalization and the State
- POLSCI 2I03 - Global Politics
- POLSCI 3B03 - Honours Issues in International Relations and Global Public Policy
- POLSCI 3G03 - Ethnicity and Multiculturalism: Theory and Practice
- POLSCI 3FF3
- POLSCI 3K03 - Migration and Citizenship: Canadian, Comparative and Global Perspectives
- POLSCI 3KK3 - Genocide: Sociological and Political Perspectives
- POLSCI 3LB3 - Globalization and the World Order
- POLSCI 3X03

- POLSCI 3Y03 - Democratization and Human Rights
- RELIGST 2H03
- SOCIOL 2E06
- SOCIOL 2FF3 - The Sociology of 'Race' and Ethnicity
- SOCIOL 2R03 - Perspectives on Social Inequality
- SOCIOL 2RR3 - Case Studies of Social Inequality
- SOCIOL 3KK3 - Genocide: Sociological and Political Perspectives
- SOCIOL 3Z03 - Ethnic Relations
- SOCIOL 4A03 - Ethnic/Racial Tensions

### LIST 3 - GLOBALIZATION AND CULTURE

- ANTHROP 2RP3 - Religion and Power in the Past
- ANTHROP 2WA3 - Neanderthals to Pyramids: Introduction to World Archaeology
- ANTHROP 3F03 - Anthropology and the 'Other'
- CMST 3I13 - Intellectual Property
- CMST 4D03 - International Communication
- ENGLISH 3A03 - Critical Race Studies
- ENGLISH 3R06
- ENGLISH 4RI3 - Colonialism and Resistance in Representations of Indigenous Womanhood
- ENGLISH 4RS3 - Reading, Spirituality and Cultural Politics
- ENGLISH 4WL3 - Globalization and Postcolonial Fiction
- ENVSOCY 1HA3 - Society, Culture and Environment
- GEOG 1HA3
- HISTORY 2A03 - Modern Middle Eastern Societies
- HISTORY 2NS3
- HISTORY 3UA3 - The History of the Future
- HISTORY 2EE3 - Science and Technology in World History
- HISTORY 2G03 - Modern Latin America Since 1820
- HISTORY 2JJ3 - Africa since 1800
- HISTORY 2MC3 - Modern China
- HISTORY 3CG3 - Canadians in a Global Age, 1914 to the Present
- HISTORY 4CG3
- HISTORY 4H03 - The Making of Modern China
- HTHSCI 4MS3 - The Social Lives of Molecules
- HTHSCI 4Y03 - Science, Culture and Identity
- PEACEST 2C03 - Peace and Popular Culture
- PHILOS 2G03 - Social and Political Issues
- PHILOS 4F03 - Issues in Continental Philosophy
- RELIGST 1B03
- RELIGST 2Q03
- RELIGST 2TA3
- RELIGST 3C03
- SCAR 1B03 - What on Earth is Religion?
- SCAR 2Q03 - Introduction to Islam
- SCAR 3C03 - Islam in the Modern World
- SCAR 2TA3 - Islam in North America
- SOCIOL 3U03 - Sociology of Sexualities
- SOCIOL 4UU3 - Global Family and Sexual Politics

### LIST 4 - GLOBALIZATION AND HEALTH

- ANTHROP 2U03 - Plagues and People
- ANTHROP 3C03 - Health and Environment: Anthropological Approaches
- ANTHROP 3HI3 - Medical Anthropology
- ANTHROP 4S03 - The Anthropology of Infectious Disease
- ECON 2CC3 - Health Economics and its Application to Health Policy
- ECON 3Z03 - Health Economics
- ENVSOCY 2HI3 - Health and Place
- ENVSOCY 3HP3 - Population, Health and Aging
- ENVSOCY 4HH3 - Environment and Health
- GEOG 2HI3
- GEOG 3HP3

- GEOG 4HH3
- HLTHAGE 3R03 - Health Inequalities
- HLTHAGE 4D03 - Health, Culture and Diversity
- HLTHAGE 4G03 - Global Health
- HTHSCI 2DS3 - Global Health and the Complexities of Disease
- HTHSCI 3AH3 - Indigenous Health
- HTHSCI 3L03 - Introduction to Bioethics
- HTHSCI 4LD3 - Global Health Governance, Law and Politics
- HTHSCI 4PA3 - Global Health Innovation
- HTHSCI 4TE3 - The Teaching Hospital
- HTHSCI 4YY3 - Health Forum Practicum
- HTHSCI 4ZZ3 - Global Health Advocacy
- INDIGST 3H03 - Indigenous Medicine I - Philosophy
- INDIGST 3HH3 - Indigenous Medicine II - Practical
- PEACEST 3B03 - Peace-Building and Health Initiatives
- PEACEST 4G03 - Peace Through Health: Praxis
- PEACEST 4L03 - Peace, Environment and Health
- PHILOS 2D03 - Bioethics (or RELIGST 2C03)
- POLSCI 4RR3 - Health Policy in the Industrialized World
- RELIGST 2M03
- SCAR 3GH3 - Interdisciplinary Global Health Field Course: Maternal and Infant Health in Morocco
- SCAR 2M03 - Death and Dying: Comparative Views

Please see the *Course Listings* section for a detailed description of the above courses. For additional information, please contact [globalhc@mcmaster.ca](mailto:globalhc@mcmaster.ca) or extension 27556.

## INTERDISCIPLINARY MINOR IN JEWISH STUDIES

Jewish Studies is an international, multidisciplinary field devoted to the study of Judaism, Jewish history, thought, culture and community. The Minor in Jewish Studies is open to all students registered in a four- or five-level program in any Faculty. Students will be required to complete a minimum of 24 units from the lists below. At least 12 of these units will be taken from List A, comprised of courses focusing directly on an area of Jewish Studies. Students are urged to take at least six units of Hebrew language as part of their List A requirements. A minimum of six units will be taken from List B, comprised of courses which provide crucial background for understanding important issues in Jewish Studies. Students are also encouraged to engage in a year of study in Israel, normally done in the third year of a four-year program. Details are available through the Department of Religious Studies, University Hall, Room 123, ext. 23109, or the Office of International Affairs, Alumni Memorial Hall, Room 203.

Students wishing to pursue a Minor in Jewish Studies may obtain more information from the Jewish Studies Minor Area Coordinator in the Department of Religious Studies, University Hall, Room 123.

### LIST A

- HEBREW 2A03 - Introduction to Biblical Hebrew I
- HEBREW 2B03 - Introduction to Biblical Hebrew II
- HEBREW 3A03 - Intermediate Hebrew I
- HEBREW 3B03 - Intermediate Hebrew II
- HISTORY 2X03
- HISTORY 3DD3 - Jews and Jesus
- HISTORY 3ZZ3 - Judaism in the Modern World
- PHILOS 2JP3
- RELIGST 1AB3
- RELIGST 1L03
- RELIGST 2B03
- RELIGST 2DD3
- RELIGST 2EE3
- RELIGST 2HB3



- RELIGST 2J03
- RELIGST 2VV3
- RELIGST 2X03
- REGLIST 2YY3
- RELIGST 3DD3
- RELIGST 3GG3
- RELIGST 3J03
- RELIGST 3JB3
- RELIGST 3K03
- RELIGST 3M03
- RELIGST 3R03
- RELIGST 3ZZ3
- SCAR 2AM3 - Abraham in Judaism, Christianity, and Islam
- SCAR 2EE3 - Prophets of the Bible
- SCAR 2HB3 - From Creation to Exile
- SCAR 2HC3 - Introduction to Biblical Hebrew I
- SCAR 2HD3 - Introduction to Biblical Hebrew II
- SCAR 2J03 - Introduction To Judaism
- SCAR 2VV3 - The Bible as Literature
- SCAR 2YY3 - The Bible and Film
- SCAR 3BW3 - Women in the Biblical Tradition
- SCAR 3DD3 - Jews and Jesus
- SCAR 3EP3 - Jewish Ethics and Politics
- SCAR 3JF3 - Jewish Life Through Film
- SCAR 3R03 - Death and the Afterlife in Early Judaism and Christianity
- SCAR 3RB3 - Ethnicity, Race, and the Bible
- SCAR 3ZZ3 - Judaism in the Modern World

**LIST B**

- ANTHROP 3G03 - Comparative Mythology
- ANTHROP 3H03
- CLASSICS 2P03
- HISTORY 3I03 - The International Relations of the European Powers, 1870-1945
- PHILOS 2P03 - Ancient Greek Philosophy
- PHILOS 2D03 - Bioethics
- PHILOS 3H03
- PHILOS 3VV3 - Kant
- PHILOS 3YY3 - Hegel
- POLSCI 3AA3
- POLSCI 3KK3 - Genocide: Sociological and Political Perspectives
- POLSCI 4D06 A/B - International Politics
- RELIGST 2C03
- SOCWORK 4C03 - Critical Perspectives on Race, Racialization, Racism and Colonialism in Canadian Society
- SOCWORK 4J03 - Social Change: Social Movements and Advocacy
- SOCIOLOG 2E06 A/B
- SOCIOLOG 2FF3 - The Sociology of 'Race' and Ethnicity
- SOCIOLOG 3KK3 - Genocide: Sociological and Political Perspectives
- SOCIOLOG 3Z03 - Ethnic Relations

**NOTE**

Please see the *Course Listings* section for a detailed description of the above courses.

**INTERDISCIPLINARY MINOR IN MUSLIM STUDIES**

The minor in Muslim Studies provides the opportunity to study Muslim beliefs, practices, thought, and history in a variety of geographic locales and timeframes.

Students are required to complete 24 units in total for the minor. A minimum of six units are required from list A, which includes courses focused wholly

on Muslims and Islam. A minimum of six units are required from list B, which includes courses in which the study of Muslims and Islam comprise one part of the course material. The remaining units are to be taken from list A, B, or C, which includes courses that provide key background for understanding Islamic history and Muslims in wider contexts. It is the student's responsibility to check carefully for prerequisites, co-requisites and enrolment restrictions for all courses on these lists.

**REQUIREMENTS**

24 units total

**A MINIMUM OF 6 UNITS FROM LIST A:**

- RELIGST 2Q03
- RELIGST 2TA3
- RELIGST 3C03
- RELIGST 3FA3
- RELIGST 4SR3 (or SOCIOLOG 4SR3)
- SCAR 2Q03 - Introduction to Islam
- SCAR 2TA3 - Islam in North America
- SCAR 3C03 - Islam in the Modern World

**A MINIMUM OF 6 UNITS FROM LIST B:**

- ARTHIST 2Y03 - Early Islamic Art to the Middle Ages
- HISTORY 2A03 - Modern Middle Eastern Societies
- HISTORY 2HH3 - Pirates, Pilgrims and Slaves in the Mediterranean, 1450-1750 (or SCAR 2FF3)
- SCAR 3GH3 - Interdisciplinary Global Health Field Course: Maternal and Infant Health in Morocco (or ANTHROP 3GH3) in combination with ARABIC 3GH3

**LIST C**

- CMST 3RR3 - Race, Religion and Media
- CMST 4D03 - International Communication
- ENGLISH 3R06 A/B
- HISTORY 1CC3 - The Rise of Empires, 500-1950
- HISTORY 2J03 - Africa up to 1800
- HISTORY 2JJ3 - Africa since 1800
- PEACEST 3B03 - Peace-Building and Health Initiatives
- PEACEST 3D03 - Globalization and Peace
- RELIGST 1B03
- RELIGST 1B06A/B
- RELIGST 2DD3
- RELIGST 2M03
- RELIGST 2RN3
- RELIGST 2WW3
- RELIGST 3AR3 (or ANTHROP 3AR3)
- RELIGST 3CC3 (or POLSCI 3LA3)
- RELIGST 3EE3 (or ANTHROP 3SS3)
- RELIGST 3F03
- RELIGST 3FF3 (or WOMENST 3FF3)
- RELIGST 3RH3
- SCAR 1B03 - What on Earth is Religion?
- SCAR 2M03 - Death and Dying: Comparative Views
- SCAR 2RN3 - Religion in the News
- SCAR 2WW3 - Health, Healing and Religion: Western Perspectives
- SCAR 2WX3 - Health, Healing and Religion: Comparative Views
- SCAR 3AR3 - Culture and Religion (or ANTHROP 3AR3)
- SCAR 3CC3 - Religion and Politics (or POLSCI 3LA3)
- SCAR 3EE3 - Sacred Journeys (or ANTHROP 3SS3)
- SCAR 3F03 - Approaches to the Study of Religion
- SCAR 3FF3 - Gender and Religion
- SCAR 3X03 - Mysticism
- SOCIOLOG 2DD3 - Immigration and the Canadian Mosaic
- SOCIOLOG 2FF3 - The Sociology of 'Race' and Ethnicity (or WOMENST 3FF3)
- SOCIOLOG 3Z03 - Ethnic Relations

## INTERDISCIPLINARY MINOR IN SOCIAL JUSTICE AND INCLUSIVE COMMUNITIES

The minor in Social Justice and Inclusive Communities provides students with the opportunity to understand structures and processes underlying social marginalization, and to explore the range of ways people and communities work to bring about social justice, equity, and inclusion.

Students will complete courses from the Faculties of Science, Social Sciences and Humanities that address these themes and they will be able to select courses based on their own specific interests.

Students should note that this minor is not accredited by the Canadian Association for Social Work Education and it is not a social work credential. It is the student's responsibility to check carefully for prerequisites, co-requisites and enrolment restrictions of all courses in this list. Students are encouraged to speak to their Faculty academic advisors about Faculty-specific rules about double-counting courses for the minor.

### REQUIREMENTS

24 units total

#### 3 UNITS

From

- SOCWORK 1AA3 - So You Think You Can Help? Introduction to Social Work I
- SOCWORK 1BB3 - Re-Imagining Help: Introduction to Social Work II

#### 3 UNITS

From

- SOCWORK 1AA3 - So You Think You Can Help? Introduction to Social Work I
- SOCWORK 1BB3 - Re-Imagining Help: Introduction to Social Work II
- ANTHROP 1AB3 - Introduction to Anthropology: Race, Religion, and Conflict
- INDIGST 1A03 - Introduction to Indigenous Studies
- INDIGST 1AA3 - Introduction to Contemporary Indigenous Studies
- PEACEST 1A03 - Introduction to Peace Studies
- SOCIOLOG 1C03 - Canadian Society: Social Problems, Social Policy, and the Law
- WOMENST 1A03 - Women, Culture, Power

#### 18 UNITS

from

- *Course List (see below)*

### COURSE LIST

- ANTHROP 3F03 - Anthropology and the 'Other'
- ANTHROP 3Y03 - Indigenous Community Health and Wellbeing
- GEOG 4HD3
- GEOG 4UF3
- ENVSOCY 4HD3 - Disability, Society and Environment
- ENVSOCY 4UF3 - The Geography of Gender
- HLTHAGE 2G03
- HLTHAGE 2GG3 - Mental Health and Society
- HLTHAGE 3D03 - Perspectives on Disability, Chronic Illness and Aging
- HLTHAGE 3E03 - Ethical Issues in Health and Aging
- HLTHAGE 3R03 - Health Inequalities
- HLTHAGE 3YY3 - Indigenous Community Health and Wellbeing
- HISTORY 2EN3 - Caribbean History
- HISTORY 3N03 - Poverty, Privilege and Protest in Canadian History
- HISTORY 3WW3 - Women in Canada and the U.S. from 1920
- HISTORY 3XX3 - Human Rights in History
- INDIGST 2F03 - Residential Schools in Canada: History and Impact
- INDIGST 3J03 - Government and Politics of Indigenous People
- INDIGST 3K03 - Indigenous Human Rights

- INDIGST 3N03 - Indigenous Women: Land, Rights, and Politics
- LABRST 2W03 - Human Rights and Social Justice
- PEACEST 2B03 - Human Rights and Social Justice
- PEACEST 3HH3
- PHILOS 2G03 - Social and Political Issues
- PHILOS 2YY3 - Ethics
- POLSCI 2C03 - Force and Fear, Crime and Punishment
- POLSCI 2XX3 - Politics of the Developing World
- POLSCI 3F03
- POLSCI 3K03 - Migration and Citizenship: Canadian, Comparative and Global Perspectives
- POLSCI 3PB3 - Politics from Below
- POLSCI 3V03 - Gender and Politics
- POLSCI 3Y03 - Democratization and Human Rights
- POLSCI 4Y03 - Domination and Decolonization
- RELIGST 2C03
- RELIGST 2RD3
- SCAR 2RD3 - Religion and Diversity
- SOCWORK 3B03 - Transnational Lives in a Globalizing World
- SOCWORK 3O03 - Social Work and Sexualities
- SOCWORK 3S03 - Social Work, Disability and Dis/Ableism
- SOCWORK 3T03 - Poverty and Homelessness
- SOCWORK 4C03 - Critical Perspectives on Race, Racialization, Racism and Colonialism in Canadian Society
- SOCWORK 4I03
- SOCWORK 4R03 - Feminist Approaches to Social Work and Social Justice
- SOCWORK 4U03 - Immigration, Settlement and Social Work
- SOCWORK 4Y03 - Critical Issues in Mental Health & Addiction: Mad & Critical Disability Studies Perspectives for SW
- SOCIOLOG 2EE3 - Introduction to Indigenous-Settler Relations in Canada
- SOCIOLOG 2FF3 - The Sociology of 'Race' and Ethnicity
- SOCIOLOG 2HH3 - Sociology of Gender
- SOCIOLOG 2JJ3 - Race, Class, Gender, and Sexuality
- SOCIOLOG 2R03 - Perspectives on Social Inequality
- SOCIOLOG 2RR3 - Case Studies of Social Inequality
- SOCIOLOG 3MM3 - Political Sociology
- SOCIOLOG 3NN3 - Popular Culture and Inequality
- SOCIOLOG 3U03 - Sociology of Sexualities
- SOCIOLOG 4DD3 - Social Movements and Social Change
- WOMENST 2AA3 - Introduction to Feminist Thought
- WOMENST 3BB3 - Women and Visual Culture

### NOTE:

Please see the *Course Listings* section for a detailed description of the above courses.

## INTERDISCIPLINARY MINOR IN SUSTAINABILITY

Addressing sustainability in our society poses complex challenges that require interdisciplinary solutions. Sustainability is frequently taught in silos within individual Faculties, and most often within individual and isolated courses. The goal of the Minor is to alter this pedagogy and teach sustainability both within and across Faculties. The Minor provides a path for students to study diverse aspects of sustainability from different disciplines and integrate them into a cohesive whole. The primary responsibility for governance of the Minor is held by the Interdisciplinary Minor in Sustainability Committee comprised of an interdisciplinary group of faculty and administrators from the Faculties of Business, Engineering, Health Sciences, Humanities, Science, Social Sciences, and the Arts & Science Program. The Arts & Science Program hosts the Minor by managing administrative obligations such as the submission of curricular revisions. Responsibility for advising students rests with the student's home

Faculty.

More information on the Interdisciplinary Minor in Sustainability can be found on the Course Substitution template web page or by contacting [asp@mcmaster.ca](mailto:asp@mcmaster.ca).

#### COURSE LIST

- ANTHROP 2AN3 - The Anthropology of Food and Nutrition
- ANTHROP 2C03 - Archaeology of Environmental Crisis and Response
- ANTHROP 3C03 - Health and Environment: Anthropological Approaches
- ANTHROP 3Y03 - Indigenous Community Health and Wellbeing
- ANTHROP 4CP3 - Cultural Politics of Food and Eating
- ARTSSCI 3GJ3 - Global Justice Inquiry
- ARTSSCI 4CA3
- ARTSSCI 4CK3
- ARTSSCI 4CM3
- ARTSSCI 4EP3 - Environmental Policy Inquiry
- ART 2ER3 - Environmentally Responsible Art
- CHEM 3I03 - Industrial Chemistry
- CHEMENG 4A03 - Energy Systems Engineering
- CMST 4P03 - Social Activism and the Media
- CMTYENGA 2A03 - Foundations of Community Engagement
- COMMERCE 1B03 - Business Environment & Organization
- COMMERCE 1E03 - Business Environment and Organization
- COMMERCE 2SB3
- COMMERCE 4BL3 - Occupational Health and Safety Management
- COMMERCE 4BM3 - Strategic Human Resource Planning
- COMMERCE 4ID3
- COMMERCE 4MG3 - Strategic Philanthropy and Leadership
- COMMERCE 4SG3 - Sustainability: Corporations and Society
- CSCT 2Z03
- EARTHSC 2GG3 - Natural Disasters
- EARTHSC 2WW3
- EARTHSC 2EI3
- EARTHSC 4EA3
- ECON 2J03 - Environmental Economics
- ECON 3W03 - Natural Resources
- ENGINEER 4A03 - Ethics, Equity and Law in Engineering
- ENGINEER 4ID3
- ENGLISH 1H03 - Words in Place
- ENGLISH 2Z03 - Nature, Literature, Culture: Introduction to the Environmental Humanities
- ENGLISH 4E03 - Literature, Culture and the Anthropocene
- ENGPYHS 3D03 - Principles of Nuclear Engineering
- ENGPYHS 3ES3 - Introduction to Energy Systems
- ENGPYHS 4X03 - Introduction to Photovoltaics
- ENGSOCTY 2X03 - Inquiry in an Engineering Context I
- ENGSOCTY 3Z03 - Preventive Engineering: Environmental Perspectives
- ENVIRSC 1B03
- ENVIRSC 1C03 - Climate, Water And Environment
- ENVIRSC 2EI3
- ENVIRSC 2WW3 - Water and the Environment
- ENVIRSC 3EE3
- ENVIRSC 4EA3 - Environmental Assessment
- ENVIRSC 4HH3
- ENVSOCYTY 1HA3 - Society, Culture and Environment
- ENVSOCYTY 1HB3 - Population, Cities and Development
- ENVSOCYTY 2EI3 - Environment & Society: Challenges and Solutions
- ENVSOCYTY 2UI3 - The Urban Experience
- ENVSOCYTY 3EC3 - Environmental Catastrophes
- ENVSOCYTY 3EE3 - Energy and Society
- ENVSOCYTY 3ER3 - Sustainability and the Economy
- ENVSOCYTY 3UP3 - Urban Planning
- ENVSOCYTY 4EA3 - Environmental Assessment
- ENVSOCYTY 4HH3 - Environment and Health
- GEOG 1HA3
- GEOG 1HB3
- GEOG 2EI3
- GEOG 2UI3
- GEOG 3EC3
- GEOG 3EE3
- GEOG 3ER3
- GEOG 3UP3
- GEOG 4EA3
- GEOG 4HH3
- GLOBALZN 1A03 - Global Citizenship
- HLTHAGE 4M03 - Environment and Health
- HISTORY 2EH3
- HISTORY 3CH3 - Catastrophic History: Natural & Technological Disasters
- HISTORY 3UA3 - The History of the Future
- HISTORY 4K03 - Environment and Environmentalism in Modern North America
- HTHSCI 3AH3 - Indigenous Health
- HTHSCI 4LD3 - Global Health Governance, Law and Politics
- HTHSCI 4PA3 - Global Health Innovation
- HTHSCI 4ZZ3 - Global Health Advocacy
- INDIGST 2D03 - Traditional Indigenous Ecological Knowledge
- LIFESCI 2H03
- LIFESCI 2X03 - Environmental Change and Human Health
- LIFESCI 3D03
- LIFESCI 3H03
- LIFESCI 4F03 - Emerging Paradigms in Environmental Change and Health
- MATLS 4I03 - Sustainable Manufacturing Processes
- MECHENG 4004 - Sustainable Energy Systems
- PEACEST 1A03 - Introduction to Peace Studies
- PEACEST 3D03 - Globalization and Peace
- PEACEST 4G03 - Peace Through Health: Praxis
- PEACEST 4L03 - Peace, Environment and Health
- PEACEST 4FC3 - Experiential Learning, Theory and Practice
- PEACEST 4J03 - International Law, Peace and Ecology
- PHILOS 2N03 - Business Ethics
- PHILOS 3L03 - Environmental Philosophy
- POLSCI 3GC3 - Global Climate Change
- RELIGST 2W03
- SCICOMM 2M03 - Engaging Your World: Science for the Global Citizen
- SEP 4A03
- SEP 4EL3 - Leading Innovation
- SEP 4X03 - Livable Cities, the Built and Natural Environment
- SOCSCI 4ID3
- SUSTAIN 1S03 - Introduction to Sustainability
- SUSTAIN 2S03 - Evaluating Problems & Sustainable Solutions
- SUSTAIN 3S03 - Implementing Sustainable Change
- SUSTAIN 3SS3 - Fostering Sustainable Communities through 100in1Day Hamilton
- SUSTAIN 4S06 A/B - Leadership in Sustainability

#### REQUIREMENTS

24 units total (no more than 6 units from Level 1 courses)

#### 3 UNITS

from

- SUSTAIN 1S03 - Introduction to Sustainability
- SUSTAIN 2S03 - Evaluating Problems & Sustainable Solutions
- SUSTAIN 3S03 - Implementing Sustainable Change
- SUSTAIN 4S06 A/B - Leadership in Sustainability

**21 UNITS**

from

- *Course List* (selected from two or more Faculties as outlined in the Undergraduate Course Calendar). Any cross-listed course between two or more Faculties and those of interdisciplinary programs will be counted as a course outside of the student's home Faculty. Sustain courses do not count towards units outside a student's home Faculty

**NOTES**

Please see the *Course Listings* section for a detailed description of the above courses. Student requests for course substitution can be completed using the request template and sent to Minor Committee Co-Chair Kate Whalen at [whalenk@mcmaster.ca](mailto:whalenk@mcmaster.ca). The Request for Course Substitution template can be found online.

- Students should note that not all courses listed are available each year. As well, it is the student's responsibility to check carefully for prerequisites, co-requisites and enrolment restrictions.
- Students are strongly encouraged to seek guidance from their academic advisor to ensure they are meeting all enrolment requirements, including Faculty-specific requirements for double counting courses required for a student's major.
- All courses have enrolment capacities. The Faculty cannot guarantee enrolment in courses for minors, even when prerequisites have been met.
- ENVIRSC and EARTHSC courses are administered by the Faculty of Science.
- ENVSOCY and GEOG courses are counted as Social Sciences courses.



# Course Listings

Anthropology	454	INSPIRE (Intersession)	605
Arabic	460	Integrated Science	605
Art	460	Integrated Biomedical Engineering and Health Sciences (IBEHS)	606
Art History	464	International Engagement	609
Arts & Science	468	Inuktitut	609
Astronomy	471	Italian	609
Automotive and Vehicle Tech	472	Japanese	610
Biochemistry	474	Kinesiology	610
Biology	476	Korean	615
Biomedical Discovery & Commercialization	481	Labour Studies	615
Biophysics	482	Latin	618
Biosafety	483	Life Sciences	618
Biotechnology	483	Linguistics	624
Cayuga	485	Manufacturing Technology	628
Chemical Biology	485	Materials	629
Chemical Engineering	487	Mathematics	632
Chemistry	489	McMaster English Language Development	637
Chinese	493	Mechanical Engineering	638
Civil Eng Infrastructure Tech	493	Mechatronics	642
Civil Engineering	494	Medical Physics	643
Classics	497	Medical Radiation Sciences	644
Collaborative	500	Midwifery	649
Commerce	502	Molecular Biology	650
Communication Studies	514	Mohawk	652
Community Engagement	516	Multimedia	652
Computer Engineering	517	Music	654
Computer Science	519	Music Cognition	661
Earth Sciences	523	Neuroscience	661
Economics	525	Nursing	663
Electrical Engineering	529	Ojibwe	666
Energy Engineering Tech	532	Peace Studies	667
Engineering	533	Pharmacology	669
Engineering & Society Program	535	Philosophy	670
Engineering & Management Program	535	Physics	674
Engineering Physics	536	Psychology, Neuroscience & Behaviour	677
Engineering Technology	539	Polish	680
English	542	Political Science	681
Environmental Science	549	Process Automation Technology	687
Environment & Society	551	Psychology	689
EXPLORE (Interdisciplinary Experiences)	557	Russian	694
Farsi	557	Sanskrit	694
French	557	School for Eng Practice	694
General Technology	561	Science	695
German	563	Science Communication	698
Globalization Studies	565	Smart Engineering Technology	698
Greek	565	Social Psychology	699
Health, Aging and Society	566	Social Sciences	700
Health Sciences	571	Social Work	704
Health Sciences (Engineering, Midwifery, Nursing)	582	Society, Culture, and Religion	707
Hebrew	584	Sociology	714
History	585	Software Engineering	720
Human Behaviour	592	Software Engineering Technology	723
Humanities	595	Spanish	725
IBH (Integrated Business and Humanities)	597	Statistics	725
Indigenous Studies	600	Sustainability	727
Innovation	604	Theatre & Film	728
		WHMIS	730
		Women's Studies	730

The courses listed in this section include all courses approved for the undergraduate curriculum for the 2020-2021 academic year. Not all courses in the approved curriculum will be offered during the year. Students are advised to refer to the course timetables available annually in Mosaic in March and June to determine which specific courses will be offered in the upcoming sessions.

**Note:** An **A/B** suffix appearing in a course number indicates that the course may be delivered across more than one term (see *Multi-Term Course* in the *Glossary* of this calendar). The *A/B S* suffix indicates that the course may be delivered as *either* a multi-term course or within a single term.

NEW for 2020-21:

Looking for **GEOG** (Geography) or **RELIGST** (Religious Studies) courses?

- The subject ENVSOCTY has replaced GEOG
- The subject SCAR has replaced RELIGST

Please use the revised subject area when searching for courses. Most courses use the same code but with the revised subject area (e.g. GEOG 3MA3 is now known as ENVSOCTY 3MA3).

## Anthropology

Courses in Anthropology are administered by the Department of Anthropology, Chester New Hall, Room 524, ext. 24423

<http://www.anthropology.mcmaster.ca>

### Department Notes

1. Not all Anthropology courses listed in this Calendar are taught every year. Students are advised to consult the department's webpage and the timetable which is published annually by the Registrar's Office to determine whether a course is offered.
2. Registration in all courses with a course code ending \*\* listed as independent research require prior arrangement with the instructor; otherwise, no grade will be submitted for the course. Please refer to "Undergraduate Course Offerings" on the department website for further details on our independent study courses.
3. To identify Anthropology courses by subdiscipline, students should refer to the lists of courses under *Anthropology Subfields* in the Department of Anthropology in the Faculty of Social Sciences section of this Calendar.

### ANTHROP 1AA3 - INTRODUCTION TO ANTHROPOLOGY: SEX, FOOD AND DEATH

This course examines major issues in Anthropology in contemporary and past societies from archaeological, biological, cultural and linguistic perspectives. It will focus on sex, food, illness, death and related themes.

Lectures, discussion (three hours)

See Department Note 2.

### ANTHROP 1AB3 - INTRODUCTION TO ANTHROPOLOGY: RACE, RELIGION, AND CONFLICT

This course examines major issues in Anthropology in both contemporary and past societies from archaeological, biological, cultural and linguistic perspectives. It will focus on identity, power, migration, race, and related themes.

Lectures, discussion (three hours); one term

**Antirequisite(s):** RELIGST 1R03

**Cross-list(s):** SCAR 1R03

### ANTHROP 2AN3 - THE ANTHROPOLOGY OF FOOD AND NUTRITION

An anthropological perspective on nutrition at the population level. Prehistoric, historic and contemporary human nutrition, emphasizing links with the

environment.

Lecture (two hours), tutorial (one hour); one term

**Prerequisite(s):** Three units of Level I Anthropology or HLTHAGE

1AA3 (HEALTHST 1A03); and registration in Level II or above in any program

**Cross-list(s):** HLTHAGE 2AN3

### ANTHROP 2BB3 - ANCIENT MESOAMERICA: AZTECS TO ZAPOTECAS

This course addresses the lifeways of ancient Mesoamerican societies through the material traces of daily and ritual practices, using diverse scientific methods and theoretical perspectives.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Three units of Level I Anthropology and registration in Level II or above in any program.

**Antirequisite(s):** ANTHROP 2VV3 and 2W03

### ANTHROP 2C03 - ARCHAEOLOGY OF ENVIRONMENTAL CRISIS AND RESPONSE

Examination of the influence of natural and human-induced environmental crises on long term culture histories.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Three units of Level I Anthropology and registration in Level II or above in any program

### ANTHROP 2D03 - DNA MEETS ANTHROPOLOGY

Introduction to the many uses of genetics in anthropology (modern human origins, migrations, domestication, primate conservation, primate genetics, forensics.)

Lectures and discussion (three hours); one term

**Prerequisite(s):** Three units of Level I Anthropology, registration in Level II or above in any program

### ANTHROP 2DA3 - TRADITIONAL INDIGENOUS ECOLOGICAL KNOWLEDGE

This course is a study of the ecological teachings of Indigenous peoples and of their relationships with the natural environment in historical and contemporary times.

Lectures and seminars (three hours); one term

**Prerequisite(s):** ANTHROP 1AA3 or 1AB3 or permission of the Instructor

**Cross-list(s):** ENVSOCTY 2EK3, INDIGST 2D03

*This course is administered by the Indigenous Studies Program.*

### ANTHROP 2E03 - INTRODUCTION TO BIOLOGICAL ANTHROPOLOGY

The course examines the biological and cultural basis for human variation, past and present.

Lectures (two hours), tutorial (one hour); one term

**Prerequisite(s):** Three units of Level I Anthropology and registration in Level II or above in any program

*This course is required of all students enrolled in an Honours Program in Anthropology, and is a prerequisite for advanced courses in Physical Anthropology.*

### ANTHROP 2EE3 - SPORT AND/AS RELIGION

An examination of relationships between sport and religion, including ritual aspects of sport, connections between social collectivities and sports teams, and sport as meaning-making activity.

Three hours (lecture and discussion); one term

**Antirequisite(s):** RELIGST 2SP3

**Cross-list(s):** SCAR 2SP3

### ANTHROP 2F03 - LISTENING ACROSS DIFFERENCE: AN INTRODUCTION TO CULTURAL ANTHROPOLOGY

An introduction to concepts, theories and current debates in cultural anthropology. This course is designed to prepare students for more advanced courses in social and cultural anthropology.

Lecture (two hours), tutorial (one hour); one term

**Prerequisite(s):** Three units of Level I Anthropology and registration in Level II or above in any program

This course is required of all students enrolled in an Honours Program in Anthropology, and is a prerequisite for advanced courses in Cultural Anthropology.

### ANTHROP 2FF3 - HUMAN SKELETAL BIOLOGY AND BIOARCHAEOLOGY

Study of the human skeleton (bones and dentition) for application in archaeology and forensic anthropology. Includes determination of sex, age, stature and other individual characteristics.

Lecture (2 hours), lab (1 hour); one term

**Prerequisite(s):** Registration in an Honours Anthropology program.

### ANTHROP 2G03 - READINGS IN INDO-EUROPEAN MYTH

This course will acquaint students with the myths of Ancient Greece, Ancient India, the Celts and the Norse. Other traditions may also be examined.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above in any program

### ANTHROP 2HE3 - HERITAGE, ECONOMY, AND ETHICS

This course examines the ethics and reasons for the current heritage boom. It will be of interest to students in anthropology, public history, and museum work.

Lecture and discussion (three hours); one term

**Prerequisite(s):** Three units of Level I Anthropology and registration in Level II or above in any program

### ANTHROP 2HH3 - SCIENCE, TECHNOLOGY & SOCIETY: ARCHAEOLOGICAL PERSPECTIVES

This course details the feats of engineering that gave us the pyramids, the million-year history of mining, and how elites rise with new technologies: from the wheel to steel. We locate the studies of fracture mechanics, quarrying, and smelting within a broader consideration of how engineering and technological innovations came to be, and their impact on past societies.

Lecture and discussion (three hours); one term.

**Prerequisite(s):** Registration in Level II or above in any program

### ANTHROP 2MA3 - MEDIA, ART AND ANTHROPOLOGY

This course examines the relationship between anthropology, media and art, including issues of politics, representation, modes of artistic production and circulation.

Lecture (two hours); tutorial (one hour); one term

**Prerequisite:** Three units of Level I Anthropology and registration in Level II or above in any program.

**Antirequisite:** ANTHROP 3MA3

*This course also includes experiential learning methods, e.g. in the form of museum visits; the creation of small exhibits, and so forth.*

### ANTHROP 2003 - THEMES IN THE ARCHAEOLOGICAL HISTORY OF NORTH AMERICA

An examination of the origins and development of the major indigenous cultural groups of prehistoric North America.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Three units of Anthropology and registration in Level II or above in any program. ANTHROP 2PA3 is strongly recommended.

### ANTHROP 2PA3 - INTRODUCTION TO ANTHROPOLOGICAL ARCHAEOLOGY

An introduction to the theory, methods and ethics of anthropological archaeology with a focus on specific problems in the human past.

Lectures, labs, discussion (three hours); one term

**Prerequisite(s):** Three units of Level I Anthropology and registration in Level II or above in any program

*This course is required of all students registered in an Honours Program in Anthropology.*

### ANTHROP 2PC3 - ALIENS, CURSES AND NAZIS: ARCHAEOLOGY AND HOLLYWOOD

This course uses popular representations of archaeology from Agatha Christie to Indiana Jones to critically review the discipline's practice and practitioners from past to present.

Lectures, tutorials (three hours); one term

**Prerequisite(s):** Registration in Level II or above in any program.

### ANTHROP 2R03 - RELIGION, MAGIC AND WITCHCRAFT

Selected issues in the study of religion, magic and witchcraft, science and the supernatural. Perspectives from history, psychology and sociology also will be discussed.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Three units of Level I Anthropology and registration in Level II or above in any program

**Antirequisite(s):** RELIGST 2MW3

**Cross-list(s):** SCAR 2MW3

### ANTHROP 2RP3 - RELIGION AND POWER IN THE PAST

A critical examination of the relationship between religion, political power and warfare in a sample of prehistoric and historic states and empires.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Three units of Level I Anthropology and registration in Level II or above in any program

### ANTHROP 2U03 - PLAGUES AND PEOPLE

A consideration of the role played by infectious disease in human evolution. The social and biological outcomes of major epidemics and pandemics, past and present, will be explored.

Lecture (two hours), tutorial (one hour); one term

**Prerequisite(s):** Registration in Level II or above in any program

### ANTHROP 2WA3 - NEANDERTHALS TO PYRAMIDS: INTRODUCTION TO WORLD ARCHAEOLOGY

This course introduces students to major debates in World Archaeology, including the origins of: humanity, art, first peoples of the Americas, farming, social differentiation and state-level societies. Global case studies highlight the approaches archaeologists employ in their search for answers.

Lectures, tutorials (three hours); one term

**Prerequisite(s):** Three units of Level I Anthropology and registration in Level II or above in any program.

### ANTHROP 3AR3 - CULTURE AND RELIGION

This course introduces key theorists and theories, classic and current topics, and issues of methodology and writing in the study of religion and culture. Lectures and tutorial (three hours); one term

**Prerequisite(s):** Three units of any Anthropology or Religious Studies course and registration in Level II or above

**Cross-list(s):** SCAR 3AR3

*This course is administered by the Department of Religious Studies*

### ANTHROP 3AS3 - ARCHAEOLOGY AND SOCIETY

A critical examination of the history of archaeology and the social and political implications of our understanding of the ancient human past.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Three units of Level I Anthropology

### ANTHROP 3BA3 - SPECIAL TOPICS IN BIOLOGICAL ANTHROPOLOGY

The topic varies with each instructor (e.g. one class may examine current issues on the study of the human skeleton for application in archaeology and forensic anthropology and other classes may focus on the anthropological perspective on nutrition at the population level.

Seminar (three hours); one term

**Prerequisite(s):** Registration in any program in Anthropology

### ANTHROP 3BB3 - ANCIENT AGRICULTURE TO CRIMINAL INVESTIGATIONS: PALEOETHNOBOTANY IN PRACTICE

This course trains students in laboratory methods and interpretations of botanical evidence through hands-on practice. We explore the major classes of plant remains likely to be encountered in forensic cases and archaeological sites; identify botanical residues and organize the data to make interpretable results; and address major issues within the discipline including preservation, analytical methods, sampling, collection, and interpretation.

Three hours (lectures, discussion, and lab); one term

**Prerequisite(s):** ANTHROP 2PA3; and credit or registration in WHMIS 1A00.

This requirement must be completed prior to the first lab.

### ANTHROP 3BD3 - THE BLACK DEATH

This class studies the underlying causes and consequences of the Black Death and the second plague pandemic of 1346 -1722 across Europe and Western Asia. We consider the synergistic effects that ultimately led to the 30-70% mortality from a biological and cultural/social perspective with guest lectures from leading historians, climatologists, geneticists and rodent ecologists. What were the pandemic's origins, its root causes (biological and other) and the ultimate consequences on the socio-economic fabric of Europe? We consider the ongoing epidemics in Madagascar, South America and the American Southwest.

Lecture (two hours); tutorial (one hour); one term

**Prerequisite(s):** ANTHROP 2D03 or ANTHROP 2U03

### ANTHROP 3BF3 - BIOARCHAEOLOGICAL FIELD SCHOOL

This course allows students to travel overseas to participate in the excavation of human skeletal remains. Students will develop skills in the documentation and analysis of skeletal remains and associated burial artifacts.

Offered during the Spring/Summer term only; one term

**Prerequisite(s):** Permission of the instructor

*Travel and subsistence costs are responsibility of the student.*

### ANTHROP 3C03 - HEALTH AND ENVIRONMENT: ANTHROPOLOGICAL APPROACHES

Examination of the ways in which humans alter and cope with their environment. Topics include: health inequalities, nutrition, population, urbanization, resource utilization and industrial pollution.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Three units of Level I Anthropology or HLTHAGE 1AA3 (HEALTHST 1A03), and registration in Level III or IV of any program. ANTHROP 2E03 is strongly recommended.

**Cross-list(s):** HLTHAGE 3CC3

### ANTHROP 3CA3 - CERAMIC ANALYSIS

Examination of theories and methods used by archaeologists to analyze ceramics and understand past ceramic technologies. The class will include strong hands-on and original research components.

Three hours (lectures, labs, discussion); one term

**Prerequisite(s):** ANTHROP 2PA3 and credit or registration in WHMIS 1A00.

This requirement must be completed prior to the first lab.

*Not open to students with credit in ANTHROP 3EE3, if the topic was Ceramic Analysis.*

### ANTHROP 3CC6 - ARCHAEOLOGICAL FIELD SCHOOL

Field instruction in the techniques used in the excavation of an archaeological site. The course includes hands-on instruction in manual excavation methods, mapping, field recording and laboratory analysis.

Offered during the Spring/Summer term only; one term

**Prerequisite(s):** ANTHROP 2PA3 or an equivalent course in archaeological methods and credit or registration in WHMIS 1A00. This requirement must be completed prior to the first day of field school.

*Not open to students with credit in an equivalent field school from another university.*

### ANTHROP 3DD3 - ARCHAEOLOGY OF DEATH

Archaeological analysis and interpretation of burial practices and other death-rituals.

Lectures and discussion (three hours); one term

**Prerequisite(s):** ANTHROP 2PA3

### ANTHROP 3E03 - SPECIAL TOPICS IN ARCHAEOLOGY I

Topic: TBA

The topic varies with each instructor (e.g. one class may examine Ancient Mesoamerican Cities and another focus on The Archaeology of Hierarchy.)

Lectures and discussion (three hours); one term

**Prerequisite(s):** ANTHROP 2PA3

### ANTHROP 3EE3 - SPECIAL TOPICS IN ARCHAEOLOGY II

Topic: TBA

The topic varies with each instructor (e.g. one class may examine Ancient Mesoamerican Cities and another may focus on The Archaeology of Hierarchy.)

Lectures and discussion (three hours); one term

**Prerequisite(s):** ANTHROP 2PA3



### ANTHROP 3EM3 - CURRENT DEBATES IN EASTERN MEDITERRANEAN PREHISTORY

This course provides a critical overview of developments in Eastern Mediterranean prehistory, focusing on debates of general archaeological significance, including the origins of farming, the role of exchange in driving 'social complexity' and the bases of power.

Lectures and discussion (three hours); one term

**Prerequisite(s):** ANTHROP 2PA3 or ANTHROP 2WA3

### ANTHROP 3F03 - ANTHROPOLOGY AND THE 'OTHER'

As a discipline, anthropology is effectively predicated on the notion of the 'othered'. This course asks about the constructions, representations, and political uses of the 'othered.'

Lectures, discussion (three hours); one term

**Prerequisite(s):** ANTHROP 2F03

### ANTHROP 3FA3 - FORENSIC ANTHROPOLOGY

This course examines the detection, recovery, and analysis of human remains within a medico-legal context. Students will explore the role of the forensic anthropologist in the investigation of criminal cases, human rights cases, and mass disasters.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Three units of Level I Anthropology

### ANTHROP 3FF3 - KEY DEBATES IN ANDEAN ARCHAEOLOGY

This class explores debates in Andean research, from the development of religious ideologies to the origins of social hierarchy, through archaeological, ethnohistorical and ethnographic data.

Lectures and discussion (three hours); one term

**Prerequisite(s):** ANTHROP 2PA3

**Antirequisite(s):** Not open to students with credit in ANTHROP 3E03 - Special Topics in Archaeology I if the topic was Ñawpa Pacha: Key Debates in Andean Archaeology

### ANTHROP 3G03 - COMPARATIVE MYTHOLOGY

The reconstruction of lost mythic traditions by means of comparative techniques drawn from historical linguistics. The Indo-European traditions of Eurasia will be examined.

Lectures and discussion (three hours); one term

**Prerequisite(s):** ANTHROP 2G03 or permission of the instructor

### ANTHROP 3GG3 - ANTHROPOLOGY OF CONTEMPORARY EUROPE

This course looks at the politics and cultures of contemporary Europe.

Lectures, films, discussion groups (three hours); one term.

**Prerequisite(s):** ANTHROP 1AA3 or 1AB3.

**Antirequisite(s):** ANTHRO 2CE3 Winter Term 2018

### ANTHROP 3GH3 - INTERDISCIPLINARY GLOBAL HEALTH FIELD COURSE: MATERNAL AND INFANT HEALTH IN MOROCCO

An integrated linguistic, cultural, historical, and public health field school in Morocco, with a focus on maternal and infant health, womens rights, and family.

Spring; one term

**Prerequisite(s):** Permission of the instructor

**Co-requisite(s):** ARABIC 3GH3

**Antirequisite(s):** RELIGST 3GH3

**Cross-list(s):** SCAR 3GH3

*Available as a study-abroad experience in the Spring only. This course is intended for students who are entering Level III or above in the following Fall/Winter Session. Students interested in this course must contact Dr. E. Amster by February 15 for application instructions. There is an additional cost associated with this course.*

*This course is administered by the Department of Religious Studies.*

### ANTHROP 3HH3 - GLOBALIZATION, SOCIAL JUSTICE AND HUMAN RIGHTS

This course examines competing theories, issues and debates relating to the promotion of social justice and human rights in a globalizing world. Students use course-integrated social justice and networking to interact and collaborate with peers from partner universities across the globe where versions of this course are simultaneously taught.

Lectures (three hours); one term

**Prerequisite(s):** Three units of Level I Anthropology

**Cross-list(s):** GLOBALZN 3A03

*This course is administered by the Institute on Globalization and the Human Condition.*

### ANTHROP 3HI3 - MEDICAL ANTHROPOLOGY

This course is an introduction to the sub-discipline of medical anthropology, and cultivates an understanding of the intersections between disease, health, society, bodies, culture, and global political economy.

Three hours (lectures and small and large group discussion)

**Prerequisite(s):** Registration in Level III or above of any program. ANTHROP 2E03 or 2F03 is strongly recommended.

**Antirequisite(s):** ANTHROP 3Z03, 3Z23

### ANTHROP 3IS3 - INDEPENDENT STUDY IN ANTHROPOLOGY

Independent study of a research problem through published materials and/or fieldwork. It is incumbent upon the student to secure arrangements with the supervising instructor prior to registration in this course; otherwise, no grade will be submitted.

Lectures, (three hours); one term

**Prerequisite(s):** Registration in any program in Anthropology and permission of the instructor.

*ANTHROP 3IS3 may be repeated, if on a different study, to a total of six units.*

### ANTHROP 3K03 - ARCHAEOLOGICAL INTERPRETATION

Techniques and methodologies in the investigation of archaeological material.

Lectures, labs and discussion (three hours); one term

**Prerequisite(s):** ANTHROP 2PA3

### ANTHROP 3LA3 - LITHICS ANALYSIS

A global approach to the theories and methods used by the archaeologists to analyse stone tools and the major debates surrounding these data. The class has a strong hands on and original-research component.

Lecture and lab (three hours); one term

**Prerequisite(s):** ANTHROP 2PA3; and credit or registration in WHMIS 1A00.

This requirement must be completed prior to the first lab.

*Not open to students with credit in ANTHROP 3E03, if the topic was 'Lithics Analysis.'*

### ANTHROP 3LL3 - OF BEAUTY AND VIOLENCE

What is the place of beauty in human experience and how does it find articulation in words? Using an interdisciplinary approach, this course explores the unexpected expressions and uses of beauty in a variety of social and ethnographic contexts marked by violence.

Lecture (2 hours); tutorial (1 hour); 1 term.

**Prerequisite(s):** Three units of Level I Anthropology or permission of the Instructor.

### ANTHROP 3P03 - DOING ETHNOGRAPHY: THEORY AND RESEARCH METHODS

This course introduces research methods utilized by sociocultural anthropologists and others in related disciplines, focusing throughout on the consequences of theoretical assumptions for the collection, interpretation, and presentation of ethnographic (and other) data.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in any Social Sciences program (Level II or above), or permission of the instructor

### ANTHROP 3PA3 - HAUDENOSAUNEE HEALTH, DIET AND TRADITIONAL BOTANY

Working with traditional knowledge holders, this course will explore the relationship between ethnobotany and agricultural practice to Haudenosaunee cultural beliefs and concepts of health and wellness.

Lectures (2 hours), tutorial (one hour); one term

**Prerequisite(s):** Six units of Level I or II Indigenous Studies, Mohawk or Cayuga language, or permission of the Instructor.

**Cross-list(s):** INDIGST 3P03

*This course is administered by the Indigenous Studies Program*

### ANTHROP 3PD3 - ANTHROPOLOGICAL PERSPECTIVES AND DEBATES

This course explores themes of importance to the various sub-disciplines of Anthropology. The goal is to show how varying analytical perspectives on these broad themes produce divergent views of past and present human cultures. Students are strongly encouraged to complete this course, prior to completion of Level III.

Lectures, discussion (three hours); one term

**Prerequisite(s):** Registration in an Honours Anthropology program or permission of the instructor

*This course is required of all students registered in an Honours Program in Anthropology.*

### ANTHROP 3PH3 - DISSENT, POWER AND HISTORY

This course addresses questions of power, agency, and resistance in historical and contemporary cultural contexts. Drawing on visual materials and ethnographic forms of writing, it looks at a range of issues, including nationalism, neoliberalism, democracy, and various forms of organizing.

Lectures, discussion, visual materials (three hours); one term

**Prerequisite(s):** ANTHROP 2F03

### ANTHROP 3PP3 - PALEOPATHOLOGY

The origins and evolution of human diseases and methods of identifying disease in ancient human remains.

Lectures, discussion and lab (three hours); one term

**Prerequisite(s):** ANTHROP 2FF3

### ANTHROP 3SS3 - SACRED JOURNEYS

A study of the significance of travel in various religious traditions, focusing on shrines, pilgrimages, and the inter-relationships between secular and sacred travel.

Lectures and tutorial (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** RELIGST 3EE3

**Cross-list(s):** SCAR 3EE3

*This course is administered by the Department of Religious Studies.*

### ANTHROP 3W03 - SPECIAL TOPICS IN ANTHROPOLOGY

The topic varies with each instructor (e.g. one class may examine Current Issues in Medical Anthropology and other classes may focus on Readings in Myth or Contemporary Issues in Archaeology.)

One term

**Prerequisite(s):** Registration in any program in Anthropology

*ANTHROP 3W03 may be repeated, if on a different topic, to a total of six units.*

### ANTHROP 3X03 - ZOOARCHAEOLOGY

Study of the long-term histories of human-environment interaction through analysis of archaeologically recovered animal remains.

Labs and discussion (three hours); one term

**Prerequisite(s):** ANTHROP 2PA3 and credit or registration in WHMIS 1A00; this requirement must be completed prior to the first lab

### ANTHROP 3Y03 - INDIGENOUS COMMUNITY HEALTH AND WELLBEING

A critical examination of the determinants of health in Aboriginal communities, processes of community revitalization and recent government policy initiatives. Three hours (lecture and discussion); one term

**Prerequisite(s):** Registration in Level II or above in any program

**Cross-list(s):** HLTHAGE 3YY3

### ANTHROP 4AA3 - MATERIALITY, MATTER AND SOCIAL LIVES

This course explores the relationship between humans and the material world. Lectures (three hours); one term.

**Prerequisite(s):** ANTHROP 2PA3 or permission of the instructor

**Antirequisite(s):** ANTHROP 4E03, if taken during the Winter term 2017

### ANTHROP 4AH3 - ARCHAEOLOGY AND HERITAGE: ETHICS, POLITICS, AND PRACTICE

This course will examine the ways in which archaeology is political, and how its practice and practitioners are deeply entangled with Western values and epistemologies.

Seminar (three hours); one term

**Prerequisite(s):** ANTHROP 2PA3 or permission of the instructor

*Not open to students with credit in ANTHROP 4E03 if the topic was 'Archaeology and Heritage: Ethics, Politics, and Practice.'*

### ANTHROP 4B03 - CURRENT PROBLEMS IN CULTURAL ANTHROPOLOGY I

Topic: TBA The topic varies with each instructor.

Seminar (three hours); one term

**Prerequisite(s):** Registration in Level IV Honours Anthropology or permission of the instructor

*ANTHROP 4B03 may be repeated, if on a different topic, to a total of six units.*

### ANTHROP 4BB3 - CURRENT PROBLEMS IN CULTURAL ANTHROPOLOGY II

As per ANTHROP 4B03.

Seminar (three hours); one term

**Prerequisite(s):** Registration in Level IV Honours Anthropology or permission of the instructor

*ANTHROP 4BB3 may be repeated, if on a different topic, to a total of six units.*

### ANTHROP 4CC3 - ARCHAEOLOGY OF FOODWAYS

This course addresses the deep history of particular foodways and the diversity of foodways over time, as gleaned from archaeological residues and early historic documents.

Seminar (three hours); one term

**Prerequisite(s):** ANTHROP 2PA3, or permission of the instructor

### ANTHROP 4CP3 - CULTURAL POLITICS OF FOOD AND EATING

This course focuses on food and the complex field of networks, expectations, and choices that are contested, negotiated, and often unequal.

Seminar (three hours); one term

**Prerequisite(s):** Registration in Honours Anthropology or Level IV of any Honours program or permission of the instructor

*Not open to students with credit in ANTHROP 4B03, if the topic was "Cultural Politics of Food and Eating."*

### ANTHROP 4D03 - PRACTICING ANTHROPOLOGY: ETHICS, THEORY, ENGAGEMENT

An examination of how anthropology is applied to solve human problems. Includes discussion of how students can use their anthropological training in non-academic occupations. Students may be involved in academic placements within the community.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level IV Honours Anthropology or permission of the instructor

### ANTHROP 4DD3 - ANTHROPOLOGY OF ZOMBIES AND THE UNDEAD

This course explores ethnographic and popular culture narratives of zombies and the undead through the lens of nationalism, colonialism, race, gender and other phenomena.

Seminar (3 hours); 1 term.

**Prerequisite:** Anthropology major or minor or with permission of the Instructor.

**Antirequisite:** Students who have taken ANTHROP 4B03 or 4BB3 (Special Topic: Anthropology of Zombies and the Undead) cannot enroll in this class.

### ANTHROP 4DN3 - DIET & NUTRITION: BIOCULTURAL AND BIOARCHAEOLOGICAL PERSPECTIVES

Study of diet and nutrition in past and contemporary populations using a biocultural approach. Focus on methods, interpretations of data and perspectives.

Lectures (three hours); one term

**Prerequisite(s):** ANTHROP 2AN3 or ANTHROP 2E03; registration in Level IV Honours Anthropology or permission of the instructor

**Antirequisite(s):** ANTHROP 4J03, if the topic was «Diet and Nutrition: Biocultural and Bioarchaeological Perspectives»

### ANTHROP 4E03 - ADVANCED TOPICS IN ARCHAEOLOGY I

Study at an advanced level of selected topics in the sub-discipline. Topics may change from year to year.

Seminar (three hours); one term

**Prerequisite(s):** ANTHROP 2PA3 or permission of the instructor

### ANTHROP 4EE3 - ADVANCED TOPICS IN ARCHAEOLOGY II

As per ANTHROP 4E03; but on a different topic.

Seminar (three hours); one term

**Prerequisite(s):** ANTHROP 2PA3 or permission of the instructor

### ANTHROP 4F03 - CURRENT DEBATES IN ARCHAEOLOGY

A seminar in current topics and issues in archaeological theory.

Lectures and discussion (three hours); one term

**Prerequisite(s):** ANTHROP 2PA3 or permission of the instructor

### ANTHROP 4FF3 - DIGGING THE CITY: THE ARCHAEOLOGY OF URBANISM

What is a city? What assumptions do we bring to the study of ancient cities? And how have archaeologists traced urban histories and the topographies of city spaces? This

seminar investigates the archaeology of early cities, focusing on ancient urban spaces and their relationship to our understanding of issues of the modern city. Seminar (three hours); one term

**Prerequisite(s):** ANTHROP 2PA3, or with permission of the instructor

### ANTHROP 4G03 - INDEPENDENT RESEARCH I

Independent study of a research problem through published materials and/or fieldwork. Study may include museum internship, participation in faculty research, or student-initiated practica or library research. Students will be required to write up the results of their inquiry in scholarly form. It is incumbent upon the student to secure arrangements with the supervising instructor prior to registration in this course; otherwise, no grade will be submitted.

One term

**Prerequisite(s):** Registration in any program in Anthropology or permission of the instructor

### ANTHROP 4GG3 - INDEPENDENT RESEARCH II

As per ANTHROP 4G03, but on a different topic.

One term

**Prerequisite(s):** Registration in Level IV Honours Anthropology or permission of the instructor

### ANTHROP 4GS3 - GENETICS AND SOCIETY

The word 'DNA' has perfused almost all aspects of society and culture. This class will explore the uses and misuses of DNA in politics, consumerism, ethics, forensics and the film and arts community.

Seminar (three hours); one term

**Prerequisite(s):** Registration in Level IV Honours Anthropology; or permission of the instructor

### ANTHROP 4HF3 - ARCHAEOLOGY OF HUNTER-FISHER-GATHERERS

Study of the prehistoric technologies and organizational strategies used in making a living from the natural environment and examination of the cultural contexts of foraging economies.

Seminar (three hours); one term

**Prerequisite(s):** ANTHROP 2PA3 or permission of the instructor

### ANTHROP 4HH3 - ARCHAEOLOGIES OF SPACE AND PLACE

This seminar explores how archaeologists study space, place and landscape, drawing on theoretical frameworks and global case studies from the deep past and recent history.

Three hours (seminar); one term

**Prerequisite(s):** ANTHROP 2PA3 or permission of the Instructor.

### ANTHROP 4J03 - ADVANCED TOPICS IN BIOLOGICAL ANTHROPOLOGY I

Topic: TBA

Study at an advanced level of selected topics within the subdiscipline. Topics may change from year to year.

Seminar (three hours); one term

**Prerequisite(s):** ANTHROP 2E03 or permission of the instructor

*ANTHROP 4J03 may be repeated, if on a different topic, to a total of six units.*

### ANTHROP 4JJ3 - ADVANCED TOPICS IN BIOLOGICAL ANTHROPOLOGY II

Topic: TBA

Study at an advanced level of selected topics within the subdiscipline. Topics may change from year to year.

Three hours (seminar); one term

**Prerequisite(s):** ANTHROP 2E03 or permission of the instructor

*ANTHROP 4JJ3 may be repeated, if on a different topic, to a total of six units.*

### ANTHROP 4KK3 - THE ARCHAEOLOGY OF NEANDERTHALS AND OTHER EARLY HUMANS

This seminar engages with the archaeology of our early ancestors, asking: what constitutes humanity, when did we become modern, and what became of the Neanderthals?

Three hour seminar; one term

**Prerequisite(s):** ANTHROP 2WA3 or permission of the Instructor.

### ANTHROP 4R03 - ADVANCED BIOARCHAEOLOGY AND SKELETAL BIOLOGY

The analysis of human skeletal samples, including such topics as paleopathology, paleodemography, paleonutrition and biological distance analyses.

Lectures and discussion (three hours); one term

**Prerequisite(s):** ANTHROP 2FF3 or permission of the instructor

### ANTHROP 4S03 - THE ANTHROPOLOGY OF INFECTIOUS DISEASE

The critical examination of the role of infectious diseases in the course of human history and contemporary society. Self-directed learning format.

Seminar (three hours); one term

**Prerequisite(s):** ANTHROP 2E03 and registration in Level IV Honours

Anthropology; or permission of the instructor

### ANTHROP 4SG3 - THE SECRET OF THE GIFT

This course is a story about returns, an attempt to invoke the notion of The Secret of the Gift into history, geography, economy, and culture. We are talking about the passage of time and the apparent passing of the gift economy from the European encounter and now into the neoliberal free market of a global world. The stories to follow are about the prices countless countries have to

pay for being seduced by the gift economy.

These are stories about imperialism that have been replicated in countless places all over the world.

Lectures and discussions (three hours); one term

**Prerequisite(s):** ANTHROP 2F03 or permission of the instructor

**Antirequisite(s):** ANTHROP 4B03, if taken during the Fall term in 2010

## Arabic

### ARABIC 2AA3 - INTRODUCTION TO MODERN STANDARD ARABIC

This course introduces students to the basics of the Arabic language. Students will learn the Arabic alphabet, pronunciation, verb forms, and basic grammar.

No prior knowledge of Arabic is necessary.

Lectures and tutorials (four hours); one term

**Cross-list(s):** SCAR 2AA3

**Antirequisite(s):** RELIGST 2AA3

### ARABIC 2AR3 - INTRODUCTION TO MODERN STANDARD ARABIC II

This course builds on the fundamentals covered in ARABIC 2AA3/SCAR 2AA3.

The course expands students vocabulary, reading fluency, composition skills, and knowledge of grammatical constructions.

Lectures and tutorials (four hours); one term

**Cross-list(s):** SCAR 2AR3

**Prerequisite(s):** One of ARABIC 2AA3, RELIGST 2AA3, SCAR 2AA3

**Antirequisite(s):** RELIGST 2AR3

### ARABIC 3AA3 - INTERMEDIATE MODERN STANDARD ARABIC

An intermediate course enhancing skills in modern standard Arabic through reading materials with the goal of improving comprehension in both written and spoken contexts.

**Prerequisite(s):** ARABIC 2AR3 or SCAR 2AR3 or permission of the instructor

Four hours (lectures); one term

**Cross-list(s):** SCAR 3AA3

### ARABIC 3GH3 - SPOKEN MOROCCAN ARABIC

Intensive training in spoken Moroccan Arabic through Latin transliteration and communicative method; no previous Arabic necessary. Students will learn to ask questions and understand responses, express facts and opinions, and engage in basic conversations in Moroccan Arabic.

Spring; one term

**Prerequisite(s):** Permission of the instructor

**Co-requisite(s):** ANTHROP 3GH3, HISTORY 3GH3, RELIGST 3GH3

*Available as a study abroad experience in the Spring only. This course is intended for students who are entering Level III or above in the following Fall/Winter Session. Students interested in this course must contact Dr. E.*

*Amster by February 15 for application instructions. There is an additional cost associated with this course.*

## Art

Courses in Studio Art are administered by the School of the Arts.

Togo Salmon Hall, Room 414, ext. 27671

<http://sota.humanities.mcmaster.ca/>

### Notes

1. Please note that students enrolled in the Studio Art program must be



committed to full-time study for the duration of the first two years of their degree. This program does not allow part-time enrolment.

- Many **Art** courses are open **only** to students registered in a program in Studio Art. However, the following **Art** courses **are open** to students enrolled in **any** program:
  - ART 1TI3 - Making Art and Understanding Technology & Images
  - ART 1UI3 - Making Art and Understanding Images
  - ART 2AT3 - Art Today
  - ART 2DP3 - Digital Practices
  - ART 2ER3 - Environmentally Responsible Art
  - ART 3FW3 - Field Work: On-Site Explorations
  - ART 3J03 - Concentrated Study - Collaborative Community Projects
- Studio Art courses may involve field trips off campus.
- All students taking Studio Art Courses must wear CSA approved steel-toed footwear in the studio at all times.
- Students in Honours Studio Art must complete ART 2DG3, 2IS3, 2PG3, 2PM3, 2SC3 before registering in Level III or IV Art courses.
- Students in Honours Studio Art must complete ART 3GS6 A/B before registering in Level IV Art courses.
- Students wishing to obtain a Minor in Art History should note that six, and only six, of the Art History units required in the Honours Studio Art program may be counted toward the Minor of 24 units.

### Courses

Students who wish to enroll in Level I Art courses must be registered in the Studio Art 1 program which leads into the Honours Studio Art program and a Bachelor of Fine Arts (BFA Honours) degree. The Honours Studio Art program is a limited enrolment program for which entrance requires the permission of the School of the Arts and a successful portfolio interview. The portfolio should contain a variety of works in different media that represent the applicant's creative abilities and interests. Aptitude in art, academic ability and demonstrated commitment to the discipline are considered in the selection process.

In exceptional circumstances, where distance does not allow for an interview, portfolios may be submitted in the form of electronic digital images or photographs. Portfolio interviews occur between January and April each year for entrance in September of the same calendar year. Only those students who call the Office of the School of the Arts (905-525- 9140, ext. 27671) before March 1st to book appointments for portfolio interviews will be guaranteed consideration for entrance into the Level I Art program. (Late applicants will only be interviewed if space availability permits).

### ART 1DM3 - DIMENSIONAL MATERIAL INVESTIGATIONS AND CONCEPTS

This course facilitates development of tacit knowledge, intuitive judgment, perception and theoretical understanding through direct material engagement with metals, plaster, clay, forest products, and use of fabrication technologies. Four hours; one term

**Prerequisite(s):** Registration in Studio Art 1 program

**Co-requisite(s):** WHMIS 1A00if not already completed; successful completion of WHMIS is required prior to studio work

### ART 1MI3 - MATERIAL INVESTIGATIONS AND CONCEPTS

This course is designed to facilitate development of tacit knowledge, intuitive judgment, perception and theoretical understanding through experiential engagement with two-dimensional forms including drawing, painting, printmaking, photographic and/or digital image production. Four hours; one term

**Prerequisite(s):** Registration in Studio Art 1 program

**Co-requisite(s):** WHMIS 1A00 if not already completed; successful completion of WHMIS is required prior to studio work

### ART 1OS3 - OBSERVATIONAL STUDIES

This course focuses on observation-based studio activities and development of critical perception to deepen understanding of visual information and phenomena related to art practice.

Four hours; one term

**Prerequisite(s):** Registration in Studio Art 1 program

**Co-requisite(s):** WHMIS 1A00if not already completed; successful completion of WHMIS is required prior to studio work

### ART 1SI3 - STUDIO INVESTIGATIONS

Working individually and in groups, students will be introduced to concepts, questions, research strategies and contexts related to art production. An integrated approach will combine dialogue, production and information gathering utilizing sketchbooks, digital technologies and University collections. Four hours; one term

**Prerequisite(s):** Registration in Studio Art 1 program

**Co-requisite(s):** WHMIS 1A00 if not already completed; successful completion of WHMIS is required prior to studio work

### ART 1TI3 - MAKING ART AND UNDERSTANDING TECHNOLOGY & IMAGES

Creating art utilizing a range of media, including digital tools and creative research, students will gain an understanding of art, images and cultures of technology. No previous artistic experience is required.

Three hours; one term

**Prerequisite(s):** Registration in Level I or above of any program

**Antirequisite(s):** Enrolment in or completion of MMEDIA 2B06

*Not open to students in the BFA program.*

### ART 1UI3 - MAKING ART AND UNDERSTANDING IMAGES

Utilizing sketchbooks, collage, colour exercises and creative research, students will gain widely applicable skills in manipulating and analyzing the communicative power of images. No previous artistic experience is required.

Three hours; one term

**Prerequisite(s):** Registration in Level I or above of any program

*Not open to students in the BFA program.*

### ART 2AT3 - ART TODAY

This course will introduce students to contemporary Canadian and International artists working today across a broad range of disciplines. Through lectures, class discussions, readings and independent research projects, students will explore key themes and concepts that are currently addressed in contemporary art discourse.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

### ART 2DG3 - CONTEMPORARY APPROACHES TO DRAWING

This course provides insight into the varied functions of drawing including expressive purpose, communication, information organization, idea synthesis and drawing as a form of thinking. A variety of media including graphite, charcoal, conte, wet media, collage, digital media, mixed media and hybrid approaches are included.

Four hours; one term

**Prerequisite(s):** Registration in Level II Honours Studio Art program

### ART 2DP3 - DIGITAL PRACTICES

Comprehensive introduction to digital image-making in the context of artistic and creative practice. Students will develop essential technical and conceptual skills in digital photography, video/film-making, and/or sound recording.

Limited access to equipment will be available, but students are encouraged to provide their own digital SLR cameras with manual control capabilities, and a tripod. No previous background required.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** Enrollment in or completion of MMEDIA 2B06

### ART 2ER3 - ENVIRONMENTALLY RESPONSIBLE ART

This course focuses on environmentally sustainable studio production with a comprehensive approach that promotes understanding of how materials are manufactured, why they are selected, how they are used and implications of disposal. A student-centered approach will determine media use and concepts.

Four hours; one term

Offered on a rotational basis

**Prerequisite(s):** Credit or registration in WHMIS 1A00 (successful completion of WHMIS is required prior to studio work) and registration in Level II or above of any program. Recommended for students pursuing a Minor in Sustainability.

### ART 2IS3 - INDEPENDENT STUDIO METHODS

This course focuses on self-directed studio strategies responding to concepts and questions generated by the student. Students will integrate beliefs, values and individual experience with ongoing research to guide studio production.

Four hours; one term

**Prerequisite(s):** Registration in Level II Honours Studio Art program

### ART 2PG3 - CONTEMPORARY APPROACHES TO PAINTING

This course develops pictorial thought processes through the vocabulary of painting. Balanced emphasis is placed on expanding conceptual and practical knowledge utilizing a variety of pigments, mediums, supports, tools, alternative and hybrid approaches.

Four hours; one term

**Prerequisite(s):** Registration in Level II Honours Studio Art program

### ART 2PM3 - CONTEMPORARY APPROACHES TO PRINT MEDIA

This course develops techniques and aesthetic tactics of print media utilizing woodblock, sintra, linoleum, collagraph, image transfers and embossing.

Four hours; one term

**Prerequisite(s):** Registration in Level II Honours Studio Art program

### ART 2SC3 - CONTEMPORARY APPROACHES TO SCULPTURE

This course develops spatial thought processes through the vocabulary of sculpture. Balanced emphasis is placed on expanding conceptual and practical knowledge through metal fabrication, woodworking, plaster and clay, assemblage, site-specific, time-based and hybrid practices.

Four hours; one term

**Prerequisite(s):** Registration in Level II Honours Studio Art program

### ART 3BA3 - CONCENTRATED STUDY - BOOK ARTS

This course integrates traditional techniques with contemporary concepts and applications of the artist book. Hand-made, imported and found paper will be utilized in a variety of formats responding to student-centered concepts. Sustainable practices, collaboration and exchange will be promoted.

Four hours; one term

**Prerequisite(s):** Registration in Level III or IV Honours Studio Art (B.F.A.) program

*Offered on a rotational basis. Consult the Master Timetable for offerings.*

### ART 3CC3 - CONCENTRATED STUDY - CERAMICS

Focused on contemporary applications and concepts of 2D and 3D ceramics, this course fuses traditional techniques and alternative methods incorporating a range from hand building to new technologies. Concepts are student-centered.

Four hours; one term

**Prerequisite(s):** Registration in Level II, III or IV Honours Studio Art (B.F.A.) program

*Students completing an Interdisciplinary Minor in Archaeology may be given special permission to register in this course if space is available.*

*Offered on a rotational basis. Consult the Master Timetable for offerings.*

### ART 3CE3 - COMMUNITY EXHIBITIONS

This course offers students an opportunity to propose, plan and implement an exhibition in a community venue. All aspects of exhibiting including, selection, arrangement, installation, writing an exhibition text, photo documenting, promotion and writing reviews will be addressed. Students will work in groups according to connections related to their personal interests and work.

Four hours; one term

**Prerequisite(s):** Registration in Level III or IV of an Honours program in Studio Art or Art History

### ART 3CF3 - CONCENTRATED STUDY - FOUNDRY

This course offers an in-depth investigation of foundry practices and the application of metal casting processes focused on lost-wax in bronze and sand-casting in Aluminum. Concepts are student-centered.

Four hours; one term

**Prerequisite(s):** ART 2SC3 and registration in Level III or IV Honours Studio Art (B.F.A.) program

*Offered on a rotational basis. Consult the Master Timetable for offerings.*

### ART 3CI3 - CONCENTRATED STUDY - INTAGLIO

This course focuses on intaglio processes exploring traditional and alternative approaches including hand-drawn, found impression, Estisol transfers and photographic/digital image making and etching.

Four hours; one term

**Prerequisite(s):** Registration in Level II, III or IV Honours Studio Art (B.F.A.) program

*Offered on a rotational basis. Consult the Master Timetable for offerings.*

### ART 3CL3 - CONCENTRATED STUDY - LITHOGRAPHY

This course provides concentration on lithography processes without the use of Volatile Organic Compounds. It includes stone lithography using Estisol, Computer-to-Plate photolithography using a Xante Platemaker and other planographic methods involving hand-drawn, transferred and digital applications.

Four hours; one term

**Prerequisite(s):** Registration in Level II, III or IV Honours Studio Art (B.F.A.) program

*Offered on a rotational basis. Consult the Master Timetable for offerings.*

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### ART 3D03 - PRACTICAL ISSUES

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This course is designed to familiarize students with an extensive range of topics associated with creative careers and the professional infrastructure that supports them. Students will gain experience in situating their art into community contexts.

Three hours; one term

**Prerequisite(s):** Registration in Level III of Honours Studio Art program

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### ART 3FW3 - FIELD WORK: ON-SITE EXPLORATIONS

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This course investigates the campus environment and its resources to promote the potential of place and local opportunities as they inform the production of site-based drawing and mixed-media work. This course may be offered as a concentrated week-long session (e.g. camping excursion). Extra cost will apply. One term. Consult the School of the Arts for details.

**Prerequisite(s):** Registration in Level II or above of any program and credit or registration in WHMIS 1A00

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### ART 3GS6 A/B - GUIDED STUDIO PRACTICE

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Under the guidance of a team of studio faculty, students will produce a body of independently motivated work selectively building on the knowledge base of Levels I and II. Work will be presented and discussed at open critique sessions attended by faculty, students, alumni and invited guests.

Four hours; two terms

**Prerequisite(s):** ART 2IS3 and registration in Level III of Honours Studio Art (B.F.A.) program

**Antirequisite(s):** ART 3GS3 and 3TS3

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### ART 3ID3 - INTEGRATED DIMENSIONAL MEDIA CONCENTRATION

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This course investigates points of intersection where installation, site-specific approaches, performance, time-based practice, kinetics and digital technologies interweave.

Four hours; one term

**Prerequisite(s):** Registration in Level III or IV Honours Studio Art (B.F.A.) program

*Offered on a rotational basis. Consult the Master Timetable for offerings.*

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### ART 3IM3 - INTEGRATED MEDIA CONCENTRATION

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Student-centered concepts will direct investigations where print, drawing and paint media interweave to create hybrid practices. Environmental compatible materials and processes will be promoted.

Four hours; one term

**Prerequisite(s):** Registration in Level III or IV Honours Studio Art program  
*Offered on a rotational basis. Consult the Master Timetable for offerings*

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### ART 3IP3 - MEDIA INSTALLATION AND PERFORMANCE

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Studio production course exploring interdisciplinary approaches to site-specific and site-responsive media installation and performance. Students will work individually and in groups to develop a series of projects that will focus on activation and creative/critical engagement with public spaces and architecture through sound, image and performative gestures. There will be a particular emphasis on sensitivity to the implications of site and public interaction with works of this kind, as well as interdisciplinary approaches which integrate material-based research and exploration with digital modes of creative production.

Four hours; one term

**Prerequisite(s):** Registration in Level III or IV of a Studio Art or Multimedia program; and credit or registration in WHMIS 1A00 (successful completion of

WHMIS is required prior to studio work)

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### ART 3J03 - CONCENTRATED STUDY - COLLABORATIVE COMMUNITY PROJECTS

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Utilizing team-based approaches that connect student learning with community, this course explores an interdisciplinary spectrum of collaborative activities. Student-centered interests and available local opportunities will direct projects.

Four hours; one term

**Prerequisite(s):** Registration in Level III or IV of any program; and credit or registration in WHMIS 1A00 (successful completion of WHMIS is required prior to studio work)

*ART 3J03 may be repeated, if on a different topic, for a total of six units.*

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### ART 3PB3 - PHOTOGRAPHY BEYOND THE FRAME

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Studio production course exploring interdisciplinary/hybrid approaches to photographic practice beyond the presentation of standardized, two-dimensional printed images in the gallery/museum context. Students will develop a series of projects that will focus on re-thinking the potential of the photographic image, capitalizing on existing/emerging technical developments, and expanding on avenues of presentation/dissemination. There will be a particular emphasis on interdisciplinary approaches which integrate material-based exploration with digital modes of creative production.

Four hours; one term

**Prerequisite(s):** Credit or registration in WHMIS 1A00 and registration in Level III or IV of a Studio Art or Multimedia program

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### ART 3PD3 - NEW DIRECTIONS IN PAINTING/DRAWING

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This course explores new directions and technologies that expand definitions of painting and drawing incorporating digital technologies, installations, urban interventions, sculptural approaches and alternative materials.

Four hours; one term

**Prerequisite(s):** ART 2PG3, ART 2DG3 and registration in Level III or IV Honours Studio Art (B.F.A.) program

*Offered on a rotational basis. Consult the Master Timetable for offerings.*

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### ART 3VA3 - VIDEO ART AND DIGITAL CINEMA

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Explores intersections between contemporary art and the moving image, with an emphasis on current movements in Digital Cinema and Video Art. Students will explore the boundaries of conventional filmic production: challenging and expanding on existing skill sets to develop unique and engaging aesthetic sensibilities. Topics will include understanding Digital Cinema, anti-narrative approaches, composite and hybrid/multi-channel video, HD and UHD work flows, audio/video output for the professional sphere, and professional practices (i.e. festivals, residencies, film school, grants, graduate programs, etc).

Lecture and lab (three hours); one term

**Prerequisite(s):** Registration in Level III or above of a Multimedia program; or ART 2DP3 and registration in Level III or above in the Studio Art program

**Cross-list(s):** MMEDIA 3VA3

*This course is administered by the Department of Communication Studies and Multimedia*

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### ART 4AR3 - ADVANCED RESEARCH AND PRESENTATION STRATEGIES

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This course refines and focuses research strategies relevant to the student's artistic direction. Problem-solving sessions focus on connecting exploration

and presentation options to ideas. Attendance at Visiting Artist lectures is mandatory.

Four hours; one term

**Prerequisite(s):** ART ART 3D03; ART 3TS3 and ART 3GS3, or ART 3GS6 A/B; and registration in Level IV Honours Studio Art program.

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### ART 4AS6 A/B - ADVANCED STUDIO PRODUCTION AND CRITICAL DISCOURSE

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This advanced course combines self-directed studio production with critical discourse, under the guidance of a team of studio faculty. Open critique sessions attended by faculty, students, alumni and community guests provide feedback. A written thesis is required connected to a cohesive body of work.

Four hours; two terms

**Prerequisite(s):** ART 3GS3 or ART 3GS6 A/B and registration in Level IV Honours Studio Art program

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### ART 4CA3 - 20TH CENTURY AND CONTEMPORARY ART PRACTICES: HOW ARTISTS THINK, ACT AND ENGAGE

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The course will study the provocation of early to mid-20th century manifestos (e.g. the viral impact of futurisms in Europe, Eurasia and Japan; the post-colonial/cultural cannibalism of the Manifesto Anthropophagi and post-1960 Tropicalia; the Angry Penguins and Antipodean Manifesto; Refus Global). Will also study enactments and interrogative strategies in a post-1950 global view (e.g. from Mono-ha and Fluxus, to Aboriginality.)

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of an Honours program in Studio Art or Art History

**Cross-list(s):** ARTHIST 4CA3

*This course is administered by the Studio Art program.*

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### ART 4CC3 - CONCENTRATED STUDY - CERAMICS

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This course is an advanced study of contemporary applications and concepts of ceramics, which students will build on techniques and process taught in ART 3CC3. Students are required to work independently to fulfill a body or work that fuses traditional techniques and concepts in order to hone their skills in the area of ceramics.

Four hours; one term

**Prerequisite(s):** ART 2SC3 and ART 3CC3 and registration in Level III or IV Honours Studio Art (B.F.A.) program. Students completing an Interdisciplinary Minor in Archaeology may be given special permission to register in this course if space is available.

*Offered on a rotational basis. Consult the Master Timetable for offerings.*

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### ART 4CI3 - CONCENTRATED STUDY - INTAGLIO

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This course provides an in-depth concentration on intaglio processes exploring traditional and alternative approaches of etching, which students will build on techniques and process taught in ART 3CI3. Students are required to work independently to fulfill a body or work that fuses traditional/contemporary techniques and concepts in order to hone their skills in the area of etching.

Four hours; one term

**Prerequisite(s):** ART 2PM3, ART 3CI3 and registration in Level III or IV Honours Studio Art (B.F.A.) program

*Offered on a rotational basis. Consult the Master Timetable for offerings.*

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### ART 4CL3 - CONCENTRATED STUDY - LITHOGRAPHY

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This course provides in-depth concentration on lithography processes without the use of Volatile Organic Compounds. Students will build on techniques and process taught in ART 3CL3. Students are required to work independently

to fulfill a body or work that fuses traditional/contemporary techniques and concepts in order to hone their skills in the area of Lithography.

Four hours; one term

**Prerequisite(s):** ART 2PM3, ART 3CL3, and registration in Level III or IV Honours Studio Art (B.F.A.) program

*Offered on a rotational basis. Consult the Master Timetable for offerings.*

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### ART 4EP3 - EXHIBITION PREPARATION AND DOCUMENTATION

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This advanced course provides hands-on experience in exhibition preparation including: catalogue and invitation design, development of advertising/publicity, fundraising strategies, and project documentation.

Four hours; one term

**Prerequisite(s):** ART 3TS3, ART 3GS3, or ART 3GS6 A/B and registration in Level IV Honours Studio Art program

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### ART 4PR3 - PROFESSIONAL RESIDENCY

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Students may obtain credit for a self-initiated, professional residency resulting in a portfolio equivalent to 3 units. Residency applications must be approved by a Faculty Supervisor prior to submission. Final portfolio must be submitted to the Supervisor for presentation and assessment. Students are responsible for all associated expenses.

**Prerequisite(s):** Registration in Level III or IV Honours Studio Art (B.F.A.) program and departmental approval

## Art History

Courses in Art History are administered by the School of the Arts.

Togo Salmon Hall, Room 414, ext. 27671

<http://sota.humanities.mcmaster.ca/>

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### ARTHIST 1A03 - WORLD ART AND CULTURAL HERITAGE I

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A global perspective of art and architecture of the Americas, Africa, Middle East, Asia, and Europe within their historical and cultural context. Material extends from objects by itinerant First Peoples to the monumental buildings created by settled agrarian societies during the Middle Ages. Lectures and tutorials examine art produced in a range of media and address the designation and preservation of world Cultural Heritage sites.

Two lectures, one tutorial; one term

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### ARTHIST 1AA3 - WORLD ART AND CULTURAL HERITAGE II

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A global perspective of art and architecture of the Americas, Africa, Middle East, Asia, and Europe within their historical and cultural context. Material includes Italian Renaissance frescoes, Japanese Zen Buddhist gardens and Contemporary Art. The course examines a range of cultural practices and artistic media, and addresses current issues for world Cultural Heritage sites.

Two lectures, one tutorial; one term

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### ARTHIST 1PA3 - ARTS IN SOCIETY: SOCIAL CONSTRUCTIONS OF RACE AND GENDER

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How can the arts both challenge or perpetuate oppressive social norms? Through a combination of hands-on creation and critical analysis of case studies in performance, theatre, film and visual art this course will provide students with skills in formal analysis as well as a foundational understanding of contemporary issues of colonialism and gender in the arts.

Two lectures, one tutorial; one term



### ARTHIST 2A03 - VISUAL LITERACY

A course of lectures and discussions that explores the concept of visual literacy and examines the ways in which fine and popular arts structure our understanding through images.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** CMST 2103

*Offered on a rotational basis.*

### ARTHIST 2AA3 - INTRODUCTION TO THE PRACTICE OF ART THERAPY

An introduction to the practice of art therapy, with an overview of its history, the diversity of its applications within psychodynamic, solution focused, cognitive behavioural principles, embodiment theory, and its clinical implications including neuroscience, mindfulness, Post-traumatic Stress Disorder, and pain management.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

### ARTHIST 2B03 - GREEK ART

The architecture, sculpture and painting of the Greek and Hellenistic worlds.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Cross-list(s):** CLASSICS 2B03

*This course is administered by the Department of Classics.*

### ARTHIST 2C03 - ROMAN ART

The architecture, sculpture and painting of the Roman world.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Cross-list(s):** CLASSICS 2C03

*This course is administered by the Department of Classics.*

### ARTHIST 2DF3 - ART AND REVOLUTIONS IN FRANCE, 1789-1914

This course examines the intersections of visual culture and the political revolutions of 1789, 1830, 1848 and 1870, as well as stylistic innovations in art including Romanticism, Realism, Impressionism, Pointillism, Fauvism, and Cubism.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Cross-list(s):** HISTORY 2DF3

*This course is administered by the Department of History.*

### ARTHIST 2FA3 - FILM ANALYSIS

An introduction to an interrelated set of approaches to film study, all of which are defined by their attention to the filmic text and which provide students with a grasp of the fundamentals of film analysis.

Two lectures, plus one weekly film screening; one term

**Prerequisite(s):** Registration in Level II or above

**Cross-list(s):** THTRFLM 2FA3

*This course is administered by the Theatre & Film Studies (B.A.) program.*

### ARTHIST 2H03 - AESTHETICS

An introduction to some main theories of the nature of art, criticism and the place of art in life and society.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** CMST 2003

**Cross-list(s):** PHILOS 2H03

*This course is administered by the Department of Philosophy.*

*Offered in alternate years.*

### ARTHIST 2I03 - RENAISSANCE ART

An introduction to the history of European art in the period 1400 to 1580.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

*Offered on a rotational basis.*

### ARTHIST 2J03 - ARCHITECTURE FROM THE PRE-ROMANESQUE TO PALLADIO

The course will survey European architecture from the Early Middle Ages to the High Renaissance. It will analyze references to Greco-Roman technical and stylistic traditions manifested in varying degrees during different periods, including the innovative adaptation of ancient forms and its iconological significance in the 'Carolingian Renaissance', the Romanesque, and the Renaissance, culminating in the work of Andrea Palladio (16th century.)

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

*Offered on a rotational basis.*

### ARTHIST 2R03 - THE HISTORY OF FASHION AND IDENTITY

This course will study selected aspects of the history of fashion and identity throughout the ages and across cultures. The course will examine issues related to changes in dress and their representation as well as the construction of identities in the broader social, political and economic context.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

*Offered on a rotational basis.*

### ARTHIST 2S03 - THE HISTORY OF PRINTING AND PRINTMAKING

This course will study the history of printing and printmaking throughout the ages and across cultures. Themes include related techniques and technologies, such as paper-making; impact on the transmission of knowledge and artistic practices.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

*Offered on a rotational basis.*

### ARTHIST 2T03 - ART, THEATRE AND MUSIC IN THE ENLIGHTENMENT

This course will examine the intersection of the arts in the period 1600 to 1800 by studying the major artists and patrons as well as the cultural and social environments in which they worked. The issues treated in this course will provide students with a panoramic understanding of the dynamic and creative cultures in which artists, composers and architects competed and collaborated.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

*Offered on a rotational basis.*

### ARTHIST 2Y03 - EARLY ISLAMIC ART TO THE MIDDLE AGES

This course will explore the formation of an architectural and artistic vocabulary for the new religion of Islam, including prior traditions (Sasanian, Late Roman, Byzantine) in the regions of Early Islam. It will also analyze the

establishment of new canons and styles in different areas of the Islamic world and their development and interactions from the Near and Middle East over the North of Africa to the Iberian Peninsula and Sicily until the 15th century.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

*Offered on a rotational basis.*

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### ARTHIST 2Z03 - ART AND VISUAL CULTURE IN EAST AND SOUTH ASIA

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An introduction to the history of the arts in China, Korea and Japan from antiquity to modern times, highlighting the impact of cultural exchange and diversity.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

*Offered on a rotational basis.*

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### ARTHIST 3AB3 - APPLIED ART HISTORY: EXPERIENTIAL LEARNING WITH PLACEMENT AS AN INTERN

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This course offers a student the opportunity of learning to research or catalogue art works in either a private or public collection, or other aspects of curatorial research, collection management, exhibition design or art education. The student-initiated internship could take place at arts institutions such as: museums, galleries, heritage sites, historical societies, and other such possibilities reviewed and approved by program faculty.

**Prerequisite(s):** Registration in Level III or IV of an Honours Art History Program

*Departmental permission required.*

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### ARTHIST 3B03 - ASPECTS OF CANADIAN ART

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A survey of the visual arts in Canada from the earliest explorations and settlements to the present.

Three lectures; three hours; one term

**Prerequisite(s):** Registration in Level III or IV of any program

*Offered on a rotational basis.*

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### ARTHIST 3BB3 - INDIGENOUS ART AND VISUAL CULTURE IN CANADA, 1960 TO THE PRESENT

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A survey of the visual art production from Indigenous Canadian communities since c. 1960 including: painting, sculpture, installation, film/video, performance and hip hop. The course focuses on First Nations' and Métis' artistic practices and examines how those are framed in the context of museums in the 21st century.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of a program in Art History, Art or Indigenous Studies, or permission of the instructor

**Cross-list(s):** INDIGST 3F03

*Offered on a rotational basis.*

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### ARTHIST 3D03 - SEVENTEENTH-CENTURY ART

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An examination of art and architecture produced in the seventeenth century and global variations of Baroque Art.

Three lectures; one term.

**Prerequisite(s):** Registration in Level II or above; prior completion of ARTHIST 2I03 is recommended

*Offered on a rotational basis.*

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### ARTHIST 3DF3 - ART AND POLITICS IN SECOND EMPIRE FRANCE

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This course examines the intersections of politics and visual culture in France 1852-1870 and critical issues related to photography, painting, sculpture, printmaking, architecture and the Universal Expositions of 1855 and 1867.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** ARTHIST 3J03

**Cross-list(s):** HISTORY 3DF3

*This course is administered by the Department of History.*

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### ARTHIST 3FL3 - EARLY CINEMA HISTORY

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An introduction to the history of narrative film from its beginnings to the Second World War. It focuses on narrative cinema's development from aesthetic, social, technological and economic perspectives while also touching on a selected number of issues in film theory.

Two lectures, plus one weekly film screening; one term

**Prerequisite(s):** Registration in Level II or above

**Cross-list(s):** THTRFLM 3FF3

**Antirequisite(s):** ARTHIST 2FL3, THTRFLM 2FF3

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### ARTHIST 3H03 - ARCHAIC GREEK ART

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The formative period of Greek Art from its rebirth after the Dark Ages to the Persian Wars (c. 1000-480 B.C.) and its relationship to the art of the Near East. Three lectures; one term

**Prerequisite(s):** ARTHIST 2B03

**Cross-list(s):** CLASSICS 3H03

*This course is administered by the Department of Classics.*

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### ARTHIST 3I03 - ITALIAN PAINTING AND SCULPTURE 1400-1580

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An advanced level lecture course dealing with selected artists and works from the Early Renaissance to Mannerism.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above; prior completion of ARTHIST 2I03 is recommended

*Offered on a rotational basis.*

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### ARTHIST 3JA3 - THE HISTORY OF ART 1970 TO THE PRESENT

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An examination of global issues in art and visual culture from 1970 to the Present, applying a range of theoretical approaches including: modernism, postmodernism, post-structuralism, gender, post-colonial and queer theories.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** ART HIST 3AA3, HISTORY 3JA3

*Offered on a rotational basis.*

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### ARTHIST 3P03 - ISSUES IN STUDIO CRITICISM

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A course that allows non-Art students to explore current studio practice and to investigate approaches to the evaluation of quality in contemporary art.

Students taking this course are required to attend a preset number of Studio Critiques and Visiting Artists' Talks.\*

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level II or above; and at least 12 units of Art History

*\*Studio Art Critiques are regularly scheduled sessions during which the work of Art students is discussed by their peers, faculty members and visiting*

professionals from the art world. Visiting Artists' talks are held on weekday evenings on the same day as the Studio Critiques.  
Offered on a rotational basis.

### ARTHIST 3Q03 - COLOURS OF THE WORLD

The traditional ways of extracting colour from plants, minerals, and animals and the ways for using colour that range from 1) making art, 2) ornamenting food, clothing, housing and transportation, and 3) symbolic/ritual purposes and visual communication (for example, sexuality, theatre, and warfare) in different cultures in early times.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** HISTORY 3QA3

Offered on a rotational basis.

### ARTHIST 3Q03 - GREEK SANCTUARIES

Ancient Greek sanctuaries and their social and political context. Topics will include architecture and art, as well as activities such as sacrifice, athletic games healing and oracular consultation.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Cross-list(s):** CLASSICS 3Q03

Alternates with ARTHIST 3SS3 (CLASSICS 3S03).

This course is administered by the Department of Classics.

### ARTHIST 3SS3 - POMPEII, HERCULANEUM, AND OSTIA

The archaeology of three cities in Italy (Pompeii, Herculaneum, Ostia) will be examined, with a focus on urbanism, public space, and domestic architecture and decoration.

Three lectures; one term

**Prerequisite(s):** One of CLASSICS 1A03, 2LC3, 2LD3 or ARTHIST 2B03 or 2C03, and registration in Level II or above of any program

**Cross-list(s):** CLASSICS 3S03

Alternates with ARTHIST 3Q03 (CLASSICS 3Q03).

This course is administered by the Department of Classics

### ARTHIST 3XX3 - CINEMA HISTORY FROM WWII

An exploration of narrative film from 1941 to the present day, incorporating a study of a variety of narrative cinema styles. Theoretical issues will include questions of cinema's relationships to other art forms, narrative, genre and authorship.

Two lectures, plus one weekly film screening; one term

**Prerequisite(s):** One of ARTHIST 2FL3, ARTHIST 3FL3, THTRFLM 2FF3 or THTRFLM 3FF3 is recommended

**Antirequisite(s):** CMST 3XX3

**Cross-list(s):** THTRFLM 3L03

This course is administered by Theatre & Film.

### ARTHIST 3Z03 - THE SILK ROAD IN THE FIRST MILLENNIUM

An examination of how recent archaeological finds are changing our understanding of the pluralistic achievements in the arts accomplished by peoples of different cultures along the Silk Road and beyond in the first millennium.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** HISTORY 3ZA3

Offered on a rotational basis.

### ARTHIST 4AA3 - SEMINAR IN CONTEMPORARY ART AND VISUAL CULTURE

An in-depth examination of one or more significant movements in contemporary art, theory and criticism from c. 1970 to the present.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of an Honours program in Art, Art History, Classics, English & Cultural Studies, or History. Prior completion of ARTHIST 3JA3 is recommended.

ART HIST 4AA3 may be repeated, if on a different topic, to a total of six units.

Offered on a rotational basis.

### ARTHIST 4BB3 - SEMINAR IN ANCIENT ART

Consult the School of the Arts concerning the topic to be offered.

Seminar (two hours); one term

**Prerequisite(s):** Nine units of ARTHIST including six units from ARTHIST 2B03, 2C03, 3Q03, 3H03, 3SS3 or registration in Level III or IV of an Honours program in Art History

**Cross-list(s):** CLASSICS 4BB3

ART HIST 4BB3 may be repeated, if on a different topic, to a total of six units.

This course is administered by the Department of Classics.

### ARTHIST 4C03 - SEMINAR IN ART AND VISUAL CULTURE 900-1400

A focused study of issues concerning art and visual culture of the tenth through fourteenth centuries. Consult the School of the Arts concerning the topic to be offered.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of an Honours program in Art or Art History; prior completion of one of ARTHIST 3I03, 3S03 or 3Z03 is recommended

ARTHIST 4C03 may be repeated, if on a different topic, to a total of six units.

Offered on a rotational basis.

### ARTHIST 4CA3 - 20TH CENTURY AND CONTEMPORARY ART PRACTICES: HOW ARTISTS THINK, ACT AND ENGAGE

The course will study the provocation of early to mid-20th century manifestos (e.g. the viral impact of futurisms in Europe, Eurasia and Japan; the post-colonial/cultural cannibalism of the Manifesto Anthropophagi and post-1960 Tropicalia; the Angry Penguins and Antipodean Manifesto; Refus Global.) Will also study enactments and interrogative strategies in a post-1950 global view (e.g. from Mono-ha and Fluxus, to Aboriginality.)

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of an Honours program in Studio Art or Art History

**Cross-list(s):** ART 4CA3

This course is administered by the Studio Art program.

### ARTHIST 4E03 - SEMINAR IN ART AND VISUAL CULTURE 1400 - 1750

A focused study of issues concerning art and visual culture of the 14th through 18th centuries. Consult the School of the Arts concerning the topic to be offered.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of an Honours program in Art or Art History; prior completion of one of ARTHIST 3D03, ARTHIST 3I03 or ARTHIST 3S03 is recommended

ARTHIST 4E03 may be repeated, if on a different topic, to a total of six units.

Offered on a rotational basis.

### ARTHIST 4LP3 - THE CULTURAL HISTORY OF PARIS, 1789-1914

Topics to be examined include: developments in architecture and city planning; the conservation of historic buildings and monuments; cultural institutions such as museums and art exhibitions; and the impact of gender, race and economics on experiences and concepts of identity in France's capital.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of any Honours program in Art or Art History

**Cross-list(s):** HISTORY 4LP3

*Departmental permission required. This course is administered by the Department of History and students should apply using seminar ballots that will be available from the History Department following Reading Week.*

### ARTHIST 4006 A/B - THESIS

Supervised study of a problem in the history of art of special interest to the student.

Tutorials; two terms

**Prerequisite(s):** Registration in Level IV of any Honours program in Art History; and a grade of at least A- in a previous course in the chosen field; and permission of the School of the Arts

### ARTHIST 4U03 - THE SEVERE STYLE IN GREEK ART

This course examines the birth of the Classical Greek style and its earliest manifestation, the Severe style. Sculpture, vase painting and architectural examples will be considered and placed in their appropriate political and cultural contexts.

Seminar (two hours); one term

**Prerequisite(s):** Nine units of ARTHIST, including ARTHIST 2B03, or registration in Level III or above of an Honours program in Art History

**Cross-list(s):** CLASSICS 4U03

*This course is administered by the Department of Classics.*

### ARTHIST 4V03 - THE STUDY, CRITICISM AND EVALUATION OF ART

A seminar to introduce students to the history, theory and practice of connoisseurship. Its focus will be to develop skills in confronting the single work of art.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of a program in Art or Art History, Communication Studies or Multimedia

*Offered on a rotational basis.*

### ARTHIST 4X03 - INTRODUCTION TO ART GALLERIES AND MUSEUMS

A study of the history and methods of institutions created for the purpose of collecting, preserving, displaying and interpreting art objects.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of a program in Art, Art History, Classics, English & Cultural Studies, or History

*Offered on a rotational basis.*

## Arts & Science

Courses in Arts & Science are administered by the Arts & Science Program.

L.R. Wilson Hall, Room 3038, ext. 24655, 23153

<http://artsci.mcmaster.ca>

**Notes**

1. Prerequisites: The prerequisite for all Level I, II, III and IV Arts & Science courses is registration in the Arts & Science Program.
2. Limited Enrolment: Enrolment in Level I of the Arts & Science Program is limited to approximately 70 students.

### ARTSSCI 1A06 A/B - PRACTICES OF KNOWLEDGE

An examination of significant themes in intellectual history through a reading of major works in philosophy and literature that shed light on the conceptual foundations of contemporary life.

Three hours; two terms

**Prerequisite(s):** Registration in Level I of the Arts & Science Program

### ARTSSCI 1B03 - WRITING

This course aims to develop students' ability to use language in written communication, with a focus on academic writing in particular. Students will develop their writing skills through assignments and activities that ask them to produce, analyze and reflect on written work in a range of genres.

Three hours; one term

**Prerequisite(s):** Registration in Level I of the Arts & Science Program

### ARTSSCI 1BB3 - ARGUMENTATION

This course provides students with some of the conceptual tools needed to recognize, understand, evaluate, formulate, and attack arguments. Students will have the opportunity to develop such skills in their oral and written work.

Three hours; one term

**Prerequisite(s):** Registration in Level I of the Arts & Science Program

### ARTSSCI 1C03 - INQUIRY: GLOBAL CHALLENGES

This inquiry course, designed to develop skills basic to the systematic, evidence-based investigation of public issues, focuses on issues relevant to global development.

Three hours; one term

**Prerequisite(s):** Registration in Level I of the Arts & Science Program

### ARTSSCI 1CC3 - CONTEMPORARY INDIGENOUS STUDIES

This course will explore the relationship between Indigenous peoples and mainstream society in the 20th century with regard to governmental policy, land claims, economic development, and self-determination.

Three hours; one term

**Prerequisite(s):** Registration in Level I of the Arts & Science Program

**Cross-list(s):** INDIGST 1AA3

### ARTSSCI 1D06 A/B - CALCULUS

This course aims to provide a thorough understanding of the principles and major applications of differential and integral calculus of functions of one variable, as well as an introduction to multivariate calculus and differential equations.

Lectures (three hours), tutorial (one hour), lab (one hour); two terms

**Prerequisite(s):** Registration in Level I of the Arts & Science Program

**Antirequisite(s):** MATH 1A03, 1AA3, 1LS3, MATH 1LT3, 1X03, 1XX3, 1ZA3, 1ZB3

*ARTSSCI 1D06 A/B serves as a prerequisite for all courses for which MATH 1AA3 (or equivalent) is a prerequisite.*

### ARTSSCI 2A06 A/B - SOCIAL AND POLITICAL THOUGHT

Development of political, moral and religious thought in the writings of such major figures as Hobbes, Locke, Rousseau, Adam Smith, Burke, Marx, Mill,



Weber, von Hayek, Nietzsche, Freud and Arendt.

Three hours; two terms

**Prerequisite(s):** Registration in Level II of the Arts & Science Program

### ARTSSCI 2D06 A/B - PHYSICS

This course explores many of the great concepts of physics in a quantitative way. Beginning with Newtonian mechanics, it moves into Einstein's relativity, wave phenomena, atomic physics, quantum mechanics and cosmology.

Selected laboratory projects will be carried out.

Lecture (three hours), tutorial (one hour); two terms

**Prerequisite(s):** Registration in Level II of the Arts & Science Program

### ARTSSCI 2E03 - ECONOMICS: PRINCIPLES AND POLICY

An introduction to the core principles of economics with the objective of helping students to apply economic reasoning to issues that are central to modern societies, such as: the role of government in a market-oriented setting; equity and efficiency; growth and the environment; and fiscal and monetary stability.

Lectures (three hours), tutorial (one hour); one term

**Prerequisite(s):** Registration in Level II of the Arts & Science Program

**Antirequisite(s):** Not open to students who have completed both ECON 1B03 and ECON 1BB3.

### ARTSSCI 2R03 - APPLIED STATISTICAL INFERENCE

Inferential statistics, with an emphasis on applications. Topics include data description, graphical methods, probability, confidence intervals, hypothesis testing, one-way ANOVA, analysis of categorical data, regression and correlation. Use of a statistics software package.

Lectures (three hours), tutorial (one hour); one term

**Prerequisite(s):** Registration in Level II of the Arts & Science Program

**Antirequisite(s):** STATS 2B03, STATS 2MB3

### ARTSSCI 3A06 A/B - LITERATURE

Literary works drawn from a variety of genres, cultures and historical periods will be examined with a focus on how great writers have treated enduring ethical concerns. It aims to show how literature is an indispensable means of thinking about human life and society.

Three hours; two terms

**Prerequisite(s):** Registration in Level III or above of the Arts & Science Program

### ARTSSCI 3B03 - TECHNOLOGY AND SOCIETY I

The Culture of Technology. Technological practices and approaches are studied as cultural activities in the contexts of beliefs, philosophies, values and social structures both past and present.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the Arts & Science Program

### ARTSSCI 3BB3 - TECHNOLOGY AND SOCIETY II

The Social Control of Technology. The dominant mechanisms of the social control of technology will be studied, with attention to the role of ethics.

Three hours; one term.

**Prerequisite(s):** Registration in Level III or above of the Arts & Science Program

### ARTSSCI 3BC3 - TECHNOLOGY AND SOCIETY III

This course explores the current explosion of publically available data and the manipulation of this data as both a positive and a negative societal development. Our focus of inquiry will be on the use of spatial data and cartography as a tool to inform society through the visualization of complex data.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the Arts & Science Program.

### ARTSSCI 3CL3 - THEATRE, SELF, AND SOCIAL DEVELOPMENT

Theatre skills are life skills. Class exercises, creative work, and online discussions will allow students to explore the practice and ethics of Applied Drama and to learn how theatre can be used as a tool for social development and change.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of the Arts & Science Program

### ARTSSCI 3CU3 - ALUMNI EXPERIENCE INQUIRY

Using an inquiry methodology, students will explore the practical applications of an interdisciplinary degree through interaction with, and mentorship from, graduates of the Arts & Science Program. Emphasis will be on problem-based learning, with the professional experiences of alumni informing the exploration of complex and multifaceted issues.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of the Arts & Science Program

### ARTSSCI 3DS1 - DEEP SKILLS DEVELOPMENT

This course will explore the integration and synthesis of a wide range of deep skills to enable students to lead richer and more balanced lives, while at university and as future working professionals. Deep skills include mindfulness and contemplative practices, empathy building, emotional intelligence, creativity, and developing employment readiness and personal resilience. A portfolio to be developed by each student over the term will be the basis upon which this course is evaluated.

One hour; one term

**Prerequisite(s):** Registration in Level II or above of the Arts & Science Program

*This course is evaluated on a Pass/Fail basis.*

### ARTSSCI 3EH3 - EXPLORING HAMILTON INQUIRY

This course encourages students to ask questions and explore topics focused on the City of Hamilton, Ontario. Through the exploration of Hamilton from a number of disciplinary perspectives, including cultural, economic, and geological, students will have an opportunity to gain insight into the city that McMaster University calls home. This course will include excursions during class time and may require small fees for travel.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of the Arts & Science Program.

### ARTSSCI 3F03 - EXPERIENTIAL PROJECT IN TEACHING AND LEARNING

This course allows students to explore in depth an issue related to teaching and learning in higher education under the supervision of faculty/staff

affiliated with the Paul R. MacPherson Institute for Leadership, Innovation and Excellence in Teaching (MacPherson Institute). Students may propose research questions of their own or contribute to the development of existing initiatives within the Institute. Proposal form and deadlines are available on the Arts & Science Program website <https://artsci.mcmaster.ca>.

One term

**Prerequisite(s):** Registration in Level II or above of the Arts & Science Program and permission of the Arts & Science Program.

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### ARTSSCI 3GJ3 - GLOBAL JUSTICE INQUIRY

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Using an inquiry methodology, students will explore issues pertaining to global justice through an interdisciplinary lens.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above

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### ARTSSCI 3RL3 - RELIGION AND LAW

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The notion of law has deep roots in religious thought and writing. This course will survey the historical development of law in the western world in connection with various religious traditions, with a focus on Judaism and Christianity. It will also address some contemporary issues and tensions between religion and law in pluralistic, secular societies.

Three hours (lecture and discussion); one term

**Prerequisite(s):** Registration in Level III and above of the Arts & Science Program

**Cross-list(s):** SCAR 3RL3

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### ARTSSCI 3S03 - THE EAST ASIAN RELIGIOUS TRADITION

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Readings of East Asian texts in translation will centre around themes such as culture vs. nature, virtue vs. power, social responsibility vs. personal cultivation, bookish learning vs. meditation.

Lecture (two hours), tutorial (one hour); one term

**Prerequisite(s):** Registration in Level III and above of the Arts & Science Program

**Cross-list(s):** SCAR 3S03

**Antirequisite(s):** RELIGST 3S03

*This course is administered by the Department of Religious Studies.*

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### ARTSSCI 3TR3 - TREES INQUIRY

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Inspired by the trees on McMaster's campus, this course examines trees and their significance through a number of different lenses and from a variety of discipline perspectives: biology; colonial and economic histories; visual, material, and performing arts practices; psychology; indigenous and environmental studies; poetry and prose.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of the Arts & Science Program.

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### ARTSSCI 3X03 - INDIVIDUAL STUDY

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This course consists of study under the supervision of a McMaster faculty member. Proposal form and deadlines are available on the Arts & Science Program website <https://artsci.mcmaster.ca>.

One term

**Prerequisite(s):** Registration in Level III and above of the Arts & Science Program and permission of the Arts & Science Program

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### ARTSSCI 4A06 A/B - INDIVIDUAL STUDY

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This course consists of study under the supervision of a McMaster faculty member. Proposal form and deadlines are available on the Arts & Science Program website <https://artsci.mcmaster.ca>.

Two terms

**Prerequisite(s):** Registration in Level IV of the Arts & Science Program and permission of the Arts & Science Program

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### ARTSSCI 4A09 A/B - INDIVIDUAL STUDY

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The same as ARTSSCI 4A06 A/B S but based on more extensive study. Proposal form and deadlines are available on the Arts & Science Program website <https://artsci.mcmaster.ca>.

Two terms

**Prerequisite(s):** Registration in Level IV of the Arts & Science Program and permission of the Arts & Science Program

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### ARTSSCI 4C06 A/B - THESIS

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This course consists of original research under the supervision of a McMaster faculty member. Proposal form and deadlines are available on the Arts & Science Program website <https://artsci.mcmaster.ca>.

Two terms

**Prerequisite(s):** Registration in Level IV of the Arts & Science Program and permission of the Arts & Science Program

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### ARTSSCI 4C09 A/B - THESIS

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The same as ARTSSCI 4C06 A/B but based on more extensive research. Proposal form and deadlines are available on the Arts & Science Program website <https://artsci.mcmaster.ca>.

Two terms

**Prerequisite(s):** Registration in Level IV of the Arts & Science Program and permission of the Arts & Science Program

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### ARTSSCI 4CB3 - EDUCATION INQUIRY

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Students will have the opportunity in this course to use an inquiry-based approach to focus on social, cultural, political, and economic issues that influence and are influenced by education.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the Arts & Science Program

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### ARTSSCI 4CD3 - RESEARCH AND CREATIVE WRITING

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The course exposes students to creative writing that is grounded in research. It also invites students to explore ways in which research findings might be disseminated through creative expression.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the Arts & Science Program.

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### ARTSSCI 4CF3 - HOW SCIENCE SPEAKS TO POWER

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A case study approach is used to examine how science is shaped by politics and how science advice is filtered by political processes. Possible case studies include Mad Cow disease, the ozone hole, and genetically modified foods.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the Arts & Science Program or an Honours Biology program.

### ARTSSCI 4CI3 - DIVERSITY AND HUMAN RIGHTS INQUIRY

This course explores issues of diversity and the role of human rights protection regimes in both Canadian and international contexts.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the Arts & Science Program

### ARTSSCI 4CP3 - MEDIA INQUIRY

This course consists of four sections dealing with theoretical and analytical perspectives, political economy of the media, news media, and entertainment media and their cultural effects.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the Arts & Science Program

### ARTSSCI 4CT3 - MEDICAL HUMANITIES INQUIRY

This course exposes students to the rapidly developing international field known as medical humanities. It explores the interconnections between health, medicine, the arts, and the humanities, with a particular focus on issues of medical ethics and narrative in medicine.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the Arts & Science Program

### ARTSSCI 4EP3 - ENVIRONMENTAL POLICY INQUIRY

This course provides a critical analysis of the relationship between public policymaking and environmental issues. Students will engage in critical discussion of a range of literature that has direct bearing on explaining how environmental issues, scientific evidence, and the policy process converge. The course also includes a current policy case study designed to help students gain further insight into how course themes and concepts unfold in reality.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the Arts & Science Program

### ARTSSCI 4HS3 - HISTORY OF SCIENCE INQUIRY

An exploration of theoretical questions and case studies from the history and sociology of science. Students will undertake inquiry projects on selected topics and present their work to the class.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the Arts & Science Program

### ARTSSCI 4MN1 - LOCAL EXPLORATIONS

An experiential learning course, which offers students the opportunity to explore issues of local significance and global relevance. Students may pursue independent study options or, when available, participate in assorted modules. Details are available on the Arts & Science Program website <https://artsci.mcmaster.ca>.

One term

**Prerequisite(s):** Registration in the Arts & Science Program or as an international exchange student and permission of the Arts & Science Program  
*This course is evaluated on a Pass/Fail basis. Some experiential learning opportunities may require a fee to cover costs of travel and other logistics. ARTSSCI 4MN1 may be repeated, if on a different topic.*

### ARTSSCI 4MN2 - MOVEMENT AND INTEGRATION

This course brings together Arts & Science students and international exchange students to assess the experience of movement away from familiar terrain and reflect critically on ways of integrating that experiential learning into their lives as an ongoing practice of reflective, intentional living.

One term

**Prerequisite:** Registration in Level III or above of the Arts & Science Program or as an international exchange student and permission of the Arts & Science Program.

*This course is evaluated on a Pass/Fail basis.*

### ARTSSCI 4ST3 - SELECTED TOPICS IN INQUIRY

Topics will vary from year to year in accordance with student interests and faculty availability. Students should consult the Arts & Science Program for information on topics to be offered.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the Arts & Science Program

ARTSSCI 4ST3 may be repeated, if on a different topic.

### ARTSSCI 4VC3 - VISUAL CULTURE INQUIRY

This course allows students to explore the ways in which images and other visual texts intersect with issues of social concern. Drawing from a range of disciplinary perspectives, it considers histories, theories, and practices of the visual, and provides students with an opportunity to conduct self-directed, creative inquiry into visual culture.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the Arts & Science Program

## Astronomy

Courses in Astronomy are administered by the Department of Physics and Astronomy.

A.N. Bourns Science Building, Room 241, ext. 24559

<http://www.physics.mcmaster.ca/>

#### Department Notes

1. The Department reserves the right to withdraw a Level III or IV course which is not specifically required in a Physics program if the registration falls below ten.
2. Students in Level III or IV of Physics programs will find a number of relevant electives among the offerings of the Department of Biology, the Department of Engineering Physics and the School of Geography and Earth Sciences.
3. Courses in Physics and Astronomy are not open to students registered in the Bachelor of Technology program.

#### Courses

*If no prerequisite is listed, the course is open.*

### ASTRON 1F03 - INTRODUCTION TO ASTRONOMY AND ASTROPHYSICS

Topics include orbital motion, electromagnetic radiation, the solar system, stars and stellar evolution, the Milky Way Galaxy, galaxies and quasars, the evolution of the universe.

Three lectures; one term

**Prerequisite(s):** One of Grade 12 Calculus and Vectors U, Grade 12 Advanced Functions and Introductory Calculus U, MATH 1F03

**Antirequisite(s):** PHYSICS 1F03, SCIENCE 1D03

### ASTRON 2B03 - THE BIG QUESTIONS

Formerly SCIENCE 2B03.

Ultimate questions in modern science are surveyed with emphasis on physical sciences: origin of space-time, elements and structure in the cosmos (stars, planets, galaxies).

Three lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** ORIGINS 2B03, SCIENCE 2B03

*Not open to students who are registered in an Honours (Origins Research Specialization) program.*

### ASTRON 2E03 - PLANETARY ASTRONOMY

Physical and mathematical foundation of planetary astronomy. Historical development of ideas about the solar system. A modern view of the planets; the origin and evolution of the solar system and planets around other stars.

Three lectures; one term

**Prerequisite(s):** One of ARTSSCI 2D06 A/B, PHYSICS 1A03, 1B03, 1C03, 1D03; and one of ARTSSCI 1D06 A/B, MATH 1A03, 1LS3, 1N03, 1X03, 1Z04, 1ZA3; or ISCI 1A24 A/B

### ASTRON 3X03 - GALAXIES AND COSMOLOGY

Stellar populations, star formation and the interstellar medium in galaxies. The Milky Way Galaxy; normal and active galaxies and large scale structure in the universe; observational and theoretical cosmology.

Three lectures, occasional lab periods; one term

**Prerequisite(s):** Six units from Level II PHYSICS, PHYSICS 1E03, ENGPYHS 2A04, 2H04, 2P04, 2QM3

*Alternates with ASTRON 3Y03.*

### ASTRON 3Y03 - STELLAR STRUCTURE

The physics of stellar interiors. The main sequence and the life cycle of a star. Stellar evolution, including white dwarfs, neutron stars, and black holes.

Three lectures; one term

**Prerequisite(s):** Six units from Level II PHYSICS, PHYSICS 1E03, ENGPYHS 2A04, 2H04, 2P04, 2QM3. PHYSICS 2G03 is strongly recommended.

*Alternates with ASTRON 3X03.*

### ASTRON 4X03 - ASTROPHYSICS DATA ANALYSIS PROJECT COURSE

A project-based course covering the basics of modern observational astronomy techniques. Students will complete a series of projects in data analysis covering topics such as the fundamentals of image analysis, photometry and spectroscopy.

Lectures, discussions, exercises; one term

**Prerequisite(s):** Registration in Level IV of Honours Astrophysics (B.Sc.), Honours Biophysics (B.Sc.), Honours Physics (B.Sc.) or the Honours Mathematics and Physics (B.Sc.) program

### ASTRON 5X03 A/B S - GRADUATE TOPICS IN ASTROPHYSICS

This course allows an undergraduate student to take any two of the astrophysics graduate-level courses (1.5 units) offered by the Department of Physics and Astronomy excluding PHYSICS 760 and 761.

May be completed over one or two terms

**Prerequisite(s):** Credit or registration in ASTRON 3X03 and ASTRON 3Y03; and permission of the instructor

Undergraduate students will be required to meet all academic obligations of this graduate-level course offering.

*ASTRON 5X03 may be repeated, if on different graduate level topics.*

## Automotive and Vehicle Tech

Courses in Automotive and Vehicle Technology are administered by the Bachelor of Technology Program.

Engineering Technology Building (ETB), Room 509, ext. 20195

<http://mybtechdegree.ca>

#### Note

For the Four-Year Program, registration is only permitted for courses of the same level in which the student is registered, unless otherwise specified.

### AUTOTECH 2AC3 - ADVANCED CAD

Parametric solid modeling for parts with complex geometry. Wireframe and complex surfaces. Multi-component assemblies with kinematic constraints. Fitting and kinematic animations for assemblies. Simulation analysis on solid models.

One lab (four hours); second term

**Prerequisite(s):** AUTOTECH 2AE3, 2CD3, and registration in level II or above of the Automotive and Vehicle Engineering Technology program

### AUTOTECH 2AE3 - DESIGN OF MACHINE ELEMENTS

Stress and strain; load analysis; failure prediction; impact; fatigue; lubrication and sliding bearings; rolling bearings; shafts and associated parts; gears; fasteners; brakes and clutches; disassemble and reassemble vehicle systems. Three lectures, one lab (three hours); first term

**Prerequisite(s):** ENGTECH 1ME3, 1PH3, and registration in level II or above of the Automotive and Vehicle Engineering Technology program

### AUTOTECH 2CD3 - COMPUTER AIDED DESIGN

Two-dimensional drafting: drawing environment and commands, drafting settings, drawing editing, plotting output, dimensioning, orthographic projections and views, sectional and auxiliary views. Three-dimensional solid modeling: parts, assemblies, 2D drawings generation.

One lecture, one lab (two hours); first term

**Prerequisite(s):** Registration in level II or above of the Automotive and Vehicle Engineering Technology program

### AUTOTECH 2MT3 - STRUCTURE AND PROPERTIES OF MATERIALS

Physical properties including tensile and impact of materials, ductile and brittle fracture, testing, applications and selection of ceramics, metals and alloys, polymers and advanced materials used in automobiles and vehicles. Metal casting for automotive applications. Case studies.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** ENGTECH 1CH3, 1ME3, 1PH3, and registration in level II or above of the Automotive and Vehicle Engineering Technology program

### AUTOTECH 2TS3 - THERMODYNAMICS AND HEAT TRANSFER

Thermodynamic principles; heat engines; gas turbine cycles; air conditioning; conductive, convective and radiative heat transfer, heat transfer coefficients, heat exchangers, vehicle thermal management components and systems.

Three lectures, one lab (three hours); second term

**Prerequisite(s):** AUTOTECH 2AE3; ENGTECH 1CH3, 1MT3, 1PH3, and registration in level II or above of the Automotive and Vehicle Engineering Technology program



### AUTOTECH 3AE3 - AUTOMOTIVE ENGINEERING TECHNOLOGY

Spark ignition engines; diesel engines, ignition systems, emission control devices, computers and on-board diagnostics; clutches; manual and automatic transmissions and transaxles; driveline; steering systems; suspension systems; brakes; tires and wheels; case studies.

Three lectures, one lab (two hours); first term

**Prerequisite(s):** AUTOTECH 2AE3, 2TS3, and registration in level III or above of the Automotive and Vehicle Engineering Technology program

### AUTOTECH 3AV3 - ELECTRIC AND HYBRID VEHICLES

Alternate vehicular power systems: electric hybrid and fuel cell technology. Current and future vehicular powertrain design and control principles for series, parallel and complex hybrid vehicles; conversion of combustion engine vehicles in electric and hybrid vehicles.

Three lectures, one lab (three hours every other week); first term

**Prerequisite(s):** AUTOTECH 3AE3, 3CT3, and registration in level IV of the Automotive and Vehicle Engineering Technology program

### AUTOTECH 3CT3 - CONTROL THEORY

Analysis and design of closed loop control systems course to include: control system characteristics and performance, stability analysis, system types and performance improvement, digital control systems, compensation, filtering and motion control system analysis and tuning.

Three lectures, one lab (three hours every other week); first term

**Prerequisite(s):** ENGTECH 1EL3, 2MT3, and registration in level III or above of the Automotive and Vehicle Engineering Technology program.

### AUTOTECH 3MP3 - MANUFACTURING PROCESSES AND SYSTEMS

Metal-casting processes and equipment; forming and shaping processes and equipment for metals, ceramics and plastics; material-removal processes and machines; joining processes and equipment; surface technology; engineering metrology and instrumentation.

Three lectures, one lab (two hours); first term

**Prerequisite(s):** AUTOTECH 2AE3, 2MT3, 3AE3 and registration in level IV of the Automotive and Vehicle Engineering Technology program

### AUTOTECH 3MV3 - MECHATRONICS

Sensors and actuators: analysis, selection and implementation. Programmable logic controllers. Ladder logic and sequential programming. Micro-controller analysis, implementation, and programming. Communication interfaces. Case studies of mechatronic systems, simulation, and testing.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** AUTOTECH 3CT3, ENGTECH 1CP3, 1PR3, and registration in level IV of the Automotive and Vehicle Engineering Technology program

### AUTOTECH 3TS3 - FLUID MECHANICS

Fluid statics; forces on submerged and floating bodies; kinematics of flow and Bernoulli's equations; dimensional analysis and similarity; flow in closed conduits. Automative turbomachines, fluid flow around bodies, lift and drag minimization by proper vehicle design.

Three lectures, one lab (two hours every other week); first term

**Prerequisite(s):** AUTOTECH 2AE3, 2TS3, and registration in level III or above of the Automotive and Vehicle Engineering Technology program

### AUTOTECH 3VD3 - MECHANICAL VIBRATIONS

Single degree of freedom systems; free vibration; harmonically excited vibration; vibration under general forcing conditions; two degree of freedom systems; multi-degree of freedom systems; natural frequencies and mode shapes; vibration control; vehicle oscillations.

Three lectures, one lab (two hours every other week); first term

**Prerequisite(s):** AUTOTECH 3AE3, 3CT3, and registration in level IV of the Automotive and Vehicle Engineering Technology program

### AUTOTECH 4AE3 - INTERNAL COMBUSTION ENGINES

Internal combustion engine operating characteristics; engine maps; engine cycles; engine configuration and design; air and fuel induction; fluid motion within combustion chamber; heat transfer in engines; friction and lubrication. Three lectures, one lab (two hours every other week); second term

**Prerequisite(s):** AUTOTECH 3AE3 and registration in level IV of the Automotive and Vehicle Engineering Technology program

### AUTOTECH 4AT3 - CONCEPTUAL DESIGN OF ELECTRIC AND HYBRID VEHICLES

Problem based learning course in which groups of students research, discuss, and implement conceptual design aspects of electric or hybrid electric vehicles for modern transportation approaches. The major aspects of vehicle design are analysed from the vehicle specification phase to the environment assessment and sustainability.

Three lectures; first term

**Prerequisite(s):** AUTOTECH 3AE3, 3AV3, 4EC3, ENGTECH 4EE0, and registration in level IV of the Automotive and Vehicle Engineering Technology program

### AUTOTECH 4CI3 - ROBOTICS AND COMPUTER INTEGRATED MANUFACTURING

Manufacturing planning; flexible manufacturing systems; CIM and quality; emerging CIM technologies; vision systems; robotics; workspace analysis; homogeneous transformation; angle and axis of rotation; Euler angles; manipulator kinematics; trajectories planning; displacement and velocity analyses; Jacobian matrix; redundant sensing of manipulators; manipulator statics; singularities; robot programming.

Three lectures, one lab (three hours every other week); first term

**Prerequisite(s):** AUTOTECH 2AC3, 3AE3, ENGTECH 1CP3, ENGTECH 4EE0, and registration in level IV of the Automotive and Vehicle Engineering Technology program

### AUTOTECH 4DV3 - VEHICLE DYNAMICS

Acceleration performance; braking performance; aerodynamics and rolling resistance; ride; tires; steady-state cornering; suspensions; steering systems; rollover.

Three lectures, one lab (two hours every other week); first term

**Prerequisite(s):** AUTOTECH 3VD3, 4MS3; ENGTECH 4EE0, and registration in level IV of the Automotive and Vehicle Engineering Technology program

### AUTOTECH 4EC3 - ELECTRICAL AND ELECTRONICS CONTROL SYSTEMS

Intelligent vehicles; vehicle controllers, protocols buses and applications areas such as chassis, steering, braking, traction and stability control etc; and safety critical systems.

Three lectures, one lab (three hours); second term

**Prerequisite(s):** AUTOTECH 3CT3, 3MV3, and registration in level IV of the Automotive and Vehicle Engineering Technology program

### AUTOTECH 4MS3 - KINEMATIC AND DYNAMIC MODELLING AND SIMULATION

Kinematic and dynamics of rigid bodies; multi-body dynamic modelling and simulation of automotive dynamics; multi-body systems simulation software; modelling of the full vehicle; complex multi-body dynamic models.

Three lectures, one lab (three hours); second term

**Prerequisite(s):** AUTOTECH 3VD3, ENGTECH 3FE3 and one of ENGTECH 3FE3 or 3MN3, and registration in level IV of the Automotive and Vehicle Engineering Technology program

### AUTOTECH 4TR1 - CAPSTONE DESIGN I

This course requires students to research, design, develop, and implement an independent project and continues as a Technical Report II. The project plan and a model developed will be documented as a technical report and presented in a seminar.

One tutorial, one lab (two hours); second term

**Prerequisite(s):** AUTOTECH 3AV3, 3MV3, 3VD3, GENTECH 3MT3, and registration in level IV of the Automotive and Vehicle Engineering Technology program

### AUTOTECH 4TR3 - CAPSTONE DESIGN II

This course is a continuation of AUTOTECH 4TR1 and it requires the students to conduct further research, modify/refine project design, develop and implement the independent project proposal submitted as a part of the Capstone Design Project I course load. The project will be documented as a technical report and presented in a seminar.

One tutorial, one lab (three hours); first term

**Prerequisite(s):** AUTOTECH 3MP3, 4EC3, 4MS3, 4TR1, ENGTECH 4EE0, and registration in level IV of the Automotive and Vehicle Engineering Technology program.

## Biochemistry

Courses in Biochemistry are administered by the Department of Biochemistry and Biomedical Sciences.

Health Sciences Centre, Room 4H45, ext. 22059

<https://healthsci.mcmaster.ca/biochem>

### Courses

*If no prerequisite is listed, the course is open.*

### BIOCHEM 2B03 - NUCLEIC ACID STRUCTURE AND FUNCTION

Fundamental concepts and experimental methods in studying both DNA and RNA. Nature of genetic information and its storage. Molecular basis of replication, transcription and translation. Students will be required to participate in a seminar outside of regular class hours.

Three lectures; one term

**Prerequisite(s):** Credit or registration in one of CHEMBIO 20A3, 20G3, CHEM 20A3, 20G3, and credit or registration in one of CHEMBIO 20B3, 20D3, CHEM 20B3, 20D3, and registration in an Honours Biochemistry, Honours Chemical Biology, Honours Molecular Biology and Genetics, or Honours Neuroscience program; or registration in Honours Arts & Science and Biochemistry or Honours Medical and Biological Physics

**Antirequisite(s):** BIOCHEM 3G03

*Not open to students with credit or registration in ISCI 2A18 A/B.*

### BIOCHEM 2BB3 - PROTEIN STRUCTURE AND ENZYME FUNCTION

Fundamental concepts and experimental methods in studying structures of proteins, including membrane proteins. Nature of enzyme catalysis.

Introduction to enzyme kinetics and mechanism.

Three lectures; one term

**Prerequisite(s):** Credit or registration in one of CHEMBIO 20A3, 20G3, CHEM 20A3, 20G3, and credit or registration in one of CHEMBIO 20B3, 20D3, CHEM 20B3, 20D3, and registration in an Honours Biochemistry, Honours Chemical Biology, Honours Molecular Biology and Genetics or Honours Neuroscience program; or registration in Honours Arts & Science and Biochemistry or Honours Medical and Biological Physics

**Antirequisite(s):** BIOCHEM 3G03

*Not open to students with credit or registration in ISCI 2A18 A/B.*

### BIOCHEM 2EE3 - METABOLISM AND PHYSIOLOGICAL CHEMISTRY

A brief introduction to proteins, enzymes and gene expression followed by a more detailed treatment of energy and intermediary metabolism with emphasis on physiological chemistry.

On-line, web modules; one term

**Prerequisite(s):** One of CHEMBIO 20G3, CHEM 2BA3, 2E03, 20A3, 20C3, 20G3, HTHSCI 2D06 A/B, 2E03; or credit or registration in BIOPHYS 2S03 and registration in Honours Medical and Biological Physics (B.Sc.)

**Antirequisite(s):** BIOCHEM 3D03, LIFESCI 2EE3

*Not open to students registered in an Honours Biochemistry (B.Sc.) or Honours Chemical Biology (B.Sc.) program.*

### BIOCHEM 2L06 A/B - INQUIRY IN BIOCHEMICAL TECHNIQUES

An inquiry approach to learning about current techniques in biochemistry research. Students will work in small groups in labs and workshops, with a focus on how to search the primary literature, prepare and deliver written and oral presentations.

Two Lectures, one lab or workshop (three hours); two terms

**Prerequisite(s):** Credit or registration in BIOCHEM 2B03, 2BB3, BIOSAFE 1BS0 (or HTHSCI 1BS0) and registration in Honours Biochemistry (B.Sc.) or Honours Medical and Biological Physics (B.Sc.) or Honours Arts & Science and Biochemistry; or Honours Integrated Science (Biochemistry Concentration). BIOSAFE 1BS0 (or HTHSCI 1BS0) must be completed prior to the first lab.

**Antirequisite(s):** BIOCHEM 3L03

### BIOCHEM 3A03 - BIOCHEMICAL RESEARCH PRACTICE

A twelve week research project undertaken in a biochemistry laboratory during the fall, winter or summer term which requires the submission of a formal report. Students are responsible to arrange a suitable project, location and agreement of the supervisor. Refer to <https://healthsci.mcmaster.ca/biochem/education/undergraduate/forms-and-procedures> for information about applying for a position.

**Prerequisite(s):** BIOCHEM 2L06 A/B; and registration in an Honours Biochemistry (B.Sc.) program; and permission of the Department

**Antirequisite(s):** BIOCHEM 3LA3, 3R06 A/B

May not be taken concurrently with BIOCHEM 4F09 A/B, 4T15 A/B, 4Z03, HTHSCI 4R12 A/B.

*Not open to students with credit or registration in ISCI 2A18 A/B.*

### BIOCHEM 3BP3 - PRACTICAL BIOINFORMATICS IN THE GENOMICS ERA

Introduction to bioinformatics theory, tools, and practice with an emphasis upon high-throughput DNA sequencing technologies. Areas of emphasis include gene sequence analysis, functional prediction, genome assembly and annotation, gene expression analysis, gene regulation analysis, genome databases, and microbial genomics. Includes introduction to the command line, software development, and cloud computing.

Two lectures, one tutorial; one term

**Prerequisite(s):** One of BIOCHEM 2B03 (or ISCI 2A18 A/B), 3G03, BIOLOGY 2C03, MOLBIOL 2C03

### BIOCHEM 3D03 - METABOLISM AND REGULATION

Principles of bioenergetics. Major pathways for carbohydrates and lipids in energy production. Photosynthesis. Nitrogen metabolism. Biosynthesis of small biomolecules. Integration and regulation of metabolic activities.

Three lectures; one term

**Prerequisite(s):** One of BIOCHEM 2BB3, ISCI 2A18 A/B, or BIOCHEM 3G03 and registration in Honours Chemical Biology (B.Sc.) or Honours of Biophysics (B.Sc.) or Honours Medical and Biological Physics (B.Sc.)

**Antirequisite(s):** BIOCHEM 2EE3

### BIOCHEM 3EE3 - RESEARCH ADVANCES IN CELL BIOLOGY AND BIOCHEMISTRY

A critical study of the literature from recent primary manuscripts on gene regulation and inter-related regulatory pathways. Emphasis is on the molecular and cellular biology of multiple pathways that interact to affect phenomena in biology and disease.

Three lectures; one term

**Prerequisite(s):** BIOCHEM 2B03 (or ISCI 2A18 A/B); and registration in any Honours Biochemistry program, B.H.Sc. (Honours) Biomedical Sciences Specialization or Honours Arts & Science and Biochemistry, or registration in B.H.Sc. (Honours) Biomedical Discovery and Commercialization

**Antirequisite(s):** BIOCHEM 3C03, 4EE3

### BIOCHEM 3G03 - PROTEINS AND NUCLEIC ACIDS

Chemical and conformational properties of proteins and relationships to their function including regulation of enzyme activity. Chemical and physical structure of DNA and RNA relevant to biological function.

Three lectures; one term

**Prerequisite(s):** One of CHEM 2BA3, 2OA3, 2OC3, 2E03, 2OG3, CHEMBIO 2OA3, 2OG3, HTHSCI 2D06 A/B, 2E03 or registration in Honours Medical and Biological Physics (B.Sc.) or Honours Chemical Biology (B.Sc.); or credit or registration in CHEM 2OA3 and registration in Biomedical Discovery and Commercialization (B.H.Sc.). Completion of at least Grade 12 Biology is strongly recommended.

**Antirequisite(s):** BIOCHEM 2B03, 2BB3

*Not open to students registered in an Honours Biochemistry program or to students with credit or registration in ISCI 2A18 A/B.*

### BIOCHEM 3H03 - CLINICAL BIOCHEMISTRY

An outline of clinical chemistry; its relation to disease and relevance to health care.

Three lectures; one term

**Prerequisite(s):** Credit or registration in one of BIOCHEM 2EE3, 3D03, HTHSCI 2D06 A/B or HTHSCI 2E03

### BIOCHEM 3LA3 - ADVANCED BIOCHEMISTRY TECHNIQUES

Laboratory course focusing on module-based advanced biochemistry techniques such as protein purification and analysis using Fast Protein Liquid Chromatography (FPLC) and Immunodetection techniques, CRISPR-Cas9, quantitative PCR, cell culture techniques, etc.

One lecture (two hours), one lab (three hours); one term

**Prerequisite(s):** Registration in Level III Honours Biochemistry - Biomedical Research Specialization (B.Sc) or registration in a Level III Honours Biochemistry program and permission of the department

**Antirequisite(s):** BIOCHEM 3A03, 3R06

### BIOCHEM 3MI3 - MICROBIAL INTERACTIONS

This course examines how interactions with bacteria influence all cellular life on earth. Topics include conflict and collaboration between bacteria, host-pathogen and host-symbiont interactions, and biological innovations arising from battles between bacteria and bacteriophages.

Two lectures, one tutorial; one term

**Prerequisite(s):** BIOCHEM 2B03 and one of BIOCHEM 2BB3, BIOLOGY 2B03, 2C03, 2EE3; or BIOCHEM 3G03 or ISCI 2A18 A/B

### BIOCHEM 3R06 A/B S - RESEARCH PROJECT

A project supervised by a member or associate member of the Department of Biochemistry and Biomedical Sciences. Assessment is based on laboratory work, a poster presentation and a final report. Refer to <https://healthsci.mcmaster.ca/biochem/education/undergraduate/forms-and-procedures> for information about applying for a position.

**Prerequisite(s):** Registration in an Honours Biochemistry or Biomedical Discovery and Commercialization program. Permission of the Department is required.

**Antirequisite(s):** BIOCHEM 3A03, 3LA3, 3P03, ISCI 2A18 A/B, 3A12 A/B  
*May not be taken concurrently with BIOCHEM 4F09 A/B, 4R12 A/B, 4T15 A/B, 4Z03.*

*Consent of the Department is required.*

### BIOCHEM 3Z03 - STRUCTURAL DETERMINATION AND ANALYSIS OF MACROMOLECULES

Introduction to methods used in the determination of protein and macromolecular structures, which include x-ray crystallography, electron microscopy and small-angle x-ray scattering. Interpretation of protein structure data with practical emphasis on solving structures by x-ray crystallography.

One lecture, three hours; one term

**Prerequisite(s):** One of BIOCHEM 2BB3, BIOCHEM 3G03, or ISCI 2A18 A/B

**Antirequisite(s):** BIOCHEM 3X03

### BIOCHEM 4C03 - INQUIRY IN BIOCHEMISTRY

Broader aspects of biochemistry such as those relating to food, drugs, health and environment discussed in small groups. Group and individual projects, seminars and lectures as appropriate to the subject matter.

Three hours; one term

**Prerequisite(s):** Registration in Level IV or above of an Honours Biochemistry program

**Antirequisite(s):** BIOCHEM 4B06 A/B, 4F09 A/B, 4P03, 4R12 A/B, 4T15 A/B, 4Z03, ISCI 4A12 A/B

### BIOCHEM 4E03 - GENE REGULATION IN STEM CELLS AND DEVELOPMENT

Mechanisms of gene regulation, emerging concepts in transcriptional regulation, fundamental aspects of stem cell biology, gene expression in

cancer, clinical applications of human stem cells.

Three hours; one term

**Prerequisite(s):** BIOCHEM 2B03; or MOL BIOL 3H03 (or BIOLOGY 3H03) and BIOCHEM 3G03; or a grade of at least B+ in BIOCHEM 3G03; or HTHSCI 2D06 A/B or HTHSCI 2E03; or ISCI 2A18 A/B

### BIOCHEM 4F09 A/B - SENIOR THESIS

A thesis based on a major research project supervised by a member of the Department of Biochemistry and Biomedical Sciences. The results will also be presented to the Department in a seminar. Refer to <https://healthsci.mcmaster.ca/biochem/education/undergraduate/forms-and-procedures> for information about applying for a position.

Occasional tutorial (one hour); two terms

**Prerequisite(s):** BIOCHEM 2L06 A/B and registration in Level IV of B.H.Sc. (Honours) Biomedical Sciences Specialization or Level IV or above of an Honours Biochemistry program

*Permission of the Department is required.*

**Antirequisite(s):** BIOCHEM 4B06 A/B, 4C03, 4L03, 4P03, 4R12 A/B, 4T15 A/B, 4Z03, ISCI 4A12 A/B

*May not be taken concurrently with BIOCHEM 3A03, 3R06 A/B.*

### BIOCHEM 4H03 - BIOTECHNOLOGY AND DRUG DISCOVERY

Selected topics on genomics, proteomics and bioinformatics illustrating the modern application of molecular biology and biochemistry to pharmaceutical and other research.

One session (three hours); one term

**Prerequisite(s):** Credit or registration in BIOCHEM 3D03; or BIOCHEM 3G03 and registration in a Chemical Engineering program

**Antirequisite(s):** BIOMEDDC 3B06 A/B

### BIOCHEM 4J03 - IMMUNOLOGICAL PRINCIPLES IN PRACTICE

This advanced course applies problem-based learning to immunological problems. Topics concern development of immunoassays, resistance to infection and immunity in health and disease.

One session (three hours), one tutorial; one term

**Prerequisite(s):** HTHSCI 3I03; or permission of the instructor

**Antirequisite(s):** MOLBIOL 4J03

**Cross-list(s):** HTHSCI 4J03

*This course is administered by the Bachelor of Health Sciences (Honours) Program.*

### BIOCHEM 4M03 - CELLULAR AND INTEGRATED METABOLISM

Study of nutritional biochemistry and the regulation of metabolism; the role of specific nutrients in functional processes of the body in health and disease.

Three lectures; one term

**Prerequisite(s):** BIOCHEM 3D03; or BIOCHEM 2EE3 and 3G03 (or ISCI 2A18 A/B); or HTHSCI 2D06 A/B or 2E03

**Antirequisite(s):** BIOCHEM 3N03

### BIOCHEM 4N03 - MOLECULAR MEMBRANE BIOLOGY

Properties and structures of membranes, molecular components of biological membranes and their interactions, strategies for signal transduction cascades, hormones, receptors.

Three lectures; one term

**Prerequisite(s):** Credit or registration in BIOCHEM 3D03; or BIOCHEM 2EE3 and BIOCHEM 3G03; or one of HTHSCI 2D06 A/B, HTHSCI 2E03, ISCI 2A18 A/B

**Antirequisite(s):** BIOCHEM 4K03

### BIOCHEM 4Q03 - BIOCHEMICAL PHARMACOLOGY

Introduction to the basic concepts of pharmacology. Mechanisms of action of antibacterial, antiviral, antifungal and anticancer drugs, toxins and how cellular resistance to such agents develop. Applications of drug-resistant mutants for genetic, biochemical pharmacological and cell biological studies.

Three lectures; one term

**Prerequisite(s):** BIOCHEM 2BB3; or BIOCHEM 2EE3 and BIOCHEM 3G03; or credit or registration in BIOCHEM 3G03 and BIOMEDDC 3B06; or HTHSCI 2D06 A/B or HTHSCI 2E03; or ISCI 2A18 A/B

### BIOCHEM 4S03 - INTRODUCTION TO MOLECULAR BIOPHYSICS

A presentation of recent contributions made to the fields of molecular and cell biology by the use of physical approaches. In particular, the following topics are discussed: physical properties of biomolecules, protein folding, molecular motors, cell motion and cell adhesion. Emphasis on the critical evaluation of current research literature.

Three lectures; one term

**Prerequisite(s):** One of CHEM 2R03, CHEMBIO 2P03, ISCI 2A18 A/B, MATLS 2B03, PHYSICS 2H04; or registration in Honours Mathematics and Physics (B.Sc.). BIOPHYS 3S03 is recommended.

**Antirequisite(s):** PHYSICS 4S03

**Cross-list(s):** BIOPHYS 4S03

*This course is administered by the Department of Physics and Astronomy.*

### BIOCHEM 4T15 A/B - SENIOR THESIS

A thesis based on a major research project supervised by a member of the Department of Biochemistry and Biomedical Sciences. The results will also be presented to the Department in a seminar. Refer to <https://healthsci.mcmaster.ca/biochem/education/undergraduate/forms-and-procedures> for information about applying for a position.

Occasional tutorial (one hour); two terms

**Prerequisite(s):** BIOCHEM 2L06 A/B and registration in Level IV or above of an Honours Biochemistry program.

*Permission of the Department is required.*

**Antirequisite(s):** BIOCHEM 4B06 A/B, 4C03, 4F09 A/B, 4R12 A/B, 4Z03, ISCI 4A12 A/B

*May not be taken concurrently with BIOCHEM 3A03, 3R06 A/B.*

### BIOCHEM 4Z03 - SENIOR PROJECT

A project supervised by a member of the Department of Biochemistry and Biomedical Sciences. Areas of study can include pedagogical research, literature reviews and data analysis as well as traditional lab-based projects. Assessment is based on lab/research performance and a final report. Refer to <https://healthsci.mcmaster.ca/biochem/education/undergraduate/forms-and-procedures> for information about applying for a position.

**Prerequisite(s):** BIOCHEM 2L06 A/B and registration in Level IV or above of an Honours Biochemistry program.

*Permission of the department is required.*

**Antirequisite(s):** BIOCHEM 4C03, 4F09 A/B, 4T15 A/B, HTHSCI 4R12 A/B, ISCI 4A12 A/B

*May not be taken concurrently with BIOCHEM 3A03 or 3R06 A/B.*

## Biology

Courses in Biology are administered by the Department of Biology. Life Sciences Building, Room 118, ext. 23049



<http://www.biology.mcmaster.ca>

#### Note

Students are strongly encouraged to take BIOLOGY 1A03 and BIOLOGY 1M03 in different terms.

#### Courses

*If no prerequisite is listed, the course is open.*

### BIOLOGY 1A03 - CELLULAR AND MOLECULAR BIOLOGY

Structure, molecular composition and function in sub-cellular and cellular systems.

Three hours (lectures, web modules), one lab (two hours); one term

**Prerequisite(s):** One of Grade 12 Biology U, BIOLOGY 1P03 or registration in an Engineering program

**Co-requisite(s):** WHMIS 1A00, and BIOSAFE 1BS0 (or HTHSCI 1BS0) if not already completed. Both requirements must be completed prior to the first lab. *Not open to students with credit or registration in HTHSCI 1106 A/B or ISCI 1A24 A/B.*

*Students are strongly encouraged to take BIOLOGY 1A03 and BIOLOGY 1M03 in the different terms.*

### BIOLOGY 1M03 - BIODIVERSITY, EVOLUTION AND HUMANITY

Fundamental evolutionary and ecological concepts with particular reference to the diversity of life.

Three lectures, seminar/lab (two hours every other week); one term

**Prerequisite(s):** Grade 12 Biology U or BIOLOGY 1P03

*Not open to students with credit or registration in ISCI 1A24 A/B.*

*Students are strongly encouraged to take BIOLOGY 1A03 and 1M03 in the different terms.*

### BIOLOGY 1P03 - INTRODUCTORY BIOLOGY

Introduction to basic biological principles for students without Grade 12 Biology U.

Three lectures; one term

*Not open to students with credit in Grade 12 Biology U.*

### BIOLOGY 2A03 - INTEGRATIVE PHYSIOLOGY OF ANIMALS

Fundamental principles of animal physiology, including: cellular energetics, diffusion, osmosis, membrane transport, excitability and contractility, gas exchange, fluid dynamics, electrolyte balance.

Three lectures, one lab (three hours); one term

**Prerequisite(s):** BIOLOGY 1A03, 1M03; and one of PHYSICS 1A03 (or 1B03) or 1C03 or credit or registration in ARTSSCI 2D06 A/B; or ISCI 1A24 A/B

**Antirequisite(s):** MEDPHYS 4XX3

*Not open to students with credit or registration in BIOLOGY 3P03, 3U03, 3UU3 or to students registered in the B.Sc.N., Bachelor of Health Sciences (Honours)(B.H.Sc.), Bachelor of Health Sciences (Honours) - Biomedical Sciences Specialization (B.H.Sc.), Bachelor of Health Sciences (Honours) - Child Health Specialization (B.H.Sc.), or Bachelor of Health Sciences (Honours) - Global Health Specialization (B.H.Sc.), or with credit or registration in HTHSCI 2F03 or 2FF3*

### BIOLOGY 2B03 - CELL BIOLOGY

Basic treatment of cell structure and function, including transport and chemical signals; adaptation of structure and function in specialized cells.

Lectures (one hour), web modules (three hours), tutorial, seminars; one term

**Prerequisite(s):** BIOLOGY 1A03, CHEM 1A03, 1AA3; or ISCI 1A24 A/B; or BIOLOGY 1A03 and registration in Chemical Engineering and Biosciences, or

Honours Medical and Biological Physics (B.Sc.)

**Antirequisite(s):** HTHSCI 2K03

*Not open to students with credit or registration in ISCI 2A18 A/B.*

### BIOLOGY 2C03 - GENETICS

Structure, function and transmission of genes; chromosomal basis of inheritance; mono- and dihybrid crosses; sequential steps in gene function; linkage maps; sex chromosome inheritance.

Lectures (three hours), online modules (two hours), tutorial (one hour); one term

**Prerequisite(s):** BIOLOGY 1A03, 1M03 (or ISCI 1A24 A/B); and

registration in an Honours program in the Faculty of Science, the Faculty of Health Sciences, or the Arts & Science Program

**Antirequisite(s):** MOLBIOL 2C03

*Not open to students registered in Honours Molecular Biology and Genetics.*

### BIOLOGY 2D03 - PLANT BIODIVERSITY AND BIOTECHNOLOGY

Key concepts in plant biology and biodiversity will be explored, including the origin of plants, plant structure and development, plant genomes, plant responses to the environment and other organisms, agriculture and plant biotechnology.

Three lectures, one lab (three hours); one term

**Prerequisite(s):** BIOLOGY 1A03, 1M03; or ISCI 1A24 A/B. If not already completed, BIOSAFE 1BS0 (or HTHSCI 1BS0) must be done prior to the first lab.

### BIOLOGY 2EE3 - INTRODUCTION TO MICROBIOLOGY AND BIOTECHNOLOGY

Microbial structure, genetics, metabolism, and evolution. Overview of agricultural, medical, environmental, and industrial microbiology. Covers key concepts, fundamental principles, and common research tools in microbiology.

Three lectures, one lab (three hours); one term

**Prerequisite(s):** ISCI 1A24 A/B; or BIOLOGY 1A03, 1M03, CHEM 1A03, 1AA3; or registration in Level III Chemical Engineering and Bioengineering. If not already completed, BIOSAFE 1BS0 (or HTHSCI 1BS0) must be done prior to the first lab.

### BIOLOGY 2F03 - FUNDAMENTAL AND APPLIED ECOLOGY

An introduction to fundamental ecological principles and their application to current environmental problems at the level of organisms, populations and ecosystems.

Three lectures, one optional tutorial, one lab (three hours); one term

**Prerequisite(s):** BIOLOGY 1M03 or ISCI 1A24 A/B

*Not open to students with credit or registration in ISCI 2A18 A/B.*

### BIOLOGY 2L03 - EXPERIMENTAL DESIGN IN BIOLOGY

An active learning approach to experiencing how research is conceived, executed, interpreted and communicated in Biology. Principles and case studies in lectures are matched with hands-on application in the lab.

Two lectures, one lab (four hours); one term

**Prerequisite(s):** Registration in Level II or III of any Honours Biology or Honours Molecular Biology and Genetics program or permission of the Instructor. If not already completed, BIOSAFE 1BS0 (or HTHSCI 1BS0) must be done prior to the first lab.

**Antirequisite(s):** BIOLOGY 2L06

### BIOLOGY 3AA3 - FUNDAMENTAL CONCEPTS OF PHARMACOLOGY

Drug interactions with living organisms; absorption and elimination of drugs, variations in drug action, drug toxicity, receptor structure and function, and signal transduction pathways.

Three lectures, one tutorial (three hours); one term

**Prerequisite(s):** BIOLOGY 2A03; and one of BIOCHEM 2BB3, 2EE3, ISCI 2A18 A/B, or registration in BIOCHEM 3G03. BIOLOGY 3P03 is strongly recommended.

*Not open to students with credit in BIOCHEM 4Q03 or registration in Honours Biology and Pharmacology.*

### BIOLOGY 3B03 - PLANT PHYSIOLOGY

Principles of physiology and plant cell metabolism. Topics include: photosynthesis, photorespiration, mineral nutrition, water relations and transpiration.

Two lectures, one lab (three hours); one term

**Prerequisite(s):** BIOLOGY 2B03 or ISCI 2A18 A/B; and BIOLOGY 2D03 or registration in a Biophysics program

### BIOLOGY 3DD3 - COMMUNITIES AND ECOSYSTEMS

Communities and ecosystems: mechanism and principles governing their form and function in origin, development, and maintenance of terrestrial and aquatic communities and ecosystems and their interactions with anthropogenic change, with elements of macroecology, biogeography, landscape, and global ecology.

Three lectures, one tutorial; one term

**Prerequisite(s):** BIOLOGY 2F03 or ISCI 2A18 A/B. BIOLOGY 2D03 is recommended.

### BIOLOGY 3E13 - ECOLOGICAL INDICATORS

Students learn how to assess the health of Great Lakes ecosystems, including wetlands, woodlots, and streams using established ecological indicators.

One lecture (2 hours), 1 lab (3 hours); one term

**Prerequisite(s):** BIOLOGY 2F03 or ISCI 2A18

### BIOLOGY 3EP3 A/B S - APPLIED BIOLOGY PLACEMENT

This placement course provides students with the opportunity to explore career options and integrate academics with a community, volunteer or professional experience. The student will complete an academic component in addition to the placement.

Normally students will complete 60 hours of placement work through the duration of the experience; may be completed over one or two terms

**Prerequisite(s):** Credit or registration in SCIENCE 2C00; and registration in Level III or above of a program in the Faculty of Science; and permission of the academic supervisor and the course coordinator (or designate)

**Antirequisite(s):** EARTHSC 3IN3, 4IN3, GEOG 3MI3, 3MV3 A/B, LIFESCI 3EP3 A/B S, 3EX6, SCIENCE 3EP3 A/B S, 3EX6 A/B

*Students are responsible to arrange a suitable placement and supervision, and are required to submit an application to the Department of Biology two months prior to registration. More information and the application form can be found at <http://www.biology.mcmaster.ca/undergraduate-programs/courses.html>.*

### BIOLOGY 3ET3 - ECOTOXICOLOGY

This course covers the environmental pathways of exposures of terrestrial and aquatic organisms to modern and legacy contaminants, and the adverse effects that these contaminants have on diverse species including humans.

Two lectures, one tutorial; one term

**Prerequisite(s):** One of CHEMBIO 20A3 or 20G3, CHEM 2E03, 20A3, 20C3 or 20G3 and registration in Level III or above.

Completion of BIOLOGY 2A03, 2B03, 2F03, ENVIRSCI 3003 are recommended.

### BIOLOGY 3FF3 - EVOLUTION

Successful participants synthesize and apply the main theoretical concepts and evaluate and analyse the major empirical observations related to evolution upon completing this course.

Three lectures, one tutorial; one term

**Prerequisite(s):** BIOLOGY 2C03 or MOLBIOL 2C03

### BIOLOGY 3HD3 - HUMAN DISASTERS

This course will examine a range of human and biologically based disasters, such as antibiotic resistance, DDT, the Great Sparrow Massacre, the Kansas Dustbowl and Agent Orange, by contextualising the circumstances and examining the science involved.

Lectures (three hours); one term

**Prerequisite(s):** Registration in Level III or above of any program

### BIOLOGY 3IR3 A/B S - INDEPENDENT RESEARCH PROJECT

Students will conduct an independent research study in a faculty member's laboratory. For further information, please refer to <http://www.biology.mcmaster.ca/undergraduate-programs/courses.html> and click on Biology 3IR3.

Students are responsible to arrange a suitable placement and supervision, and are required to submit an application to the Department of Biology thirty days prior to the date classes begin in each Term (see the Sessional Dates section of this Calendar).

8 - 10 hours per week (scheduling arranged by supervisor); one or two term(s)

**Prerequisite(s):** Registration in Level III or above of any Honours Biology program. BIOLOGY 2L06 A/B (or 2L03) is recommended preparation.

Permission of the Department is required.

Students are expected to have a GPA of at least 8.0.

**Antirequisite(s):** MOLBIOL 3I03 A/B S

*Not open to students with credit or registration in any department- or program-based independent study or research seminar course within the University.*

### BIOLOGY 3JJ3 - FIELD METHODS IN ECOLOGY

An introduction to techniques in ecology, including restoration, population, community, functional, and behavioural ecology, based on field labs. Lectures provide background and data analysis.

Two lectures, one lab (four hours); one term

**Prerequisite(s):** BIOLOGY 2F03 or ISCI 2A18 A/B

### BIOLOGY 3MM3 - INVERTEBRATE FORM AND FUNCTION

Analysis of sensory reception, nervous control systems, feeding, skeletal support, locomotion, excretion, respiration, and reproduction in selected invertebrates.

Two lectures, one lab (three hours); one term

**Prerequisite(s):** BIOLOGY 2A03 and registration in Level III or above of any Honours program; or BIOLOGY 1A03 and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

### BIOLOGY 3P03 - CELL PHYSIOLOGY

Analysis of cell function with an emphasis on electrical properties, ion transport proteins, signalling via second messengers, and mechanisms of cell homeostasis.

Two lectures, one tutorial; one term

**Prerequisite(s):** One of BIOLOGY 2A03, PNB 2XB3, or both BIOLOGY 1A03 (or ISCI 1A24 A/B) and registration in Level III or above of Honours Kinesiology; and credit or registration in one of BIOCHEM 2BB3, 3G03, BIOLOGY 2B03, or registration in Honours Neuroscience; or ISCI 2A18 A/B

### BIOLOGY 3PG3 - POPULATION GENETICS

Conceptual foundations of evolutionary theory and principles of population genetics.

Three lectures; or two lectures, one tutorial; one term

**Prerequisite(s):** BIOLOGY 3FF3 and registration in Level III or above of any Honours program

### BIOLOGY 3R03 - FIELD BIOLOGY I

Academic component associated with field work chosen from an assortment of modules. Content and schedules vary annually. Module must differ from any completed for credit in BIOLOGY 4J03. For further information, please refer to <http://www.biology.mcmaster.ca> and click on Field Biology.

**Prerequisite(s):** Permission of the Course Administrator, Life Sciences Building, Room 118. Some modules have additional prerequisites.

**Co-requisite(s):** Credit or registration in BIOLOGY 3RF0

For further information, please refer to <http://www.biology.mcmaster.ca> and click on Field Biology.

### BIOLOGY 3RF0 - FIELD WORK I

Field work, corresponding with BIOLOGY 3R03, chosen from an assortment of modules. Content and schedules vary annually. Module must differ from any completed for credit in BIOLOGY 4J03. Students enrolling in this course must pay the incidental fees, as prescribed by the Department. Further information may be found at <http://www.biology.mcmaster.ca> and click on Field Biology.

**Prerequisite(s):** Permission of the Course Administrator, Life Sciences Building, Room 118. Some modules have additional prerequisites.

Students must register in BIOLOGY 3R03 in the same or subsequent session as BIOLOGY 3RF0.

### BIOLOGY 3S03 - AN INTRODUCTION TO BIOINFORMATICS

This course introduces the techniques and methods of basic computer analysis of sequence data, including alignment, databases, and phylogenetic reconstruction.

Three lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level III or above of any program; BIOLOGY 2C03 (or equivalent) is strongly recommended

### BIOLOGY 3SA3 - APPLIED STATISTICS FOR BIOLOGY

Theory and practice for statistical analysis in Biology. Using R, students will explore and analyse large data sets.

Two lectures, one tutorial; one term

**Prerequisite(s):** One of ISCI 2A18, PNB 3XE3, STATS 2B03, 2MB3

**Antirequisite(s):** STATS 4P03

### BIOLOGY 3SS3 - POPULATION ECOLOGY

Population structure and dynamics. Natural selection and regulation of organisms by environmental and biological factors. An evolutionary view of predation, competition, life history schedules.

Three lectures, one tutorial (one hour); one term

**Prerequisite(s):** BIOLOGY 2F03 (or ISCI 2A18 A/B)

### BIOLOGY 3U03 - ANIMAL PHYSIOLOGY - HOMEOSTASIS

Respiration, circulation, acid-base balance and renal function.

Two lectures, one lab/tutorial (three hours); one term

**Prerequisite(s):** BIOLOGY 2A03 and registration in Level III or above of any Honours program; or both BIOLOGY 1A03 and registration in Level III or above of Honours Kinesiology. BIOCHEM 2EE3 and BIOCHEM 3G03 are recommended. *Not open to students registered in the B.Sc.N., Bachelor of Health Sciences (Honours)(B.H.Sc.), Bachelor of Health Sciences (Honours) - Biomedical Sciences Specialization (B.H.Sc.), Bachelor of Health Sciences (Honours) - Child Health Specialization (B.H.Sc.), or Bachelor of Health Sciences (Honours) - Global Health Specialization (B.H.Sc.), or with credit or registration in HTHSCI 2F03 or 2FF3.*

### BIOLOGY 3UU3 - ANIMAL PHYSIOLOGY - REGULATORY SYSTEMS

Regulation associated with major features and functions of organisms (e.g. feeding, reproduction, thermoregulation, growth, stress, sleep, aging). Emphasis on endocrinology, evolution, vertebrates and ecology. Material will include selected readings.

Three lectures; or two lectures, one tutorial; one term

**Prerequisite(s):** BIOLOGY 2A03; or both BIOLOGY 1A03 and registration in Level III or above of Honours Kinesiology. BIOLOGY 2B03 (or ISCI 2A18 A/B) and BIOLOGY 2C03 or MOLBIOL 2C03 are recommended.

*Not open to students registered in B.Sc.N., Bachelor of Health Sciences (Honours)(B.H.Sc.), Bachelor of Health Sciences (Honours) - Biomedical Sciences Specialization (B.H.Sc.), Bachelor of Health Sciences (Honours) - Child Health Specialization (B.H.Sc.), or Bachelor of Health Sciences (Honours) - Global Health Specialization (B.H.Sc.), or with credit or registration in HTHSCI 2F03 or HTHSCI 2FF3.*

### BIOLOGY 3VV3 - LABORATORY METHODS IN MOLECULAR BIOLOGY

A laboratory course providing hands-on experience in basic molecular biology techniques.

One lecture, two labs (three hours); one term

**Prerequisite(s):** BIOLOGY 2B03 (or ISCI 2A18 A/B) and 2C03. If not already completed, BIOSAFE 1BS0 (or HTHSCI 1BS0) and WHMIS 1A00 must be done prior to the first lab.

**Antirequisite(s):** MOLBIOL 3V03

### BIOLOGY 3XL3 - COMPARATIVE VERTEBRATE ANATOMY & PHYSIOLOGY

Major organ systems (cardiovascular, respiratory, renal, skeletal, muscle, gastrointestinal) form and function compared across taxa (within vertebrates) and environments (heat, cold, salt, and oxygen stress).

Two lectures, one lab (three hours); one term

**Prerequisite(s):** BIOLOGY 2A03 and registration in Level III or above of any Honours program; or both BIOLOGY 1A03 and registration in Level III or above of Honours Kinesiology. BIOCHEM 2EE3 and 3G03 are recommended.

*Offered in alternate years.*

### BIOLOGY 3ZZ3 - TOPICS IN PHYSIOLOGY

An advanced seminar focusing on current topics in physiology.

One seminar (two hours), one tutorial (two hours); one term

**Prerequisite(s):** Registration in Honours Biology - Physiology (B.Sc.); or BIOLOGY 2A03 and one of BIOLOGY 3MM3, 3P03, 3U03, 3UU3, 3XL3

### BIOLOGY 4A03 - ADVANCED TOPICS IN ECOLOGY

Examination of current topics in ecology including ecosystem and landscape ecology, evolutionary ecology and behavioural ecology.

Two lectures, one tutorial (three hours); one term

**Prerequisite(s):** One of BIOLOGY 3DD3, 3FF3, 3SS3; and registration in Level III or above of any Honours program

### BIOLOGY 4AA3 - CONSERVATION BIOLOGY

Examination of how biological principles, mainly from population biology and genetics can be applied to conserving diversity in the natural world.

Two lectures, one tutorial, one lab (three hours); one term

**Prerequisite(s):** BIOLOGY 2C03 or MOLBIOL 2C03; and one of BIOLOGY 3DD3, 3FF3 or 3SS3; and registration in Level III or above of any Honours program

### BIOLOGY 4AE3 - THE ECOLOGY AND EVOLUTION OF ORGANISMS

The evolution of organismal form and function from a perspective of the ecological niche. Convergent and coevolutionary aspects as shaped by environmental and biological factors.

Three lectures; one term

**Prerequisite(s):** BIOLOGY 2F03 (or ISCI 2A18 A/B) and registration in Level III or above of an Honours Biology program

### BIOLOGY 4C12 A/B S - SENIOR THESIS

A thesis based upon a research project in an area of biology. Arrangements to take BIOLOGY 4C12, including agreement of the supervisory committee, should be made according to Departmental Guidelines before the end of March in Level III. For information on Departmental Guidelines, please refer to the Biology web site at <http://www.biology.mcmaster.ca/undergraduate-programs/courses.html> and click on BIOLOGY 4C12, or contact the Course Administrator.

Occasional lecture/tutorial; two terms

**Prerequisite(s):** Registration in Level IV of any Honours Biology program and permission of the Course Administrator, Life Sciences Building, Room 118.

Students are expected to have a GPA of at least 8.5.

**Antirequisite(s):** BIOLOGY 4F06 A/B S, BIOLOGY 4C09 A/B S

*Not open to students with credit or registration in any Level IV department- or program-based thesis or independent study/project course.*

### BIOLOGY 4ED3 - EVOLUTIONARY DEVELOPMENTAL BIOLOGY

A critical analysis of the conceptual and methodological approaches to Evolutionary Developmental biology. Emphasis is on integrating the developmental, genetic and evolutionary approaches towards understanding how phenotypic variation is generated.

Lectures (two hours), one tutorial (two hours); one term

**Prerequisite(s):** BIOLOGY 3FF3 or MOLBIOL 3M03; and registration in Level III or above of any Honours program

### BIOLOGY 4EE3 - HUMAN DIVERSITY AND HUMAN NATURE

The nature of genetic diversity in humans; the nature versus nurture debate in relation to genetic determinism and biological basis of behaviour.

Three lectures, one tutorial; one term

**Prerequisite(s):** BIOLOGY 3FF3 and registration in Level III or above of any Honours program

### BIOLOGY 4F06 A/B S - SENIOR PROJECT

Students undertake an experimental or library project in a specialized area of biology under the direction of a member of the Biology department.

Arrangements to take BIOLOGY 4F06, including the agreement of the supervisory committee, should be made according to Departmental Guidelines before the end of March in Level III. For information on Departmental Guidelines, please refer to the Biology web site at <http://www.biology.mcmaster.ca/undergraduate-programs/courses.html> and click on BIOLOGY 4F06, or contact the Course Administrator.

Occasional lecture/tutorial; two terms

**Prerequisite(s):** Registration in Level IV of any Honours Biology program and permission of the Course Administrator, Life Sciences Building, Room 118.

Students are expected to have a GPA of at least 7.5.

**Antirequisite(s):** BIOLOGY 4C09 A/B S

*Not open to students with credit or registration in any Level IV department- or program-based thesis or independent study/project course.*

### BIOLOGY 4IR3 - ADVANCED INDEPENDENT RESEARCH PROJECT

An independent research project, involving bench or field work or literature review, in an area of biology, to be supervised by an approved faculty member. Arrangements to take this course, including agreement of the supervisor, should be made according to Departmental Guidelines at least one month prior to beginning of the course. For information on Departmental Guidelines, please refer to the Biology web site at <http://www.biology.mcmaster.ca/undergraduate-programs/courses.html> and click on BIOLOGY 4IR3, or contact the Course Administrator.

Occasional lecture/tutorial; one term

**Prerequisite(s):** Registration in Level IV of any Honours Biology program and permission of the Course Administrator

**Antirequisite(s):** BIOLOGY 4C09, 4C12 A/B S, 4F06, LIFESCI 4A03

*Not open to students with credit or registration in any Level IV department- or program-based thesis or independent study/project course.*

### BIOLOGY 4J03 - FIELD BIOLOGY II

A second academic component associated with field work chosen from an assortment of modules. Content and schedules vary annually. Module must differ from any completed for credit in BIOLOGY 3R03. For further information, please refer to <http://www.biology.mcmaster.ca> and click on Field Biology.

**Prerequisite(s):** BIOLOGY 3R03, 3R0; and permission of the Course Administrator, Life Sciences Building, Room 118. Some modules have additional prerequisites.

**Co-requisite(s):** Credit or registration in BIOLOGY 4JF0

### BIOLOGY 4JF0 - FIELD WORK II

Field work, corresponding with BIOLOGY 4J03, chosen from an assortment of modules. Content and schedules vary annually. Module must differ from any completed for credit in BIOLOGY 3R03. Students enrolling in this course must pay the incidental fees, as prescribed by the Department. Further information may be found at <http://www.biology.mcmaster.ca> and click on Field Biology.

**Prerequisite(s):** BIOLOGY 3R03, BIOLOGY 3R0; and permission of the Course Administrator, Life Sciences Building, Room 118. Some modules have additional prerequisites.

*Students MUST register in BIOLOGY 4J03 in the same or subsequent session as BIOLOGY 4JF0.*



### BIولوجY 4PP3 - ENVIRONMENTAL MICROBIOLOGY AND BIOTECHNOLOGY

Study of interaction of microorganisms with their environment with emphasis on topics of ecological significance including plant-microbe interactions, nutrient cycling and waste treatment.

Two lectures, one tutorial (three hours); one term

**Prerequisite(s):** BIOLOGY 2EE3; and registration in Level III or above of any Honours program

### BIولوجY 4T03 - MOLECULAR AND CELLULAR NEUROSCIENCE

Selected topics in neurobiology at the molecular and cellular level including growth factors and neuronal development, ion channels, neurotransmitter functions, learning and memory, and neurological disorders.

Two lectures, one tutorial (three hours); one term

**Prerequisite(s):** BIOLOGY 2B03 (or ISCI 2A18 A/B), BIOLOGY 3P03 and registration in Level III or above of an Honours Biology program, Honours Neuroscience, or Honours Psychology, Neuroscience & Behaviour. MOLBIOL 3B03 is recommended.

### BIولوجY 4X03 - ENVIRONMENTAL PHYSIOLOGY

The influence of environmental factors on the physiology of animals and the adaptation of animals to diverse environments in the context of biodiversity.

Three lectures; or two lectures, one tutorial; one term

**Prerequisite(s):** One of BIOLOGY 3MM3, 3P03, 3U03, 3UU3; and registration in Level III or above of any Honours program

## Biomedical Discovery & Commercialization

Courses in Biomedical Discovery and Commercialization are administered by the Department of Biochemistry and Biomedical Sciences. Health Sciences Centre, Room 4H30, ext. 27335, [bdcprogram@mcmaster.ca](mailto:bdcprogram@mcmaster.ca) <http://bdcprogram-mcmaster.ca/> <http://bdcstudent-mcmaster.ca/>

### BIOMEDDC 2C03 - EXPLORING CAREERS IN BIOMEDICAL SCIENCES

An inquiry-based course that will explore careers related to biochemistry and biomedical sciences, coupled with an exploration of the science behind each career. The course will include examination of the primary literature as it relates to each topic, culminating in a final presentation.

One three-hour seminar

**Prerequisite(s):** Registration in Level II or above of any program in the Faculty of Health Sciences or Faculty of Science

### BIOMEDDC 2W03 - WRITE RIGHT FOR YOUR SCIENCE: SCIENTIFIC WRITING FOR THE BIOMEDICAL SCIENCES

This course will develop fundamental writing skills with application to writing for the biomedical sciences. We will review basic principles of effective scientific writing, and review good and bad writing. Students will be given practical examples of science writing and will be given writing exercises with opportunities for frequent feedback and review to advance their written communications.

One two-hour lecture, 1 one-hour tutorial; one term

**Prerequisite(s):** Registration in Level II or above of any program in the Faculty of Health Sciences or Faculty of Science

### BIOMEDDC 3A03 - ROAD TO BIOMEDICAL DISCOVERY

This course will introduce students to critical thinking essential to discovery research through examples of fundamental and applied research occurring in the laboratories of thought leaders at McMaster and their efforts to translate this knowledge to stakeholders across the spectrum of knowledge users.

Communication of fundamental research is emphasized.

Three lectures; one term

**Prerequisite(s):** Registration in Level III of the Biomedical Discovery and Commercialization program

### BIOMEDDC 3B06 A/B - DRUG DISCOVERY AND DEVELOPMENT

This two-term course will provide an overview of paradigms and processes in modern drug discovery and development. Selected content will include discovery and preclinical research as well as clinical development, market analysis and intellectual property. Learners will benefit from a mix of lecture-based and student-focused activities.

Three lectures; two terms

**Prerequisite(s):** Registration in Level III of the Biomedical Discovery and Commercialization program.

**Antirequisite(s):** BIOCHEM 4H03

### BIOMEDDC 3C09 A/B - RESEARCH SKILLS LABORATORY AND INQUIRY

A two-term laboratory-based inquiry course where students will learn and apply current techniques used in drug discovery. Instruction to achieve an understanding of key laboratory skills in drug discovery will prepare students for participation in a team-based drug discovery project.

One lecture (two hours), two labs (three hours); two terms

**Prerequisite(s):** Registration in level III of the Biomedical Discovery and Commercialization program

### BIOMEDDC 4A15 A/B - SENIOR RESEARCH THESIS

An intensive two-term research project carried out under the supervision of a member or associate member of the Department of Biochemistry and Biomedical Sciences. The results will be presented to the department in a seminar or poster session as part of a senior thesis symposium.

Monthly tutorial (one hour); two terms

**Prerequisite(s):** Registration in Level IV of the Biomedical Discovery and Commercialization program

### BIOMEDDC 4B03 - ROAD TO BIOMEDICAL COMMERCIALIZATION

This course will be a practical and hands-on foray into the world of commercialization of biomedical research. Students will conduct an in-depth examination of biomedical research with the goal of establishing a favoured avenue for commercialization. To this end, students will work in small groups with both individual and group assignments. The effort will be self-directed and under the mentorship of a content expert. Students will also benefit from lectures and guidance from commercialization experts in the McMaster Industry Liaison Office (MILO.)

Seminar and discussions (three hours); one term

**Prerequisite(s):** Registration in Level IV of the Honours Bachelor of Health Sciences in Biomedical Discovery and Commercialization Program

## Biophysics

Courses in Biophysics are administered by the Department of Physics and Astronomy.

A.N. Bourns Science Building, Room 241, ext. 24559

<http://www.physics.mcmaster.ca/>

### Department Notes

1. The Department reserves the right to withdraw a Level III or IV course which is not specifically required in a Physics program if the registration falls below ten.
2. Students in Level III or IV of Physics programs will find a number of relevant electives among the offerings of the Department of Biology, the Department of Engineering Physics and the School of Geography and Earth Sciences.
3. Courses in Physics and Astronomy are not open to students registered in the Bachelor of Technology program.

### Courses

#### BIOPHYS 1S03 - BIOPHYSICS OF MOVEMENT AND THE SENSES: FROM MICROBES TO MOOSE

A conceptual course, based on and requiring Grade 12 Physics. Applications to biological systems exploring the interdisciplinary field of biophysics. Topics include: Sound, Hearing and Echolocation, Optics of Vision, Animal Locomotion, Thermal Motion of Molecules, Heat and Heat Flow in biological systems, Fluid Dynamics. Intended for students in Life Science Gateway, Chemical and Physical Sciences Gateway, and those interested in physical aspects of biology. Three lectures; one term

**Prerequisite(s):** Grade 12 Physics U or credit or registration in one of PHYSICS 1A03, 1L03; and credit or registration in one of MATH 1A03, 1LS3, 1X03, 1ZA3; or ISCI 1A24 A/B

#### BIOPHYS 2A03 - BIOPHYSICS OF THE CELL AND LIVING ORGANISMS

Some of the most exciting breakthroughs in science are made at the interface between disciplines. Biology and physics are no different. Topics may include: elements of bioelectromagnetism, basic circuits, capacitance, impedance and potentials of cells and membranes. Waves for sound and vision, diffraction, refraction, scattering. Intracellular motion and transport: diffusion, permeability, Fick's Law and electrophoresis. Phases and equilibria: energy landscapes, protein folding, Boltzmann distribution.

Three hours (lectures); one term

**Prerequisite(s):** One of PHYSICS 1A03, 1C03, 1D03; and one of MATH 1A03, 1LS3, 1X03, 1ZA3 (or ISCI 1A24 A/B)

**Antirequisite(s):** MEDPHYS 2B03, PHYSICS 2A03, 2B06

**Cross-list(s):** LIFESCI 2BP3

*Not open to students enrolled in any Physics program or with credit or registration in ISCI 2A18 A/B.*

#### BIOPHYS 2S03 - EXPLORATIONS IN MEDICAL AND BIOLOGICAL PHYSICS

An inquiry based presentation of selected current topics in medical and biological physics including central concepts of organic chemistry. As part of this course students will work in small groups and carry out several short projects involving a literature review, experimental or computational research. One lecture or tutorial (one hour), one workshop (two hours); one term

**Prerequisite(s):** One of ISCI 1A24, BIOPHYS 1S03, 2A03, LIFESCI 2BP3, PHYSICS 1AA3, 1CC3, 1E03 (or 1BA3 or 1BB3) or registration in Honours Medical and Biological Physics

#### BIOPHYS 3D03 - ORIGIN OF LIFE

The roles of replication, metabolism and compartmentalization in the Origins of Life. Prebiotic chemistry. The RNA World and ribozymes. The earliest traces of life in the fossil record. Astrobiology: could life exist on other planets?

Three lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level III or above of an Honours program in the Faculty of Science

**Antirequisite(s):** ORIGINS 3D03, PHYSICS 3L03

*Not open to students registered in an Origins Research Specialization.*

*Offered in alternate years.*

#### BIOPHYS 3G03 - MODELLING LIFE

Introduction to simulating computational models in the life sciences, including examples from molecular and cell biology, ecology and evolution. Designing models to link to experimental questions and to test scientific hypotheses.

Three hours (lectures); one term

**Prerequisite(s):** PHYSICS 1A03 or 1C03; and one of MATH 1A03, 1LS3, 1X03, 1ZA3; or ISCI 1A24 A/B

**Cross-list(s):** LIFESCI 3BP3

#### BIOPHYS 3S03 - SOFT CONDENSED MATTER PHYSICS

Soft materials include polymers, liquid crystals, surfactants and colloids. The course will cover structure, dynamics, phase transitions and self-assembly, and discuss applications and links to the life sciences.

Three lectures; one term

**Prerequisite(s):** One of CHEM 2R03, CHEMBIO 2P03, ISCI 2A18 A/B, PHYSICS 2H04; or registration in Honours Mathematics and Physics (B.Sc.) or Honours Medical and Biological Physics

**Antirequisite(s):** PHYSICS 3S03

#### BIOPHYS 4L03 A/B - LITERATURE REVIEW

A directed reading and review of the literature in any field of biophysics, associated with a faculty member's research area. Normally, a report and poster presentation will be required.

Occasional tutorial (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours Biophysics program; and permission of the Chair of the Department of Physics and Astronomy

**Antirequisite(s):** PHYSICS 4L03 A/B

*Not open to students with credit or registration in ISCI 4A12 A/B.*

#### BIOPHYS 4P06 A/B - SENIOR RESEARCH PROJECT

An experimental or theoretical project to be carried out under the supervision of a faculty member. Normally, a report, oral and poster presentation will be required.

One occasional tutorial (two hours); two terms

**Prerequisite(s):** Registration in Level IV of an Honours Biophysics program; and a GPA of at least 9.0; and permission of the Chair of the Department of Physics and Astronomy

**Antirequisite(s):** MEDPHYS 4Y06 A/B, PHYSICS 4P06 A/B

*Not open to students with credit or registration in ISCI 4A12 A/B.*

#### BIOPHYS 4S03 - INTRODUCTION TO MOLECULAR BIOPHYSICS

A presentation of recent contributions made to the fields of molecular and cell biology by the use of physical approaches. In particular, the following topics are discussed: physical properties of biomolecules, protein folding, molecular motors, cell motion and cell adhesion. Emphasis on the critical evaluation of current research literature.

Three lectures; one term

**Prerequisite(s):** One of CHEM 2R03, CHEMBIO 2P03, ISCI 2A18 A/B, MATLS 2B03, PHYSICS 2H04; or registration in Honours Mathematics and Physics (B.Sc) or an Honours Medical and Biological Physics (B.Sc.) program. BIOPHYS 3S03 is recommended.

**Antirequisite(s):** PHYSICS 4S03

**Cross-list(s):** BIOCHEM 4S03

## Biosafety

BIOSAFE courses are administered by the Faculty of Science.

### BIOSAFE 1BS0 - BIOSAFETY TRAINING

*Formerly HTHSCI 1BS0*

BSL 1 biosafety training for the handling of non-pathogenic bacteria, cell lines, blood and body fluids or mammalian tissues based on federal laboratory biosafety guidelines.

*This course is evaluated on a Complete/Fail basis.*

Web module

*BSL 1 must be completed prior to the start of the first lab for all courses for which it is required. Students who fail the quiz will be required to repeat it and will not be permitted in any course where BIOSAFE 1BS0 is a requirement until the quiz has been successfully completed.*

## Biotechnology

Courses in Biotechnology are administered by the Bachelor of Technology Program.

Engineering Technology Building (ETB), Room 121, ext. 20195

<http://mybtechdegree.ca>

### Note

For the Four-Year Program, registration is only permitted for courses of the same level in which the student is registered, unless otherwise specified.

### BIOTECH 2B03 - BIOTECHNOLOGY CONCEPTS

Basic elements of biotechnology. Proteins, enzymes, nucleic acids, DNA manipulation, cloning and recombinant technology, with applications in genetics, medicine and industry.

Three lectures, one lab (three hours); second term

**Prerequisite(s):** BIOTECH 2CB3, 2M03, and registration in level II or above of the Biotechnology program

**Antirequisite(s):** BIOTECH 2BE3

### BIOTECH 2BC3 - BIOCHEMISTRY

Biochemistry and biotechnology; amino acids, nucleotides, nucleic acids, proteins, peptides, enzymes, carbohydrates, lipids, membranes and their functions, metabolism, gene expression and DNA.

Three lectures; one lab (three hours every other week); second term

**Prerequisite(s):** BIOTECH 2OC3, and registration in level II or above of the Biotechnology program

### BIOTECH 2CB3 - CELL BIOLOGY

An introduction to basic living cell structure, functions, genetics and the fundamentals of metabolism.

Three lectures, one lab (three hours every other week); first term

**Prerequisite(s):** ENGTECH 1BI3, 1CH3, and registration in level II or above of the Biotechnology program

### BIOTECH 2EC3 - CHEMICAL ENGINEERING CONCEPTS

Material balances: single and multi-unit systems with possible reactions.

Energy balance: energy conservation including enthalpy calculations, steam tables, specific heats, phase changes, and reactions. Survey of momentum, heat and mass transfer; basics of chemical process design.

Three lectures, one lab (two and one half hours every other week); first term

**Prerequisite(s):** ENGTECH 1CH3, 1MT3, and registration in level II or above of the Biotechnology program.

**Antirequisite(s):** BIOTECH 3EC3

### BIOTECH 2GT3 - GENETICS

This course covers the fundamentals of genetic studies including genes and genetic code, DNA, RNA and protein synthesis, cellular reproduction and human genetics.

Three lectures; second term

**Prerequisite(s):** ENGTECH 1BI3 and registration in level II or above of the Biotechnology program

### BIOTECH 2M03 - MOLECULAR BIOLOGY

Principles of molecular biology that form the basis nucleic acid and protein based methodologies. DNA replication, repair and recombination; bacterial and eukaryotic transcription and RNA processing; translation; and regulation of gene expression.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** ENGTECH 1BI3, 1CH3, and registration in level II or above of the Biotechnology program

### BIOTECH 2MB3 - MICROBIOLOGY

An introduction to microbiological analysis with emphasis on use of microscopic techniques, staining, cultivation and control of microbial growth, enumeration, identification, potable water analysis, with environmental and industrial applications.

Three lectures, one lab (three hours); second term

**Prerequisite(s):** BIOTECH 2CB3, 2M03, and registration in level II or above of the Biotechnology program

### BIOTECH 2OC3 - ORGANIC CHEMISTRY

This course covers a working knowledge of the major classes of organic compounds, including their physical and chemical properties. The laboratory introduces the techniques of organic synthesis and identification.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** ENGTECH 1CH3, and registration in level II or above of the Biotechnology program

### BIOTECH 3B03 - INDUSTRIAL BIOTECHNOLOGY

A continuation of Biotechnology I including a more in depth application of the recombinant technology and gene expression systems. Applications include microbial, plant, and animal biotechnology, bioremediation, cloning and stem cell technology.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** BIOTECH 2B03, 2GT3, 2MB3, and registration in level III or above of the Biotechnology program

### BIOTECH 3BC3 - BIOPROCESS CONTROL AND DYNAMICS

Basic control theory and interfacing concepts, design of simple digital controllers, as applied to biological systems with emphasis on biosensors, bioreactors, neural physiology, and homeostasis.

Three lectures, one lab (three hours every other week); first term

**Prerequisite(s):** ENGTECH 1EL3, 2MA3, BIOTECH 2B03, 2EC3, and registration in level III or above of the Biotechnology program

### BIOTECH 3BP3 - BIOREACTOR PROCESSES AND DESIGN

Overview of fermentation technology and bioprocessing, kinetics and thermodynamics of microbial processes. Mass transfer in immobilized systems. Analysis of batch and continuous processes, bioreactor design and analysis, operation and control, instrumentation, oxygen transfer, and scale up.

Four lectures, one lab (three hours); first term

**Prerequisite(s):** BIOTECH 2EC3, 3BC3, 3B03, and registration in level IV of the Biotechnology program

### BIOTECH 3CM3 - COMPUTATIONAL MODELING OF BIOLOGICAL SYSTEMS

This course covers fundamental concepts of computational modeling and applying it to biological systems. Lab component will include programming language to explore/study biological systems.

Two lectures, one lab (two hours); first term

**Prerequisite(s):** ENGTECH 1CP3, ENGTECH 2MA3, and registration in level IV of Biotechnology program

### BIOTECH 3FM3 - FOOD MICROBIOLOGY

An introduction to the microbiology of raw materials used in the manufacturing of food products. The course will review microbial growth and examine the types of microorganisms found in foods, the fermentation process in foods and food borne illness.

Three lectures, one lab (three hours every other week); first term

**Prerequisite(s):** BIOTECH 2CB3, 2MB3, and registration in level IV of the Biotechnology program

### BIOTECH 3IV3 - IMMUNOLOGY AND VIROLOGY

Structure and function of antibodies, antibody diversity and interactions, immune system and immunity, immunological responses to disease, antibodies production and applications, structure of viruses, methods to study viruses, virus transcriptions and interactions.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** BIOTECH 2MB3 and registration in level III or above of the Biotechnology program

### BIOTECH 3PM3 - PHARMACOLOGY

The first part of this course deals with general principles of pharmacokinetics and pharmacodynamics. Implications of the choice of route of administration and dosing will be studied. The second component of the course is systems pharmacology whereby the major drugs affecting different systems of the human body will be explored.

Three lectures, one lab (three hours every other week); first term

**Prerequisite(s):** ENGTECH 1CH3, BIOTECH 2BC3, and registration in level IV of the Biotechnology program

### BIOTECH 4BI3 - BIOINFORMATICS

The course will familiarize students with the tools and principles of bioinformatics. A toolbox will be used to study access to genomic and proteomic data and data formats and analysis techniques.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** BIOTECH 3CM3 or SFWRTECH 4AI3 or 4DA3, and BIOTECH 4GP3, ENGTECH 1CP3, 3ES3, 4EE0, and registration in level IV of the Biotechnology program

### BIOTECH 4BL3 - BIOMATERIALS AND BIOCOMPATIBILITY

Natural and synthetic biopolymers, and other materials for industrial and biomedical engineering applications: biocompatibility; tissue response to implants; inflammation; bioplastics, composites and applications.

Three lectures; second term

**Prerequisite(s):** BIOTECH 2BC3, 3B03, and registration in level IV of the Biotechnology program

### BIOTECH 4BM3 - BIOPHARMACEUTICALS

An introduction to biopharmaceutical drug development and manufacture. Emphasis will include basic genetic engineering principles used in the development and large-scale manufacture of biopharmaceutical products.

Three lectures, one lab (three hours); second term

**Prerequisite(s):** BIOTECH 3B03, 3PM3, and registration in level IV of the Biotechnology program

### BIOTECH 4BS3 - BIOTECHNOLOGY REGULATIONS

This course will familiarize students with current methods of laboratory safety and good lab and manufacturing practices in biotechnology; bioethics issues, benefits and risks of biotechnology applications; provincial, federal and international guidelines/regulations.

Three lectures; first term

**Prerequisite(s):** BIOTECH 3PM3, ENGTECH 4EE0, and registration in level IV of the Biotechnology program

### BIOTECH 4GP3 - GENOMICS AND PROTEOMICS

This course examines genomics, functional genomics and proteomics. Topics covered are the organization of model system genomes, gene expression profiling at the mRNA and protein levels, microarrays, analyses of interactions, genomic and proteomic databases.

Three lectures, one lab (three hours); second term

**Prerequisite(s):** BIOTECH 2M03, 3B03, and registration in level IV of the Biotechnology program

### BIOTECH 4TB3 - ADVANCED BIOTECHNOLOGY

This advanced course examines select topics of interest that reflect current methods utilized to produce new products and processes in the field of biotechnology. The course invites subject experts from various sectors of the biotech industry as guest lecturers.

Three lectures; first term

**Prerequisite(s):** BIOTECH 3B03, 4GP3, ENGTECH 4EE0, and registration in level IV of the Biotechnology program

### BIOTECH 4TR1 - CAPSTONE PROJECT I

This course requires students to research, design, develop, and implement an independent project. The project plan and a model developed will be documented as a technical report and presented in a seminar.

One tutorial, one lab (two hours); second term

**Prerequisite(s):** BIOTECH 3BP3, 3FM3, 3PM3, GENTECH 3MT3, and registration in level IV of the Biotechnology program

### BIOTECH 4TR3 - CAPSTONE PROJECT II

This course is a continuation of BIOTECH 4TR1 and it requires the students to conduct further research, modify/refine the project design, develop, and implement the independent project proposal submitted as a part of the Capstone Project I. The project will be documented as a technical report and presented in a seminar.



One tutorial, one lab (three hours); first term

**Prerequisite(s):** BIOTECH 4BL3, 4BM3, 4GP3, 4TR1, ENGTECH 4EE0, and registration in level IV of the Biotechnology program

## Cayuga

Courses in Cayuga are administered by the Indigenous Studies Program.

LR Wilson Hall, Room 1811, ext. 23788

<https://indigenous.mcmaster.ca>

### Courses

*If no prerequisite is listed, the course is open.*

### CAYUGA 1Z03 - INTRODUCTION TO CAYUGA LANGUAGE AND CULTURE

This course will study the Cayuga language, in its spoken and written forms, in the context of Iroquoian cultural traditions, values, beliefs and customs.

### CAYUGA 2Z03 - INTERMEDIATE CAYUGA

This course expands on the vocabulary and the oral skills for the Cayuga language. In addition, the course reviews the written component of the language.

## Chemical Biology

Courses in Chemical Biology are administered by the Department of Chemistry and Chemical Biology.

A.N. Bourns Science Building, Room 156, ext. 23490

<http://www.chemistry.mcmaster.ca>

### Department Notes

1. CHEM 1AA3 is a prerequisite for CHEM 2E03 and CHEM 2E03 is a prerequisite for BIOCHEM 2EE3.
2. Students seeking permission and/or a seat authorization for a Chemistry or Chemical Biology course must submit an application for academic permission to the Department of Chemistry and Chemical Biology ([advisor@chemistry.mcmaster.ca](mailto:advisor@chemistry.mcmaster.ca)) well in advance of the start of the term.

### Courses

### CHEMBIO 2A03 - INTRODUCTION TO BIO-ANALYTICAL CHEMISTRY

An introductory course covering basic principles of quantitative analysis of biological samples based on classical volumetric techniques and modern instrumental methods including spectroscopy and chromatography.

Three lectures, one lab; one term

**Prerequisite(s):** CHEM 1A03 (or 1E03) and 1AA3 or ISCI 1A24 A/B; and registration in an Honours Chemical Biology, Honours Biochemistry, Honours Biology, Chemical Engineering, Honours Life Sciences or Honours Molecular Biology and Genetics program

**Antirequisite(s):** CHEM 2A03, 2AA3, CHEMBIO 2AA3

### CHEMBIO 2L03 - PHARMACEUTICAL CHEMISTRY LABORATORY I: BIOMOLECULAR INTERACTIONS

Students will be introduced to the standard tools and techniques employed in Chemical Biology research.

One lecture, one lab (four hours), one tutorial; one term

**Prerequisite(s):** Registration in Honours Chemical Biology

Completion of CHEM 20A3 or 20G3 or CHEMBIO 20G3; and CHEM 2A03 or CHEMBIO 2A03 is strongly recommended.

**Prerequisite(s) (EFFECTIVE 2021-2022):** Registration in Honours Chemical

Biology; and CHEM 20A3 or 20G3 or CHEMBIO 20G3; and CHEM 2A03 or CHEMBIO 2A03

### CHEMBIO 20D3 - ORGANIC CHEMISTRY II

Fundamental reactions used to construct organic molecules, nucleophilic substitutions at carbonyl centres, biomolecules, and applications of spectroscopic techniques in organic chemistry. Emphasis on reaction mechanisms.

Three lectures, one tutorial; one term

**Prerequisite(s):** CHEM 20G3 or CHEMBIO 20G3; and registration in Honours Chemical Biology (B.Sc.)

**Antirequisite(s):** CHEM 20B3, 20D3, CHEMBIO 20B3

### CHEMBIO 20G3 - ORGANIC CHEMISTRY I

Examines how structure affects properties and chemistry of organic molecules important for life, health, and advanced technologies. Includes fundamentals of reactions of functional groups, organic reaction mechanisms and spectroscopic techniques for structure determination.

Three lectures, one lab (four hours), one tutorial; one term

**Prerequisite(s):** CHEM 1AA3 or ISCI 1A24 A/B; and registration in Honours Chemical Biology (B.Sc.)

**Antirequisite(s):** CHEM 20A3, 20C3, 20G3, CHEMBIO 20A3

### CHEMBIO 2P03 - PHYSICAL CHEMISTRY TOOLS FOR CHEMICAL BIOLOGY

Chemical thermodynamics and kinetics and their application to biological, chemical and environmental systems.

Three lectures, one tutorial; one term

**Prerequisite(s):** CHEM 1A03 (or 1E03) and 1AA3; and one of MATH 1A03, 1LS3, 1M03, 1X03, 1ZA3; or ISCI 1A24 A/B

**Antirequisite(s):** CHEM 2PD3, EARTHSC 2L03, 2Q03, ENVIRSC 2L03, PHYSICS 2H04

**Cross-list(s):** CHEM 2P03

*Not open to students with credit or registration in ISCI 2A18 A/B.*

### CHEMBIO 2Q03 - INQUIRY FOR CHEMICAL BIOLOGY

Systematically investigate issues in Chemical Biology while developing skills in formulating and refining questions, searching and analyzing the scientific literature, and written and oral presentation.

Three lectures; one term

**Prerequisite(s):** Registration in Honours Chemical Biology

**Antirequisite(s):** CHEM 2Q03

### CHEMBIO 3AA3 - ANALYTICAL TOOLS FOR CHEMICAL BIOLOGY

Modern instrumental bioanalytical techniques will be examined, including atomic and molecular spectroscopy, mass spectrometry and chromatography with emphasis on analytical design, data interpretation, and applications to biomedical, environmental, and food safety areas.

Three lectures; one term

**Prerequisite(s):** One of CHEM 2A03, 2AA3, CHEMBIO 2A03, 2AA3

**Antirequisite(s):** CHEM 3AA3

### CHEMBIO 3BM3 - IMPLANTED BIOMATERIALS

An introduction to the chemistry of implantable biomaterials (metals, ceramics, plastics, elastomers) and the methods used to characterize their physical properties. The wound healing response following insult by an implanted foreign body will be examined, in order to understand the need to control

synthetic biomedical interfaces. The regulatory approval process will also be discussed.

Three lectures; one term

**Prerequisite(s):** CHEM 1AA3 (or ISCI 1A24 A/B); and BIOLOGY 2B03 (or ISCI 2A18 A/B) or registration in an Honours Chemical Biology program; and one of CHEM 2E03, 20B3, 20D3, CHEMBIO 20B3, 20D3; or permission of the instructor

**Cross-list(s):** LIFESCI 3BM3

May be offered in alternate years.

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### CHEMBIO 3EP3 A/B S - ADVANCED CHEMICAL BIOLOGY PLACEMENT

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This placement course provides students with the opportunity to explore career options and integrate academics with a community, volunteer or professional experience. The student will complete an academic component in addition to the placement.

Students are responsible to arrange a suitable placement, obtain appropriate permission from both a placement and academic supervisor, and are required to submit an application to the Department of Chemistry and Chemical Biology thirty days prior to the date classes begin in each Term (see the Sessional Dates section of this Calendar). More information and the application form can be found at <https://chemistry.mcmaster.ca/undergraduate/course-outlines/level-3-outlines.html>.

May be completed over one or two terms

**Prerequisite(s):** Credit or registration in SCIENCE 2C00; and completion of Level II of Honours Chemical Biology; and permission of the academic supervisor and the course coordinator (or designate)

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### CHEMBIO 3L03 - CHEMICAL BIOLOGY LABORATORY II

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A research project will be formulated and addressed using the tools of Chemical Biology.

One lecture, one lab (five hours); one term

**Prerequisite(s):** Credit or registration in BIOSAFE 1BS0 (or HTHSCI 1BS0); and CHEMBIO 2L03

*If not already completed, BIOSAFE 1BS0 must be completed prior to the first lab.*

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### CHEMBIO 30A3 - ORGANIC MECHANISTIC TOOLS FOR CHEMICAL BIOLOGY

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Chemistry and biology of primary metabolism. Synthesis, biosynthesis and degradation of carbohydrates, nucleotides, and proteins are compared and contrasted by studying reaction mechanisms and catalysis.

Three lectures, one lab; one term

**Prerequisite(s):** One of CHEM 20B3, 20D3, CHEMBIO 20B3, 20D3

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### CHEMBIO 30B3 - STRUCTURAL ELUCIDATION OF NATURAL PRODUCTS AND SMALL MOLECULES

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Applications of spectroscopy detailing the use of NMR, MS, IR, and UV in determining structures of small molecules and biomolecules with a particular focus on natural products.

Three lectures; one term

**Prerequisite(s):** One of CHEM 20B3, 20D3, CHEMBIO 20B3, 20D3

*May be offered in alternate years.*

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### CHEMBIO 3P03 - BIOMOLECULAR INTERACTIONS AND KINETICS

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Principles of macromolecule-macromolecule and small molecule-macromolecule interactions, including ligands and drugs. Techniques for

characterizing and quantifying biomolecular interactions in vitro and in vivo.

Emerging technologies such as biological therapeutics as applied to pharmacodynamics and -kinetics.

Three lectures; one term

**Prerequisite(s):** CHEMBIO 2P03 or ISCI 2A18 A/B

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### CHEMBIO 3RP3 - RESEARCH PRACTICUM IN CHEMICAL BIOLOGY

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A one term research project undertaken in a chemical biology laboratory during the fall, winter or summer term which requires the submission of a formal report. May be taken in preparation for a Level IV thesis or project.

Students are responsible to arrange a suitable research experience, obtain appropriate permission from both a placement and academic supervisor, and are required to submit an application to Department of Chemistry and Chemical Biology thirty days prior to the date classes begin in each Term (see the Sessional Dates in the Undergraduate Calendar). More information and the application form can be found at <https://chemistry.mcmaster.ca/undergraduate/course-outlines/level-3-outlines.html>.

**Prerequisite(s):** Completion of Level II of Honours Chemical Biology; and permission of the academic supervisor and the course coordinator (or designate)

*Not to be taken concurrently with a Co-op work term.*

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### CHEMBIO 4A03 - BIO-ANALYTICAL CHEMISTRY AND ASSAY DEVELOPMENT

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Advanced separation and detection principles for high-throughput bio-assays for drug targets, as well as recent global analytical strategies for genomic, proteomic and metabolomic analyses.

Three lectures; one term

**Prerequisite(s):** CHEM 3AA3 or CHEMBIO 3AA3

*May be offered in alternate years.*

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### CHEMBIO 4G12 A/B - SENIOR THESIS IN CHEMICAL BIOLOGY

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A thesis-based on a major research project supervised by a member of the Department of Chemistry and Chemical Biology or on the list of acceptable supervisors. More information and the application form can be found at <http://www.chemistry.mcmaster.ca/contact/resources.html>.

**Prerequisite(s):** Registration in Level IV of Honours Chemical Biology and permission of the Department. Students are responsible for securing a suitable project supervisor, and are required to submit an application by March 31st of the academic year prior to registration. Students are expected to have a Grade Point Average of at least 9.5.

**Antirequisite(s):** CHEMBIO 4G03, CHEMBIO 4GG9, CHEMBIO 4RP6

*Not open to students with credit or registration in ISCI 4A12 A/B.*

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### CHEMBIO 4IB3 - BIO-INORGANIC CHEMISTRY

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Inorganic elements and their behaviour in biological systems. Topics for study include metalloenzymes, bio-redox agents, transport proteins, biomimetic inorganic complexes, metallodrugs, and radiopharmaceuticals.

Three lectures; one term

**Prerequisite(s):** CHEM 3II3

**Cross-list(s):** CHEM 4IB3

*May be offered in alternate years.*

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### CHEMBIO 40A3 - NATURAL PRODUCTS

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A description of basic building blocks and reaction mechanisms involved in the biosynthesis of naturally occurring compounds.

Three lectures; one term

**Prerequisite(s):** CHEM 30A3 or CHEMBIO 30A3

**Cross-list(s):** CHEM 40A3

### CHEMBIO 40B3 - MEDICINAL CHEMISTRY: DRUG DESIGN AND DEVELOPMENT

Topics will include lead compound discovery strategies; high-throughput screening and 'in silico' screening; exploration of structure-activity relationships; drug targets and molecular mechanisms of drug action; strategies for drug optimization.

Three lectures; one term

**Prerequisite(s):** CHEM 30A3 or CHEMBIO 30A3

*May be offered in alternate years.*

### CHEMBIO 40Q3 - PEER TUTORING IN CHEMICAL BIOLOGY OR CHEMISTRY

Provides students with theoretical and practical experience with teaching methods in Chemical Biology or Chemistry and focuses on effective presentation and scientific writing skills.

One lecture (three hours), tutorial (one hour); one term

**Prerequisite(s):** CHEM 2Q03 or CHEMBIO 2Q03 and permission of the instructor

### CHEMBIO 4RP6 A/B S - RESEARCH PROJECT IN CHEMICAL BIOLOGY

A project supervised by a member of the Department of Chemistry and Chemical Biology or on the list of acceptable Supervisors.

More information and the application form can be found at

<http://www.chemistry.mcmaster.ca/contact/resources.html>.

**Prerequisite(s):** Registration in Level IV Honours Chemical Biology (B.Sc.) and permission of the Department. Students are responsible for securing a suitable project supervisor, and are required to submit an application by March 31st of the academic year prior to registration. Students are expected to have a Grade Point Average of at least 5.0.

**Antirequisite(s):** CHEMBIO 4G03, CHEMBIO 4GG9 A/B, CHEMBIO 4G12 A/B  
*Not open to students with credit or registration in ISCI 4A12 A/B.*

## Chemical Engineering

Courses in Chemical Engineering are administered by the Department of Chemical Engineering.

John Hodgins Engineering Building, Room 374, ext. 24957

<http://chemeng.mcmaster.ca>

#### Department Note

All Chemical Engineering courses are open to students registered in a Chemical Engineering program, subject to prerequisite requirements. Prior permission of the Department is necessary for students from other Engineering departments and other faculties.

### CHEMENG 2D04 - CHEMICAL ENGINEERING PRINCIPLES I

Steady-state mass balances in chemical processes and the first law of thermodynamics. The behaviour of gases and liquids, and their physical equilibria. Recycle in steady state operation.

Four lectures, one tutorial (two hours); first term

**Prerequisite(s):** Registration in Level II or above of any Chemical Engineering program or permission from the department

### CHEMENG 2E04 - NUMERICAL METHODS AND COMPUTING FOR CHEMICAL ENGINEERS

Application of finite and discretized models for various chemical processing applications at steady and unsteady states. Techniques for numerical solution of linear and nonlinear model equations. Techniques for numerical differentiation and integration of equations and data sets. Introduction to data-driven model fitting and analysis.

Three lectures; one tutorial (two hours); first term

**Prerequisite(s):** MATH 1ZA3, 1ZB3, 1ZC3, registration or credit in CHEMENG 2D04, or permission from the department

**Antirequisite(s):** CHEMENG 3E04

### CHEMENG 2F04 - CHEMICAL ENGINEERING PRINCIPLES II

Combined mass and energy balances in the steady and unsteady state. The second law of thermodynamics, physical/chemical equilibria and sustainability. Three lectures, one tutorial (two hours); second term

**Prerequisite(s):** Registration or credit in CHEMENG 2D04 or permission from the department

### CHEMENG 2G03 - PROBLEM SOLVING AND TECHNICAL COMMUNICATION

Developing awareness, strategies, creativity, analysis and interpersonal skills in the context of solving homework problems and preparing technical communications. Interpretation, retrieval manipulation and communication of information.

Three lectures; second term

**Prerequisite(s):** Registration in Level II or above of any Chemical Engineering program or permission from the department

### CHEMENG 2004 - FLUID MECHANICS

The laws of statics and dynamics in both compressible and incompressible fluids. Equations of conservation and modern turbulence and boundary layer theory applied to submerged and conduit flow. Similitude, unsteady flow, measuring devices and fluid machinery.

Three lectures, one tutorial (three hours); second term

**Prerequisite(s):** Registration in a Chemical Engineering, Materials Science, Materials Engineering or Engineering Physics (Nuclear Engineering and Energy Systems Stream) program, or permission of the Department.

**Co-requisite(s):** One of CHEMENG 2F04, MATLS 2D03

**Antirequisite(s):** CHEMENG 3004

### CHEMENG 3A04 - HEAT TRANSFER

Steady and unsteady conduction and convection, condensation and boiling. Understanding fundamentals behind heat exchangers, and finned arrangements. Numerical simulations of complex heat transfer systems.

Three lectures, one tutorial (two hours); first term

**Prerequisite(s):** CHEMENG 2F04, 2004 (or 3004), or registration in Level III or above in a Materials Engineering program, or permission of the department

**Antirequisite(s):** CHEM ENG 2A04

### CHEMENG 3BK3 - BIO-REACTION ENGINEERING

Kinetics of cellular processes, microbial processes and enzyme reactions including those of immobilized cells and enzymes. Cell culturing. Bioreactor design. Bioprocess development including downstream processing.

Three lectures; first term

**Prerequisite(s):** Registration in Level IV or above of any Chemical Engineering program or the Integrated Biomedical Engineering & Health Sciences (IBEHS) Program; or permission of the Department

### CHEMENG 3BM3 - BIOSEPARATIONS ENGINEERING

Introduction to bioseparations engineering, cell disintegration, precipitation based separation processes, extraction, adsorption, chromatography, centrifugal separations, filtration, membrane based separation processes, electrophoresis.

Three lectures; second term

**Prerequisite(s):** Registration in Level IV or above of any Chemical Engineering Program, or Integrated Biomedical Engineering & Health Sciences (IBEHS) Program; or permission of the Department

### CHEMENG 3D04 - CHEMICAL ENGINEERING THERMODYNAMICS

Review of the total energy balance, mechanical energy balance and thermodynamics of one component system. Chemical reaction and phase equilibria of multicomponent systems, with emphasis on non-ideality.

Three lectures, one tutorial (two hours); first term

**Prerequisite(s):** CHEMENG 2F04 or permission of the department

**Antirequisite(s):** CHEMENG 3D03

### CHEMENG 3G04 - CHEMICAL PROCESS DESIGN AND SIMULATION

Chemical process simulations including models for heat exchangers, separators, reactors, heat integration, pressure handling, energy conversion, and other unit operations. Using process simulations to solve problems related to chemical processing, energy and sustainability.

Three lectures, one tutorial (two hours); second term

**Prerequisite(s):** CHEMENG 2E04 (or 3E04), 2F04, 3D04, or permission from the department

### CHEMENG 3I03 - DATA ACQUISITION AND ANALYSIS

Operational characteristics of physical and chemical sensors, statistics of sampling and analysis, measurement error and data acquisition theory. Measurement of pressure, temperature, flow, strain and voltage. Technical writing and communication.

Two lectures, one lab (three hours); first term

**Prerequisite(s):** Registration in Level III or above of any Chemical Engineering program or permission of the department

**Antirequisite(s):** CHEMENG 2I03

### CHEMENG 3K04 - INTRODUCTION TO REACTOR DESIGN

Stoichiometry of multiple reactions, kinetics of homogeneous reactions, interpretation of batch data, design of ideal and non-ideal CSTR and plug flow reactors.

Three lectures; one tutorial (two hours); second term

**Prerequisite(s):** MATH 2Z03 and 2ZZ3, and registration or credit in CHEMENG 2F04, 2E04 (or 3E04) and 3D04, or permission of the Department

### CHEMENG 3L02 - INTERMEDIATE LABORATORY SKILLS

Experiments and projects in heat transfer, thermodynamics, mass transfer and fluid mechanics with appropriate data analysis and report writing.

One lecture, one lab (three hours); second term

**Prerequisite(s):** CHEMENG 2004 (or 3004), 3D04 and credit or registration in CHEMENG 3A04 (or 2A04), or permission of the department

### CHEMENG 3M04 - MASS TRANSFER AND STAGewise OPERATIONS

Stagewise operations, diffusion, mass transfer coefficients, distillation, differential contacting and absorption.

Three lectures, one tutorial (two hours); first term

**Prerequisite(s):** CHEMENG 2F04 or permission of the department

### CHEMENG 3P04 - PROCESS CONTROL

Transient behaviour of chemical processes. Theory and practice of automatic control. Introduction to computer process control.

Three lectures, one tutorial (two hours); second term

**Prerequisite(s):** MATH 2Z03 and MATH 2ZZ3; and credit or registration in CHEMENG 2E04 (or 3E04), 2004 (or 3004), 3A04 (or 2A04), 3K04, or permission of the department

**Antirequisite(s):** IBEHS 4A03

### CHEMENG 3Q03 - INTRODUCTION TO POLYMER SCIENCE

An overview of important synthetic and natural polymers with emphasis on polymer structure, the chemistry of polymer formation. An introduction to polymer characterization, recycling and sustainability.

Three lectures; second term

**Prerequisite(s):** CHEM 2E03 or 20A3 and 20B3, or permission of the department

### CHEMENG 4A03 - ENERGY SYSTEMS ENGINEERING

Cradle-to-grave overview of major gas, coal, nuclear, biomass, petroleum, solar, and wind energy resources, networks, and systems. Gasification, fuel cells, polygeneration, synthetic fuels, alternative fuels.

Two lectures; one tutorial (two hours); first term

**Prerequisite(s):** CHEMENG 3G04, or permission of the department

### CHEMENG 4B03 - POLYMER REACTION ENGINEERING

Kinetics of polymerization: step-growth and chain-growth (free radical, anionic, anionic coordination and cationic). Polymerization processes: solution/bulk, suspension, emulsion, gas-phase, slurry and reactive processing. Principles of polymer process and reactor design, optimization and control.

Three lectures; first term

**Prerequisite(s):** CHEMENG 3K04 or permission of the department

### CHEMENG 4E03 - DIGITAL COMPUTER PROCESS CONTROL

This course addresses key aspects of implementing control via discrete calculations using digital computers. Topics include discrete-time dynamic models, system identification, analysis of discrete-time systems, design of digital control systems and model predictive control.

Three lectures; first term

**Prerequisite(s):** CHEMENG 3P04 or permission of the department

### CHEMENG 4G03 - OPTIMIZATION IN CHEMICAL ENGINEERING

Formulation of optimization programs for important engineering problems focusing on equipment design, economics, controls, operations, and scheduling. Solution methods and analysis of linear, nonlinear, and mixed-integer programs. Introduction to mathematical concepts of convexity and optimality conditions. Introduction to meta-heuristic optimization methods.

Two lectures, one tutorial (two hours); second term

**Prerequisite(s):** CHEMENG 2E04 (or 3E04), 3G04, 3P04 or permission of the



department

### CHEMENG 4H03 - BIG DATA METHODS AND MODELING IN CHEMICAL AND MATERIALS ENGINEERING

Review of multivariate statistics. Acquiring, interpreting and processing large data sets. Introduction to dimensional reduction techniques such as principal component analysis (PCA) and projection of latent structures (PLS). Introduction to data clustering methods. Chemical and materials engineering applications.

Three lectures; one term

**Prerequisite(s):** One of COMMERCE 2QA3, STATS 3Y03, MATLS 3J03 or HTHSCI 2A03 or permission of the department

### CHEMENG 4K03 - REACTOR DESIGN FOR HETEROGENEOUS SYSTEMS

Catalytic kinetics, mass transfer limitations, packed and fluidized bed reactors, two phase reactors.

Three lectures; first term

**Prerequisite(s):** CHEMENG 3K04 or permission of the department

### CHEMENG 4L02 - ADVANCED LABORATORY SKILLS

Experiments and projects in transport phenomena, reaction kinetics, reactor design and process control with appropriate data analysis and report writing. One lab (three hours), one lecture; first term

**Prerequisite(s):** CHEMENG 3L02, 3K04, 3M04; and registration in Level IV or above of any Chemical Engineering program or permission of the department

### CHEMENG 4M03 - INDUSTRIAL SEPARATION PROCESSES

Overview of industrial separation methods with focus on applications in the water and energy industries. Topics to be covered may include liquid-liquid extraction, adsorption, ion-exchange, sedimentation, filtration, and membrane technologies (ultrafiltration, reverse osmosis), with a particular emphasis on the fundamental phenomena and design principles for each topic.

Two lectures, one tutorial (two hours); first term

**Prerequisite(s):** CHEMENG 2004 (or 3004), CHEMENG 3M04 or permission of the department

### CHEMENG 4N04 - ENGINEERING ECONOMICS AND PROBLEM SOLVING

Economic decision making with capital and operating cost estimation, taxation, depreciation, profitability, payback, net present value, interest rates and sensitivity analysis. Applications to design and operation of engineering systems, emphasizing safety, equipment performance, uncertainty, flexibility and troubleshooting. Students will work individually and in groups on problem-based projects.

Three lectures, one tutorial (two hours); first term

**Prerequisite(s):** CHEMENG 2004 (or 3004), CHEMENG 3K04, 3M04, 3P04, 3G04; registration in the final level of any Chemical Engineering program, or permission of the department

**Antirequisite(s):** ENGINEER 2B03

### CHEMENG 4T03 - APPLICATIONS OF CHEMICAL ENGINEERING IN MEDICINE

Applications of chemical engineering principles to biological systems and medical problems including examples from hemodynamics, blood oxygenation, artificial kidney systems, controlled drug release, biosensors and biomaterials.

Three lectures; second term

**Prerequisite(s):** Registration in Level III or above in any engineering program or registration in Level IV or above in the Integrated Biomedical Engineering &

Health Sciences (IBEHS) Program; or permission of the Department

### CHEMENG 4TA3 A/B - ENGINEERING PRACTICUM

Mastery of core technical engineering skills with applications through student mentorship and teaching practicums. Demonstration of deeper understanding through lecture design and presentation, assessment design, and course material development.

Two lectures (during first term), one practicum placement (during second term); both terms

**Prerequisite(s):** Registration in final level of any engineering program and permission of the instructor

### CHEMENG 4W04 - CHEMICAL PLANT DESIGN AND CAPSTONE PROJECT

Projects, often in cooperation with industry, usually involve steady-state computer simulation of an existing process or design of a new process. Plant equipment may be tested to develop simulation models. Sustainability analysis is integral part of plant design.

Three lectures and one tutorial (three hours); second term

**Prerequisite(s):** Registration in the final level of any Chemical Engineering program, registration or credit in CHEMENG 4N04, or permission of the department

### CHEMENG 4X03 - POLYMER PROCESSING

An introduction to the basic principles of polymer processing, stressing the development of models. Rheology of polymers, extrusion, molding, films, fibers, and mixing. Reactive processing.

Three lectures; second term

**Prerequisite(s):** One of CHEMENG 3A04 (or 2A04), MATLS 3E04 or MECHENG 3R03; and CHEMENG 2004 (or 3004) or MECHENG 3004, or permission of the department

### CHEMENG 4Y04 A/B - SENIOR INDEPENDENT PROJECT

A research and design project with students working independently under the direction of a Faculty member.

Two labs (three hours); both terms. The hours assigned can be freely scheduled to suit those involved in a particular project and may include computation classes, laboratory work, discussions, or individual study.

**Prerequisite(s):** Registration in the final level of any Chemical Engineering program and a GPA of at least 9.5, and permission of the department

**Antirequisite(s):** IBEHS 3I06 A/B

### CHEMENG 4Z03 - INTERFACIAL ENGINEERING

The physics and chemistry at the 'nano' scale including interactions forces, colloids, surface active systems, wetting, adhesion, and flocculation.

Three lectures; second term

**Prerequisite(s):** Registration in final level of any Engineering program or permission of the department

## Chemistry

Courses in Chemistry are administered by the Department of Chemistry and Chemical Biology.

A.N. Bourns Science Building, Room 156, ext. 23490

<http://www.chemistry.mcmaster.ca/>

#### Department Notes

- CHEM 1AA3 is a prerequisite for CHEM 2E03 and CHEM 2E03 is a prerequisite for BIOCHEM 2EE3.

2. Students seeking permission and/or a seat authorization for a Chemistry or Chemical Biology course must submit an application for academic permission to the Department of Chemistry and Chemical Biology (email: [advisor@chemistry.mcmaster.ca](mailto:advisor@chemistry.mcmaster.ca)) well in advance of the start of the term.

#### Courses

If no prerequisite is listed, the course is open.

### CHEM 1A03 - INTRODUCTORY CHEMISTRY I

A discussion of chemical fundamentals, including bonding, structure, reactivity, and energetics, with emphasis on applications to health, energy, and the environment. Laboratories highlight hands-on experimental techniques; tutorials support the development of problem-solving skills.

Lectures, web modules (three hours), one lab (two and one half hours) every other week; one term

**Prerequisite(s):** Grade 12 Chemistry U and either registration in a Level I program in the Faculty of Science or Engineering I/Engineering I Co-Op, Arts & Science I, Health Sciences I, any program above Level I; or a grade of at least 80% in Grade 12 Chemistry U; or CHEM 1R03

**Co-requisite(s):** WHMIS 1A00 if not already completed, must be completed prior to the first lab.

**Antirequisite(s):** CHEM 1E03

*Not open to students with credit or registration in ISCI 1A24 A/B.*

### CHEM 1AA3 - INTRODUCTORY CHEMISTRY II

A discussion of organic chemistry, chemical kinetics, acid-base equilibrium, and the energetics of phase transformations, with emphasis on relevant experimental techniques and solving real problems ranging from drug discovery to environmental chemistry.

Three lectures, one lab (two and one half hours) every other week; one term

**Prerequisite(s):** CHEM 1A03 or CHEM 1E03

*Not open to students with credit or registration in ISCI 1A24 A/B.*

### CHEM 1E03 - GENERAL CHEMISTRY FOR ENGINEERING I

An introduction to chemical principles for Engineering students, including reactivity, bonding, structure, energetics and electrochemistry.

Three lectures, one lab (two and one half hours) every other week; one term

**Prerequisite(s):** Registration in a program in Engineering

**Antirequisite(s):** CHEM 1A03

*Not open to students with credit or registration in ISCI 1A24 A/B.*

### CHEM 1R03 - GENERAL CHEMISTRY

A general introduction to chemistry, suitable for students without Grade 12 Chemistry U.

Three lectures, one tutorial; Winter term

**Prerequisite(s):** Grade 11 Chemistry SCH3U

*Not open to students with 80% or higher in Grade 12 Chemistry U or with credit or registration in CHEM 1A03.*

### CHEM 2A03 - QUANTITATIVE CHEMICAL ANALYSIS

The art and science of performing quantitative analysis on samples based on classical volumetric techniques and modern instrumental methods including electrochemistry, optical spectroscopy, and chromatography.

Three lectures, one lab (three hours); one term

**Prerequisite(s):** CHEM 1A03 (or 1E03) and 1AA3 ; or ISCI 1A24 A/B

**Antirequisite(s):** CHEM 2AA3, CHEMBIO 2A03, 2AA3

### CHEM 2BC3 - MAKING CHEMISTRY MORE SUSTAINABLE

The 12 principles of Green Chemistry provide strategies for chemists and those who use chemicals to reduce their impact on the planet. Students will develop approaches to scientific problems that take sustainability into account at the conception of all new chemical syntheses and processes - 'benign by design'.

Three hours (lectures and tutorial); one term

**Prerequisite(s):** CHEM 1A03 or 1E03 and CHEM 1AA3; or ISCI 1A24

**Antirequisite(s):** CHEM 2SC3

The lectures of this course are combined with CHEM 2SC3.

### CHEM 2E03 - INTRODUCTORY ORGANIC CHEMISTRY

An introduction to the chemistry of monofunctional aliphatic compounds with emphasis on reactions and their mechanisms. Special topics will include synthetic and natural polymers.

Three lectures, one tutorial; one term

**Prerequisite(s):** CHEM 1A03 (or 1E03) and CHEM 1AA3; or ISCI 1A24 A/B

*Not open to students with credit or registration in CHEM 20A3, 20C3, 20G3 or CHEMBIO 20A3, 20G3.*

*CHEM 2E03 is not a prerequisite for further courses in Organic Chemistry.*

### CHEM 2I13 - INTRODUCTORY INORGANIC CHEMISTRY: STRUCTURE AND BONDING

The basic theories and models of bonding and structure that explain the combination of elements across the periodic table with primary emphasis on the main-group elements.

Three lectures, one tutorial; one term

**Prerequisite(s):** CHEM 1A03 (or 1E03) and 1AA3 ; or ISCI 1A24 A/B

### CHEM 2LB3 - TOOLS FOR CHEMICAL DISCOVERY

Advanced techniques for synthesis and characterization of organic and inorganic molecules and materials, and the use of modern instrumentation in chemistry.

One lecture, two labs; one term

**Prerequisite(s):** Registration in an Honours Chemistry program

### CHEM 20A3 - ORGANIC CHEMISTRY I

An introduction to organic chemistry with emphasis on the reactions of functional groups and an introduction to spectroscopic techniques for structure determination.

Three lectures, one lab (three hours) every other week; one tutorial (one hour) every other week; one term

**Prerequisite(s):** ISCI 1A24 A/B; or CHEM 1A03 (or 1E03) and 1AA3 and a GPA of at least 5.0; or CHEM 1A03 (or 1E03) and 1AA3 with a grade of at least C-; or CHEM 1A03 (or 1E03), 1AA3 and permission of the Department (See Department Note 2.)

Registration priority will be given to students for whom this course is a program requirement.

**Antirequisite(s):** CHEM 20C3, 20G3, CHEMBIO 20A3, 20G3

*Not open to students registered in Honours Chemical Biology or to students with credit or registration in CHEM 20C3, 20G3, CHEMBIO 20A3, 20G3.*

### CHEM 20B3 - ORGANIC CHEMISTRY II

Nucleophilic substitutions at carbonyl centres, aromatic chemistry, carbohydrates, applications of spectroscopic techniques in organic chemistry.

Three lectures, one lab (three hours) every other week; one tutorial (one hour) every other week; one term

**Prerequisite(s):** CHEM 1A03 (or 1E03) and 1AA3 or ISCI 1A24 A/B; and one of CHEM 20A3, 20C3, 20G3, CHEMBIO 20A3, 20G3

Registration priority will be given to students for whom this course is a program requirement.

**Antirequisite(s):** CHEM 20D3, CHEMBIO 20B3, 20D3

*Not open to students registered in Honours Chemical Biology.*

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### CHEM 20D3 - SYNTHESIS AND FUNCTION OF ORGANIC MOLECULES

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Fundamental reactions used to construct organic molecules, nucleophilic substitutions at carbonyl centres, biomolecules, and applications of spectroscopic techniques in organic chemistry. Emphasis on reaction mechanisms.

Three lectures, one tutorial; one term

**Prerequisite(s):** CHEM 1A03 (or 1E03) and 1AA3; or ISCI 1A24 A/B; and CHEM 20G3

**Antirequisite(s):** CHEM 20B3, CHEMBIO 20B3, 20D3

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### CHEM 20G3 - STRUCTURE AND REACTIVITY OF ORGANIC MOLECULES

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Examines how structure affects properties and chemistry of organic molecules important for life, health, and advanced technologies. Includes fundamentals of reactions of functional groups, organic reaction mechanisms and spectroscopic techniques for structure determination.

Three lectures, one lab (four hours), one tutorial; one term

**Prerequisite(s):** ISCI 1A24 A/B; or CHEM 1A03 (or 1E03) and 1AA3; and registration in an Honours program; or CHEM 1A03 (or 1E03) and 1AA3 with a grade of at least C-; or CHEM 1A03 (or 1E03), 1AA3 and permission of the Department (See *Department Note 2* above.)

**Antirequisite(s):** CHEM 20A3, 20C3, CHEMBIO 20A3, 20G3

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### CHEM 2P03 - APPLICATIONS OF PHYSICAL CHEMISTRY

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Chemical thermodynamics and kinetics and their application to biological, chemical and environmental systems.

Three lectures, one tutorial; one term

**Prerequisite(s):** CHEM 1A03 (or 1E03) and 1AA3; and one of MATH 1A03, 1LS3, 1M03, 1X03, 1ZA3; or ISCI 1A24 A/B

**Antirequisite(s):** EARTHSC 2L03, EARTHSC 2Q03, ENVIRSC 2L03, PHYSICS 2H04

**Cross-list(s):** CHEMBIO 2P03

*Not open to students with credit or registration in ISCI 2A18 A/B.*

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### CHEM 2Q03 - INQUIRY FOR CHEMISTRY

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Systematically investigate issues in Chemistry while developing skills in formulating and refining questions, searching and analyzing the scientific literature, and written and oral presentation.

Three lectures; one term

**Prerequisite(s):** Registration in Honours Chemistry (B.Sc.) or Honours Sustainable Chemistry or Honours Integrated Science (Chemistry Concentration) (B.Sc.)

**Antirequisite(s):** CHEMBIO 2Q03

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### CHEM 2SC3 - SUSTAINABLE CHEMISTRY - GREEN CHEMISTRY

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An introduction to the 12 principles of Green Chemistry, which provide guidelines for ways to 'reduce the harm' that chemical processes do to the planet. Students will develop a novel way to approach scientific problems by taking into account sustainability at the conception of all new chemical syntheses and processes - 'benign by design'.

Three hours (lectures and tutorial); one term

**Prerequisite(s):** CHEM 1A03 or 1E03 and CHEM 1AA3; or ISCI 1A24 A/B; and registration in an Honours Chemistry

or Honours Chemical Biology program or Honours Sustainable Chemistry

**Antirequisite(s):** CHEM 2BC3

*The lectures of this course are combined with CHEM 2BC3.*

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### CHEM 3AA3 - INSTRUMENTAL ANALYSIS

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Modern instrumental analytical techniques will be examined, including atomic and molecular spectroscopy, mass spectrometry and chromatography with emphasis on analytical design and data interpretation.

Three lectures; one term

**Prerequisite(s):** One of CHEM 2A03, 2AA3, CHEMBIO 2A03, 2AA3

**Antirequisite(s):** CHEMBIO 3AA3

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### CHEM 3EP3 A/B S - ADVANCED CHEMISTRY PLACEMENT

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This placement course provides students with the opportunity to explore career options and integrate academics with a community, volunteer or professional experience. The student will complete an academic component in addition to the placement.

Students are responsible to arrange a suitable placement, obtain appropriate permission from both a placement and academic supervisor, and are required to submit an application to the Department of Chemistry and Chemical Biology thirty days prior to the date classes begin in each Term (see the Sessional Dates section of the Undergraduate Calendar). More information and the application form can be found at <https://chemistry.mcmaster.ca/undergraduate/course-outlines/level-3-outlines.html>.

May be completed over one or two terms

**Prerequisite(s):** Credit or registration in SCIENCE 2C00; and completion of Level II of Honours Chemistry or Honours Sustainable Chemistry; and permission of the academic supervisor and the course coordinator (or designate)

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### CHEM 3I03 - INDUSTRIAL CHEMISTRY

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A systematic study of modern processes in the chemical industry, as well as their environmental impact and the role of emerging green chemistry technologies.

Three lectures; one term

**Prerequisite(s):** One of CHEM 2E03, 20B3, 20D3, CHEMBIO 20B3, 20D3; or registration in Level III or IV of a Chemical Engineering program

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### CHEM 3II3 - INTRODUCTION TO TRANSITION METAL CHEMISTRY

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An introduction to transition metal chemistry, with focus on the relationships between structure, bonding, orbitals, properties, spectroscopy and applications.

Three lectures, one tutorial; one term

**Prerequisite(s):** CHEM 1AA3 or ISCI 1A24 A/B

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### CHEM 3LA3 - STRATEGIES FOR CHEMICAL DISCOVERY

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An advanced laboratory course emphasizing the principles of chemical research, including synthesis, analysis, characterization, and application of organic, inorganic, and organometallic compounds. Exposes students to an array of advanced characterization techniques used in the modern chemical research laboratory.

One lecture, two labs; one term

**Prerequisite(s):** CHEM 2LB3

### CHEM 30A3 - ORGANIC SYNTHESIS

A survey of contemporary organic synthesis, including functional group manipulations, use of protecting groups, and strategic carbon-carbon bond forming reactions. Applications involving multistep syntheses of complex organic molecules will be presented.

Three lectures; one term

**Prerequisite(s):** One of CHEM 20B3, 20D3, CHEMBIO 20B3, 20D3

*May be offered in alternate years.*

### CHEM 3PA3 - QUANTUM MECHANICS AND SPECTROSCOPY

An introduction to quantum chemistry and its applications in spectroscopy and structure and unusual phenomena at the nanoscale.

Three lectures, one tutorial; one term

**Prerequisite(s):** CHEM 2PC3; or MATH 1B03 and CHEM 1AA3 and one of MATH 1AA3, 1LT3, 1XX3, 1ZB3; or MATH 1B03 and ISCI 1A24 A/B

**Prerequisite(s) (EFFECTIVE 2021-2022):** CHEM 2PC3; or MATH 1B03 and CHEM 1AA3 and one of MATH 1AA3, 1LT3, 1XX3, 1ZB3; or MATH 1B03 and ISCI 1A24 A/B; and PHYSICS 1AA3 or 1CC3

### CHEM 3PC3 - MATHEMATICAL TOOLS FOR CHEMICAL PROBLEMS

An introduction to vector calculus, differential equations and linear algebra - including solving linear equations, eigenvalues and eigenvectors - motivated by problems of chemical equilibrium and kinetics.

Three lectures, one tutorial; one term

**Prerequisite(s):** One of CHEM 2PD3, 2P03, EARTHSC 2L03, ENGINEER 2H03, ENVIRSC 2L03, ISCI 2A18 A/B, MATLS 2B03, PHYSICS 2H04; and one of MATH 1A03, 1LS3, 1X03, 1ZA3, ISCI 1A24 A/B; or permission of the Instructor

**Antirequisite(s):** CHEM 2PC3

### CHEM 3RC3 - RADIOISOTOPES IN MEDICINE

A systematic study of the use of radioactive isotopes and radiotracers in the physical and life sciences, including: radioisotope production; elucidating biochemical pathways using radiotracers; diagnostic radiopharmaceuticals in cancer and mental health care; and therapeutic radioisotopes and radiopharmaceuticals.

Three lectures

**Prerequisite(s):** CHEM 1A03 (or 1E03) and 1AA3; or ISCI 1A24

**Cross-list(s):** LIFESCI 3RC3

### CHEM 3RP3 - RESEARCH PRACTICUM IN CHEMISTRY

A one term research project undertaken in a chemistry laboratory during the fall, winter or summer term which requires the submission of a formal report. May be taken in preparation for a Level IV thesis.

Students are responsible to arrange a suitable research experience, obtain appropriate permission from both a placement and academic supervisor, and are required to submit an application to Department of Chemistry and Chemical Biology thirty days prior to the date classes begin in each Term (see the *Sessional Dates* in the Undergraduate Calendar). More information and the application form can be found at <https://chemistry.mcmaster.ca/undergraduate/course-outlines/level-3-outlines.html>.

**Prerequisite(s):** Completion of Level II of Honours Chemistry or Honours Sustainable Chemistry; and permission of the academic supervisor and the course coordinator (or designate)

*Not to be taken concurrently with a Co-op work term.*

### CHEM 3SC3 - SUSTAINABLE CHEMISTRY - NATURAL RESOURCES AND ENERGY

Sustainable Use of Natural Resources and Energy. Using examples and case studies, this course will apply the principles of green chemistry and sustainability to the life cycles of resources such as hydrogen, water and endangered elements.

Three lectures; one term

**Prerequisite(s):** CHEM 2SC3

*First offered in 2021-2022.*

### CHEM 4AA3 - RECENT ADVANCES IN ANALYTICAL CHEMISTRY

Recent advances in analytical chemistry will include an introduction to chemometrics and multivariate analysis, as well as new developments in separation science and mass spectrometry.

Three lectures; one term

**Prerequisite(s):** CHEM 3AA3 or CHEMBIO 3AA3

*May be offered in alternate years.*

### CHEM 4D03 - ORGANIC STRUCTURE AND SYNTHESIS

This course will focus on strategic carbon-carbon and carbon-heteroatom bond forming reactions and their applications to both retrosynthetic analysis and total synthesis of complex organic molecules. Applications of green-chemical principles, catalysis and organocatalysis will be emphasized in their historical context.

Three lectures; one term

**Prerequisite(s):** CHEM 30A3 or CHEMBIO 30A3

*May be offered in alternate years.*

### CHEM 4G12 A/B - SENIOR THESIS

A thesis based on a research project under the direction of a faculty member of the Department of Chemistry and Chemical Biology. More information and the application form can be found at <http://www.chemistry.mcmaster.ca/contact/resources.html>.

Two terms

**Prerequisite(s):** Registration in Level IV of any Honours Chemistry or Honours Sustainable Chemistry program and a GPA of at least 6.0; or permission of the Department

**Antirequisite(s):** CHEM 4G09 A/B, CHEM 4RP6 A/B S

*Not open to students with credit or registration in ISCI 4A12 A/B.*

### CHEM 4IA3 - PHYSICAL METHODS OF INORGANIC STRUCTURE DETERMINATION

Structural methods such as multi-NMR, NQR, EPR, Msbauer and vibrational spectroscopy are covered. Inquiry directed problems and topics illustrate applications in contemporary inorganic chemistry.

Three lectures, one tutorial; one term

**Prerequisite(s):** CHEM 2II3, 3II3

*May be offered in alternate years.*

### CHEM 4IB3 - BIO-INORGANIC CHEMISTRY

Inorganic elements and their behaviour in biological systems. Topics for study include metalloenzymes, bio-redox agents, transport proteins, biomimetic inorganic complexes, metallodrugs, and radiopharmaceuticals.

Three lectures; one term

**Prerequisite(s):** CHEM 3II3

**Cross-list(s):** CHEMBIO 4IB3

*May be offered in alternate years.*



### CHEM 4IC3 - SOLID STATE INORGANIC MATERIALS: STRUCTURES, PROPERTIES, CHARACTERIZATION AND APPLICATIONS

Structure-property relationships that form the basis for the technological applications of non molecular inorganic solids, including oxides, metals and intermetallic compounds.

Three lectures; one term

**Prerequisite(s):** CHEM 2I13, 3I13

*May be offered in alternate years.*

### CHEM 4I13 - TRANSITION METAL ORGANOMETALLIC CHEMISTRY AND CATALYSIS

Organometallic complexes and their reactivity, with a view towards catalyst design. An inquiry project is included.

Three lectures; one term

**Prerequisite(s):** CHEM 2I13, 3I13

*May be offered in alternate years.*

### CHEM 40A3 - NATURAL PRODUCTS

A description of basic building blocks and reaction mechanisms involved in the biosynthesis of naturally occurring compounds.

Three lectures; one term

**Prerequisite(s):** CHEM 30A3 or CHEMBIO 30A3

**Cross-list(s):** CHEMBIO 40A3

### CHEM 40B3 - POLYMERS AND ORGANIC MATERIALS

Fundamentals of polymer structure, and the structure-property relationships that enable polymer applications in a wide array of products. Both traditional and modern polymerization methods are covered, with an emphasis on methods enabling the formation of advanced polymer architectures.

Three lectures; one term

**Prerequisite(s):** One of CHEM 20B3, 20D3, CHEMBIO 20B3, 20D3

*May be offered in alternate years.*

### CHEM 4PB3 - COMPUTATIONAL MODELS FOR ELECTRONIC STRUCTURE AND CHEMICAL BONDING

Modern computational methods for studying atoms, molecules, and materials.

Three lectures; one term

**Prerequisite(s):** CHEM 3PA3 or PHYSICS 3MM3

### CHEM 4RP6 A/B S - RESEARCH PROJECT IN CHEMISTRY

A project supervised by a member of the Department of Chemistry and Chemical Biology or on the list of acceptable Supervisors.

More information and the application form can be found at

<http://www.chemistry.mcmaster.ca/contact/resources.html>.

**Prerequisite(s):** Registration in Level IV Honours Chemistry (B.Sc.) or Honours Sustainable Chemistry and permission of the Department. Students are responsible for securing a suitable project supervisor, and are required to submit an application by March 31st of the academic year prior to registration. Students are expected to have a Grade Point Average of at least 5.0.

**Antirequisite(s):** CHEM 4G09 A/B, CHEM 4G12 A/B

*Not open to students with credit or registration in ISCI 4A12 A/B.*

### CHEM 4SC3 - SUSTAINABLE CHEMISTRY - ANALYSIS AND REGULATION

This course develops the skills necessary to work effectively in a Quality System environment. Design, execution, and audit of processes compliant with

regulatory frameworks such as good manufacturing practice (GMP).

Three lectures; one term

**Prerequisite(s):** CHEM 2SC3

*First offered in 2022-2023.*

### CHEM 4W03 - NATURAL AND SYNTHETIC MATERIALS

The microscopic origins of the macroscopic properties of materials including soft polymer and biological systems.

Three lectures; one term

**Prerequisite(s):** CHEM 2PB3, CHEMBIO 2P03 or CHEM 2P03

**Antirequisite(s):** CHEM 3PB3

*May be offered in alternate years.*

## Chinese

Chinese 1Z06 is administered by the Department of Linguistics and Languages.

Togo Salmon Hall, Room 629, ext. 24388

<http://linguistics.humanities.mcmaster.ca/>

**Course**

*If no prerequisite is listed, the course is open.*

### CHINESE 1Z06 A/B - MANDARIN CHINESE FOR BEGINNERS

An intensive beginner's course in modern standard (Mandarin) Chinese designed for students with no prior knowledge of the language. The focus is on developing proficiency in the skills of listening, speaking, reading and writing. In addition to general knowledge about China and Chinese culture, students will be exposed to some basic Chinese script.

Four hours; two terms

*Not open to native speakers of Chinese or to students with credit in Grade 12 U or M equivalent.*

## Civil Eng Infrastructure Tech

Courses in Civil Engineering Infrastructure Technology are administered by the Bachelor of Technology Program.

Engineering Technology Building (ETB), Room 121, ext. 20195

<http://mybtechdegree.ca>

### CIVTECH 3GE3 - GEOTECHNICAL MATERIALS AND ANALYSIS

Composition of soils, soil identification and classification; compaction; seepage theory; effective stress concept; stresses and displacements using elastic solutions; consolidation theory and settlement.

Two lectures, one lab; one term

**Prerequisite(s):** Registration in Civil Engineering Infrastructure Technology

### CIVTECH 3GT3 - GEOTECHNICAL DESIGN

Shear strength characteristics and failure criteria for soils; direct shear, triaxial, plane strain and field tests; earth pressure theory; bearing capacity theory; slope stability and embankment analysis; borehole testing and interpretation.

Two lectures, one lab; one term

**Prerequisite(s):** CIVTECH 3GE3, ENGTECH 3ML3, and registration in Civil Engineering Infrastructure Technology Co-op (B.Tech.)

### CIVTECH 3PM3 - HIGHWAY DESIGN, CONSTRUCTION, AND MAINTENANCE

Geometric design. Horizontal and vertical alignment, and intersections. Aggregates and soils, asphalt and Portland cement concrete; design of

bituminous mixtures; pavement rehabilitation; distress mechanisms; construction techniques; preventative measures.

Three lectures; one term

**Prerequisite(s):** CIVTECH 3GE3, ENGTECH 3ML3, and registration in Civil Engineering Infrastructure Technology

### CIVTECH 3SA3 - STRUCTURAL ANALYSIS

Structural analysis and modelling of linear elastic truss, beam and frame structures; analysis of determinate and indeterminate structures; matrix stiffness method of analysis.

Three lectures; one term

**Prerequisite(s):** ENGTECH 3ML3 and registration in Civil Engineering Infrastructure Technology

### CIVTECH 3TP3 - TRANSPORTATION PLANNING AND MODELLING

Fundamental theories and applications of transportation planning and modelling; short and long range transportation planning; traffic impacts of land development; trip generation and gravity models; software applications.

Two lectures; one lab; one term

**Prerequisite(s):** ENGTECH 3ST3 and registration in Civil Engineering Infrastructure Technology

### CIVTECH 4BC3 - BUILDING SCIENCE

*Formerly CIVTECH 3BC3.*

Topics include building science theory, heat, air and moisture transfer, building envelope, roofing and green roofs, sustainability considerations, assessment, durability, performance, LEED design, codes and regulations.

Three lectures; one term

**Prerequisite(s):** ENGTECH 3SP3, 4TF3, and registration in Civil Engineering Infrastructure Technology

### CIVTECH 4BD3 - BRIDGE DESIGN, MAINTENANCE AND REPAIR

Bridge elements, structural forms, design loads and required concrete and steel properties. Causes and mechanisms of damage in bridges and of methods of damage detection and assessment. Effective repair materials and techniques and maintenance strategies.

Three lectures; one term

**Prerequisite(s):** CIVTECH 4RC3 or 4SD3; and registration in the Civil Engineering Infrastructure Technology program  
*CIVTECH 4RC3 or 4SD3 may be taken concurrently with this course.*

### CIVTECH 4LU3 - ADVANCED LAND USE PLANNING

*Formerly CIVTECH 3LU3.*

Management of land use; land development and redevelopment processes; infrastructure requirements; land redevelopment; principles and practices of land use planning, legislation and regulations; public consultation; GIS applications.

Three lectures; one term

**Prerequisite(s):** GENTECH 4SE3 and registration in Civil Engineering Infrastructure Technology

### CIVTECH 4MH3 - HYDRAULIC ENGINEERING

Fluid mechanics applications in civil engineering. Topics include; flow in open channels, hydraulic jump, weirs and spillways, forces on immersed bodies, pumps in series/parallel and fluid measurements.

Three lectures; one term

**Prerequisite(s):** One of CIVTECH 3FM3, ENGTECH 4TF3, and registration in Civil Engineering Infrastructure Technology

### CIVTECH 4RC3 - REINFORCED CONCRETE AND MASONRY DESIGN

Formerly CIVTECH 3RC3

Design by limit states methods to ensure adequate capacities for bending moment, shear and diagonal tension, axial force; and design to satisfy serviceability requirements.

Three lectures; one term

**Prerequisite(s):** Registration or completion of CIVTECH 3SA3, and registration in Civil Engineering Infrastructure Technology

### CIVTECH 4SD3 - STRUCTURAL STEEL DESIGN

Limit states design methods to ensure capacities for bending moment, shear and diagonal tension, axial force; serviceability requirements; failure analysis for common structural materials.

Three lectures; one term

**Prerequisite(s):** CIVTECH 3SA3 and registration in Civil Engineering Infrastructure Technology

### CIVTECH 4UM3 - ASSET MANAGEMENT

*Formerly CIVTECH 3UM3.*

Introduction to utilities products and networks. Planning and management tools for infrastructure, including inventory management, needs assessment, demand management and investment decisions.

Three lectures; one term

**Prerequisite(s):** GENTECH 3EE3 and registration in Civil Engineering Infrastructure Technology

### CIVTECH 4WT3 - MUNICIPAL AND ENVIRONMENTAL ENGINEERING

Formerly CIVTECH 3WT3.

Design, maintenance and rehabilitation of municipal water systems. This includes drinking water distribution systems, sewage and rainwater collection, management and pumping. Land development and population forecasting as it relates to water and wastewater demand.

Three lectures; one term

**Prerequisite(s):** ENGTECH 4TF3 and registration in Civil Engineering Infrastructure Technology

## Civil Engineering

Courses in Civil Engineering are administered by the Department of Civil Engineering.

John Hodgins Engineering Building, Room 301, ext. 24287 or 24315

<http://www.eng.mcmaster.ca/civil>

#### Department Notes

1. All Civil Engineering courses are open to students registered in a civil engineering program, subject to prerequisite requirements. Prior permission of the Department is necessary for students from other engineering departments and other faculties.
2. Unless otherwise stated, the duration and the frequency of activities are as follows:
  - one lecture consists of one hour each week
  - one tutorial consists of two hours each week
  - one lab consists of three hours each week

### CIVENG 2A03 - SURVEYING AND MEASUREMENT FOR TRANSPORTATION AND CONSTRUCTION

Introduction to measurement and computational techniques of surveying, the theory of measurement and errors, adjustment of observations; laboratory measurement and instrumentation with a focus on geometric profiles for road networks and construction; formal Civil Engineering drawings, interpretation, and communication of information.

Two lectures, one tutorial or one lab; first term

### CIVENG 2B04 - PRINCIPLES OF ENVIRONMENTAL ENGINEERING

Fundamentals of reaction kinetics; mass and energy balances; reactor theory; ecological systems; water quality; water and wastewater treatment; sustainability; and climate change.

Three lectures, one tutorial or one lab; first term

**Prerequisite(s):** Registration in Level II Engineering or permission of the department

### CIVENG 2C04 - STRUCTURAL MECHANICS

Review of stress/strain state and strain-displacement relations; plastic deformations and residual stresses due to axial loading and bending; torsion of noncircular and thin-walled sections; unsymmetric bending and eccentric axial loading, shear stresses and unsymmetric loading of thin-walled members; transformation of stress and strain; stress/strain invariants; yield and fracture criteria energy methods; stability of columns.

Three lectures, one tutorial or one lab; second term

**Prerequisite(s):** Credit or registration in CIVENG 2P04

**Antirequisite(s):** MECHENG 3A03

### CIVENG 2E03 - COMPUTER APPLICATIONS IN CIVIL ENGINEERING

Numerical techniques including error analysis, root finding, linear algebraic equations, curve fitting, integration and differentiation, ordinary differential equations; sensitivity analysis; use of several software packages for numerical analysis; civil engineering applications.

Two lectures, one lab, one tutorial; first term

**Prerequisite(s):** Credit or registration in CIVENG 2P04

### CIVENG 2I03 - COMMUNICATIONS IN CIVIL ENGINEERING

Oral and written communication in context of civil engineering activity. A professional liaison program involving site visits.

Three lectures, one tutorial (three hours); first term

*Not open to students registered in an IBEHS, Engineering and Management or Engineering and Society program.*

### CIVENG 2J04 - PRINCIPLES OF GEOLOGICAL AND GEO-ENVIRONMENTAL ENGINEERING

Principles of geological engineering and hydrologic engineering; Composition of 'earth'; processes that operate on or beneath the surface; fundamentals of: groundwater flow, monitoring, and sampling, contaminant movement in aquifers, solid waste management, hazardous waste management and remediation.

Three lectures, one tutorial or one lab; second term

**Prerequisite(s):** Credit or registration in CIVENG 2B04

**Antirequisite(s):** ENVIRSC 3U03

### CIVENG 2004 - FLUID MECHANICS

Fluid properties; hydrostatics; continuity, momentum and energy equations; potential flow; laminar and turbulent flow; flow in closed conduits, transients, open channel flow; hydraulic cross-sections.

Three lectures, one tutorial or one lab; second term

**Prerequisite(s):** Credit or registration in CIVENG 2P04; and credit or registration in MATH 2ZZ3 and MATH 2Z03

**Antirequisite(s):** MECHENG 3004

### CIVENG 2P04 - STATICS AND MECHANICS OF MATERIALS

Principles of statics as applied to rigid bodies. Internal forces, shear and bending moment diagrams, Stress and strain, elastic behaviour of simple members under axial force, torsion, bending and traverse shear. Principal stresses.

Three lectures, one tutorial; first term

**Prerequisite(s):** PHYSICS 1D03 and registration in Level II or above of Civil Engineering program

**Antirequisite(s):** MECHENG 2P04, ENGINEER 2P04

### CIVENG 2Q03 - ENGINEERING MECHANICS: DYNAMICS

Kinematics and dynamics of particles and rigid bodies. Work, energy and momentum principles; introduction to mechanical vibrations, free and forced vibrations of rigid and elastic systems..

Two lectures, one tutorial; second term

**Prerequisite(s):** Credit or registration in CIVENG 2P04

**Antirequisite(s):** MECHENG 2QA4, 2Q04

### CIVENG 3A03 - GEOTECHNICAL ENGINEERING I

Composition of soils, soil identification and classification; compaction; seepage theory; effective stress concept; stresses and displacements using elastic solutions; consolidation theory; numerical solutions.

Two lectures, one tutorial or one lab; first term

**Prerequisite(s):** CIVENG 2J04

### CIVENG 3B03 - GEOTECHNICAL ENGINEERING II

Shear strength characteristics and failure criteria for soils; direct shear, triaxial, plane strain and field tests; earth pressure theory; bearing capacity theory; slope stability and embankment analysis.

Two lectures, one tutorial or one lab; second term

**Prerequisite(s):** Credit or registration in CIVENG 3A03

### CIVENG 3C03 - ENGINEERING SYSTEMS

Mathematical models and systems; economic comparison of projects; optimization; linear, nonlinear and dynamic programming; simulation modelling. With an emphasis on transportation and other civil engineering applications.

Two lectures, one tutorial; first term

**Prerequisite(s):** Registration in Level III or above of any Engineering program

### CIVENG 3G04 - STRUCTURAL ANALYSIS

Structural analysis and modelling of linear elastic truss, beam and frame structures; stress resultants and deformations of statically determinate structures; methods for analysis of indeterminate structures; stiffness matrix method; plane frame computer analysis.

Three lectures, one tutorial; first term

**Prerequisite(s):** CIVENG 2C04 and CIVENG 2P04

### CIVENG 3J04 - REINFORCED CONCRETE DESIGN

Design by limit states methods to ensure adequate capacities for bending moment, shear and diagonal tension, axial force, bond and anchorage; and design to satisfy serviceability requirements for deflection and cracking; practical design requirements; interpretation of building code for behaviour of structures.

Three lectures, one tutorial or one lab; second term

**Prerequisite(s):** Credit or registration in CIVENG 3G03 or 3G04, 3P03 or 3P04

### CIVENG 3K03 - INTRODUCTION TO TRANSPORTATION ENGINEERING

A transportation impact study serves as the focus for group projects, and provides the context for application of material on traffic flow characteristics, capacity and control for signalized and unsignalized intersections, and travel demand forecasting. Safety; social impacts.

Two lectures, one tutorial; first term

**Prerequisite(s):** Registration in Level III or above of any Engineering program

### CIVENG 3L03 - WATER QUALITY

Physical, chemical and biological characteristics of water; stoichiometry; thermodynamics; acid/base chemistry; carbonate system; nitrogen and phosphorous cycles; mathematical modeling of physical systems; water quality standards.

Two lectures, one tutorial or one lab; second term

**Prerequisite(s):** Credit or registration CHEMENG 2D04 or CIVENG 2B04

### CIVENG 3M03 - MUNICIPAL HYDRAULICS

Analysis/design of water distribution networks; analysis and design of wastewater collection systems; pumps; surface and groundwater supplies.

Two lectures, one tutorial; second term

**Prerequisite(s):** CIVENG 2004; and credit or registration in either STATS 3J04 or IBEHS 4C03

### CIVENG 3P04 - CIVIL ENGINEERING MATERIALS AND DESIGN

Characteristics, behaviour and use of Civil Engineering materials: concrete, metals, wood, and composites; Physical, chemical and mechanical properties; Quality control and material tests; Concepts of Structural design, limit states design, estimation of structural loads.

Three lectures, one tutorial or one lab; first term

**Prerequisite(s):** CIVENG 2C04, MATLS 1M03

### CIVENG 3RR3 - ENGINEERING ECONOMICS AND PROJECT MANAGEMENT

Introduction to fundamental concepts of project management and construction industry: Project and project management overview; construction industry and project; project participants; project chronology; construction contracts and delivery methods; project estimating; construction planning and scheduling; project control; introduction to Engineering Economics: engineering decision making; time value of money; value engineering; cash flow analysis; and comparison methods.

Two lectures, one tutorial; second term

**Prerequisite(s):** Registration in Level III or above of a Civil Engineering program

**Antirequisite(s):** ENGINEER 2B03, 4B03

*Not open to students registered in an Integrated Biomedical Engineering & Health Sciences (IBEHS) or Engineering and Management program.*

### CIVENG 4A04 - ENGINEERING HYDROLOGY

Hydrologic cycle; climate; hydraulic and hydrologic processes, precipitation; unit hydrographs; hydrologic statistics, hydrologic routing; introduction to groundwater flow.

Three lectures, one tutorial; one term

**Prerequisite(s):** CIVENG 3M03

### CIVENG 4BP4 - BUILDING SCIENCE

Building science theory, heat, air and moisture transfer, building envelope, building systems, energy consumption, sustainability considerations, LEED design.

Three lectures, one tutorial; one term

**Prerequisite(s):** CIVENG 3P04 and CIVENG 3J04 or registration in Level IV or above in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program

### CIVENG 4CM4 - ADVANCED CONSTRUCTION ENGINEERING AND MANAGEMENT

Fundamental concepts of advanced tools, techniques, and technologies in construction engineering and management. Topics include; advanced scheduling techniques; computer-aided project management in scheduling; automation and telematics in construction equipment; construction site work and earth work operations; construction safety; and other advanced technological trends in construction.

Three lectures, one tutorial; one term

**Prerequisite(s):** CIVENG 3RR3 or IBEHS 4P04 or registration in the Engineering and Management program

### CIVENG 4DD4 - STRUCTURAL DYNAMICS AND SEISMIC DESIGN

Introduction to linear elastic structural dynamics including single and multi degree-of-freedom systems. Introduction to seismic design philosophy including capacity design, ductility, and collapse mechanisms. Design, detailing, and analysis of selected lateral force resisting systems will be covered using current design codes.

Three lectures, two tutorial; one term

**Prerequisite(s):** CIVENG 3G04 and CIVENG 3J04 and credit or registration in CIVENG 4N04

**Antirequisite(s):** CIVENG 4ED4, 4SD4

### CIVENG 4G04 - PAVEMENT MATERIALS AND DESIGN

Components of highway pavements; ground water and drainage for highway facilities; soil compaction and stabilization; aggregates; bituminous materials; asphalt mix design; flexible and rigid pavement design; embankment design.

Three lectures, one tutorial or one lab; one term

**Prerequisite(s):** CIVENG 3B03

### CIVENG 4K04 - MODERN METHODS OF STRUCTURAL ANALYSIS

Stiffness method; development and applications in structural analysis.

Introduction to finite element method. Influence lines, elastic stability analysis of frames with and without sway effects. Application of computer programs.

Three lectures, one tutorial; one term

**Prerequisite(s):** CIVENG 3G03 or CIVENG 3G04



### CIVENG 4L04 - DESIGN OF WATER RESOURCES SYSTEMS

Investigation, planning, analysis and design of water resources systems, climate change. Introduction to GIS tools. Frequency analysis, design storms, urban drainage and analysis, floodplain analysis and flood control.

Two lectures, one tutorial, one lab; one term

**Prerequisite(s):** CIVENG 3M03

### CIVENG 4N04 - STEEL STRUCTURES

Introduction to design in steel, tension and compression members, plate buckling aspects, beam instability, beam design, beam-columns, bolted and welded connections. Applications employing steel structures building code.

Three lectures, one tutorial; one term

**Prerequisite(s):** CIVENG 3G03 or 3G04, 3P04

### CIVENG 4S04 - FOUNDATION ENGINEERING

Principles of foundation design; stability analysis; bearing capacity, settlement and location, footings, deep foundations, piles, pile groups and drilled piers; retaining walls.

Three lectures, one tutorial; one term

**Prerequisite(s):** CIVENG 3B03

### CIVENG 4T04 - TRANSIT MODELLING AND INTELLIGENT TRANSPORTATION SYSTEMS

Introduction to advanced traffic signal modelling, basic Transit Engineering concepts and Intelligent Transportation Systems.

Three lectures, one tutorial; one term

**Prerequisite(s):** CIVENG 3K03

### CIVENG 4TA4 - TRAFFIC ANALYSIS: THEORY AND SIMULATION

Traffic operation and transportation network analysis, including traffic studies, traffic flow models, shockwave analysis, advanced analysis of signalized intersections, capacity and level of service analysis, and road network simulation.

Three lectures, one tutorial, one lab (two hours); one term

**Prerequisite(s):** CIVENG 3K03

### CIVENG 4V04 - BIOLOGICAL ASPECTS OF WASTEWATER TREATMENT

Microbial kinetics and cell yield in biological wastewater treatment; conventional activated sludge systems; models of activated sludge systems; aeration systems; sedimentation; membrane bioreactors; biological nutrient removal; sequential batch reactors; biosolids treatment, including sludge thickening, anaerobic digestion and dewatering; attached growth reactors, including trickling filters, rotation disk contactors and fluidized bed reactors.

Three lectures, one tutorial or one lab; one term

**Prerequisite(s):** CIVENG 3L03 or CHEMENG 2D04 or registration in Level IV or above in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program or permission of the department

**Antirequisite(s):** ENGINEER 4U03

### CIVENG 4W04 - DESIGN OF LOW RISE BUILDINGS

Structural systems and load distribution, design of masonry, wood, and cold-formed steel. Introduction to building envelope design.

Three lectures, one tutorial; one term

**Prerequisite(s):** CIVENG 3J04, CIVENG 3G03 or 3G04 and credit or registration in CIVENG 4N04

### CIVENG 4X06 A/B - DESIGN AND SYNTHESIS PROJECT IN CIVIL ENGINEERING

Capstone project supervised by faculty members in civil engineering, involving design and synthesis that reinforces concepts from structural and/or municipal engineering. Exposure to elements of teamwork, sustainability, social responsibility and project management.

Three lectures, two hours of design studio; both terms

**Prerequisite(s):** CIVENG 3G03 or CIVENG 3G04, CIVENG 3L03, CIVENG 3J04 and registration in a final level of a Civil Engineering program or permission from the Department

**Co-requisite(s):** CIVENG 4N04

### CIVENG 4Y04 - BRIDGES AND OTHER STRUCTURAL SYSTEMS

Bridge loads and analysis for load effects. Design of (steel beam - concrete slab) composite floor system and steel plate girders. Stresses, ultimate strength, and design of pre-stressed concrete girders. Fatigue Design.

Three lectures, one tutorial; one term

**Prerequisite(s):** CIVENG 3G03 or 3G04, 3J04 or registration in CIVENG 4N04

### CIVENG 4Z04 A/B S - INDEPENDENT STUDY

An experimental and/or analytical investigation related to any branch of civil engineering, under the direction of a faculty member. Students choose a project from a list of department approved projects. The student may be required to present a seminar and will submit a final written report before April 1.

Two labs (three hours); both terms. The hours assigned can be freely scheduled to suit those involved in a particular project and may include computation classes, laboratory work, discussion or individual study.

**Prerequisite(s):** Registration in a final level of a Civil Engineering program, and a SA of at least 9.5 and permission of the department

**Antirequisite(s):** IBEHS 3I06 A/B

## Classics

Courses in Classics are administered by the Department of Classics.

Togo Salmon Hall, Room 706, ext. 24311

<http://classics.humanities.mcmaster.ca/>

No language other than English is required for courses listed under Classics.

#### Department Note

The following courses are available as electives to qualified students in any program:

#### a. Classical Archaeology and Art History

- CLASSICS 1A03 - Introduction to Classical Archaeology
- CLASSICS 2B03 - Greek Art
- CLASSICS 2C03 - Roman Art
- CLASSICS 3H03 - Archaic Greek Art
- CLASSICS 3Q03 - Greek Sanctuaries
- CLASSICS 3S03 - Pompeii, Herculaneum, and Ostia

#### b. Ancient History and Society

- CLASSICS 1M03 - History of Greece and Rome
- CLASSICS 2K03 - The Society of Greece and Rome
- CLASSICS 2HA3 - Athens and Sparta: Democracy, Oligarchy, and War
- CLASSICS 2HB3 - From Alexander to Cleopatra: Cosmopolis and Empire
- CLASSICS 2HC3 - Caesar and the Rise of Autocracy
- CLASSICS 2HD3 - Nero, Decadence, and the End of a Dynasty

#### c. Classical Literature in Translation

- CLASSICS 1B03 - An Introduction to Ancient Myth and Literature
- CLASSICS 2D03 - Greek and Roman Mythology
- CLASSICS 2E03 - The Ancient World in Film

- CLASSICS 2YY3 - Greek Tragedy
- CLASSICS 3EE3 - The Greek Historians
- CLASSICS 3ER3 - Epics of Rome
- CLASSICS 3M03 - Greek Intellectual Revolution
- CLASSICS 3YY3 - Ovid

d. **Classical Languages**

- GREEK 1Z03 - Beginner's Intensive Ancient Greek I
- GREEK 1ZZ3 - Beginner's Intensive Ancient Greek II
- LATIN 1Z03 - Beginner's Intensive Latin I
- LATIN 1ZZ3 - Beginner's Intensive Latin II

**Courses**

If no prerequisite is listed, the course is open.

See also courses in *Greek* and *Latin*.

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### CLASSICS 1A03 - INTRODUCTION TO CLASSICAL ARCHAEOLOGY

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A study of the history and methodology of Greek and Roman archaeology illustrated with materials from excavated sites.

Three lectures; one term

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### CLASSICS 1B03 - AN INTRODUCTION TO ANCIENT MYTH AND LITERATURE

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A study of Greek and Roman mythology and literature. Texts such as Homer, Virgil and Greek tragedies will be read in translation.

Two lectures, one tutorial; one term

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### CLASSICS 1M03 - HISTORY OF GREECE AND ROME

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The history of Greece and Rome from the bronze age to the fall of Rome based on literary, documentary and archaeological evidence.

Two lectures, one tutorial; one term

**Cross-list(s):** HISTORY 1M03

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### CLASSICS 2B03 - GREEK ART

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The architecture, sculpture and painting of the Greek and Hellenistic world.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Cross-list(s):** ARTHIST 2B03

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### CLASSICS 2C03 - ROMAN ART

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The architecture, sculpture, and painting of the Roman world.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Cross-list(s):** ARTHIST 2C03

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### CLASSICS 2D03 - GREEK AND ROMAN MYTHOLOGY

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A study of the myths of Greek and Roman gods and heroes, their explanation according to theories on the nature of myths, and their use by Greek and Roman authors, particularly Homer and Virgil.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

*Offered on rotation.*

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### CLASSICS 2E03 - THE ANCIENT WORLD IN FILM

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The emphasis is on myth (Amazons, Hercules) and history (slave revolts, banquets, decadent emperors), studied via Greek and Latin accounts (in translation) and cinematic versions (e.g. *Electra*, *Medea*, *Mighty Aphrodite*, *Apocalypse Now*, *Spartacus*, *I Claudius*).

Two lectures, plus one weekly film screening; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** CMST 2Y03, THTRFLM 2G03

*Offered on rotation.*

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### CLASSICS 2HA3 - ATHENS AND SPARTA: DEMOCRACY, OLIGARCHY, AND WAR

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The Classical period of Ancient Greece will be examined from the perspective of its two great rival states, Athens and Sparta, with attention to their rival political and social systems, contrasting cultures, and the generation-long war they fought.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** CLASSICS 2LA3

*Alternates with CLASSICS 2HB3*

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### CLASSICS 2HB3 - FROM ALEXANDER TO CLEOPATRA: COSMOPOLIS AND EMPIRE

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The Hellenistic period of Ancient Greece, examining Alexanders conquests; Seleucid Asia, Antigonid Macedon, Ptolemaic Egypt; dynastic and imperial power struggles; cosmopolitanism and colonialism; Greek and indigenous cultures; science and philosophy; and the triumph of Rome.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

*Alternates with CLASSICS 2HA3.*

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### CLASSICS 2HC3 - CAESAR AND THE RISE OF AUTOCRACY

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This course will consider the growth of Roman power in the Mediterranean, the stresses that this put on Roman institutions, and how the crises that brought an end to the Republic led to the dictatorship of Gaius Julius Caesar and set the stage for autocratic regimes to come.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

*Alternates with CLASSICS 2HD3.*

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### CLASSICS 2HD3 - NERO, DECADENCE, AND THE END OF A DYNASTY

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The last of the Julio-Claudian emperors, Nero, became notorious for his capriciousness and extravagance. How much of this was myth and how much reality? This course will consider the evolution of the Roman system under the Julio-Claudians and place Nero in his political, economic, and ideological contexts.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

*Alternates with CLASSICS 2HC3*

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### CLASSICS 2K03 - THE SOCIETY OF GREECE AND ROME

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An examination of selected aspects of the social life of Greece and Rome. Attention will be given to subjects such as work and leisure, war and the warrior, slavery, marriage and family, and the role of women.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** HISTORY 2K03

*Offered on rotation.*

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### CLASSICS 2LW3 - ANCIENT LAW

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An overview of the law and legal systems of the ancient world, from Mesopotamia, ancient Israel, Greece, and Rome. Themes may include notions

of justice, legal status, family law, property law, delict, injury and crime.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** HISTORY 2LW3

*Offered in alternate years.*

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### CLASSICS 2MT3 - ANCIENT ROOTS OF MEDICAL TERMINOLOGY

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This course presents Greek and Latin roots out of which is built the vocabulary of contemporary medicine and reveals the predictable patterns by which these roots combine. Students will learn to define new compounds and phrases by analysis of their parts.

Three lectures; one term

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### CLASSICS 2YY3 - GREEK TRAGEDY

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Selected plays of the Greek tragic playwrights will be read in translation and considered in their literary, historical or social contexts.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** THTRFLM 2Y03

*Offered in alternate years.*

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### CLASSICS 3EE3 - THE GREEK HISTORIANS

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The study in translation of Herodotus, Thucydides, and other Greek historical writers, with consideration of the evolution of their genre and their contributions to the development of historiography.

Three lectures; one term

**Prerequisite(s):** One of CLASSICS 1M03, CLASSICS 2K03, CLASSICS 2LA3 or registration in Level III or above of any program

**Antirequisite(s):** HISTORY 3EE3

*Offered in alternate years.*

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### CLASSICS 3ER3 - EPICS OF ROME

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This course will examine the great epic poems of Vergil, Ovid and Statius, studying them in the political and cultural context of contemporary Rome and against the background of the tradition of epic poetry.

Three hours; one term

**Prerequisite(s):** Three units from CLASSICS 1B03, 2D03, 2E03, 2Y03, 2YY3; and registration in Level II or above of any program

*Offered in alternate years.*

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### CLASSICS 3H03 - ARCHAIC GREEK ART

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The formative period of Greek Art, from its rebirth after the Dark Ages to the Persian Wars (c. 1000-480 B.C.), and its relationship to the art of the Near East.

Three lectures; one term

**Prerequisite(s):** CLASSICS 2B03

**Cross-list(s):** ARTHIST 3H03

*Offered in alternate years.*

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### CLASSICS 3HH3 - ROMAN SLAVERY

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An examination of Roman slavery using a variety of sources (historical and juridical texts, funerary inscriptions, archaeological evidence) in order to determine its place in Roman social structure and its importance to the ancient economy and culture.

Three lectures; one term

**Prerequisite(s):** One of CLASSICS 1M03, 2K03, 2LC3, 2LD3; and registration in Level II or above of any program

**Antirequisite(s):** HISTORY 3HH3

*Offered in alternate years.*

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### CLASSICS 3M03 - GREEK INTELLECTUAL REVOLUTION

---

A study of the birth of rationalistic and naturalistic thought in Greece, placing this intellectual revolution in its social, political and cultural context.

Three lectures; one term

**Prerequisite(s):** Three units of CLASSICS, HISTORY, or PHILOSOPHY; and registration in Level II or above of any program

**Antirequisite(s):** HISTORY 3M03

*Offered in alternate years.*

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### CLASSICS 3MT3 - ADVANCED ANCIENT ROOTS OF MEDICAL TERMINOLOGY

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This course continues and develops the methods and materials introduced in CLASSICS 2MT3, presenting advanced and specialized medical terms and an introduction to the major Latin corpus of anatomical phrases known as the *Terminologia Anatomica*.

Three hours; one term

**Prerequisite(s):** CLASSICS 2MT3

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### CLASSICS 3Q03 - GREEK SANCTUARIES

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Ancient Greek sanctuaries and their social and political context. Topics will include architecture and art, as well as activities such as sacrifice, athletic games, healing, and oracular consultation.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Cross-list(s):** ARTHIST 3Q03

*Alternates with CLASSICS 3S03 (ARTHIST 3SS3)*

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### CLASSICS 3S03 - POMPEII, HERCULANEUM, AND OSTIA

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The archaeology of three cities in Italy (Pompeii, Herculaneum, Ostia) will be examined, with a focus on urbanism, public space, and domestic architecture and decoration.

Three lectures; one term

**Prerequisite(s):** One of CLASSICS 1A03, 2B03, 2C03, 2LC3, or 2LD3 and registration in Level II or above of any program

**Cross-list(s):** ARTHIST 3SS3

*Alternates with CLASSICS 3Q03 (ARTHIST 3QQ3).*

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### CLASSICS 3X03 - ROMAN RELIGION

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A study of the role of religion in Roman public and private life using literary, documentary and archaeological evidence.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** HISTORY 3X03

*Offered in alternate years.*

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### CLASSICS 3YY3 - OVID

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Representative texts of the Latin poet Ovid will be read in translation, especially his erotic poetry and mythical stories. There will be literary analysis and later adaptations in literature and film will be considered.

Three hours; one term

**Prerequisite(s):** Three units from CLASSICS 1B03, 2D03, 2E03, 2Y03, 2YY3; and registration in Level II or above of any program

*Offered in alternate years.*

### CLASSICS 4BB3 - SEMINAR IN ANCIENT ART

Consult the Department concerning the topic to be offered.

Seminar (two hours); one term

**Prerequisite(s):** Nine units of CLASSICS including six units from CLASSICS 2B03, 2C03, 3Q03, 3H03, 3S03 or registration in Level III or above of an Honours program in Classics

**Cross-list(s):** ARTHIST 4BB3

*CLASSICS 4BB3 may be repeated, if on a different topic, to a total of six units.*

### CLASSICS 4E03 - SEMINAR IN ANCIENT CULTURE

Consult the Department for the topic to be offered.

Seminar (two hours); one term

**Prerequisite(s):** Six units from Level III Classics or above or registration in Level III or above of an Honours program in Classics

*CLASSICS 4E03 may be repeated, if on a different topic, to a total of six units.*

### CLASSICS 4F03 - SEMINAR IN ANCIENT HISTORY

Consult the Department for the topic to be offered.

Seminar (two hours); one term

**Prerequisite(s):** Nine units from CLASSICS 2K03, 2LA3, 2LB3, 2LC3, 2LD3, 3HH3, 3M03, 3X03 or registration in Level III or above of an Honours program in Classics or History

**Antirequisite(s):** HISTORY 4FA3

*CLASSICS 4F03 may be repeated, if on a different topic, to a total of six units. Offered in alternate years.*

### CLASSICS 4FP3 - FIELD PRACTICUM IN CLASSICAL ARCHAEOLOGY

Students will learn the techniques of archaeology in the field (survey, excavation, finds processing) by participating in an excavation at a classical site in the Mediterranean area.

Offered during the spring/summer session only

**Prerequisite(s):** Six units of CLASSICS 2C03, 3B03, 3Q03, 3S03; and permission of the Department.

### CLASSICS 4H03 - DEATH AND COMMEMORATION IN THE ROMAN WORLD

An examination of attitudes to death and commemoration at ancient Rome incorporating written sources and material culture.

Seminar (two hours); one term

**Prerequisite(s):** Nine units of Classics including at least three units at Level III or above or registration in Level III or above of an Honours program in Classics

### CLASSICS 4L03 - ATHENIAN DEMOCRACY

A study of the institutional, social and cultural dynamics of popular self-government in Athens, exploring how Athenian democracy compares and contrasts with democracy today.

Seminar (two hours); one term

**Prerequisite(s):** Nine units from CLASSICS 2LA3, 2LB3, 2LC3, 2LD3, 3HH3, 3M03, 3X03 or registration in Level III or above of an Honours program in Classics or History

**Antirequisite(s):** HISTORY 4LL3

### CLASSICS 4MR3 - THE MYTH AND REALITY OF TROY

A consideration of the role that the Trojans played in the history, art, and literature of the Greeks and Romans.

Seminar (two hours); one term

**Prerequisite(s):** Nine units of CLASSICS including three units from CLASSICS 2YY3, 2D03, 3EE3, 3YY3, or 3Z03 or registration in Level III or above of an Honours program in Classics

*Not open to students with credit in CLASSICS 4E03, SEMINAR IN ANCIENT CULTURE, if the topic was The Myth and Reality of Troy.*

### CLASSICS 4T03 A/B S - INDEPENDENT STUDY

Reading and research in Classics, supervised by a department member and culminating in a major paper to be evaluated by the supervisor, with confirmation by a second reader. See Department for more detailed guidelines. Tutorials; two terms

**Prerequisite(s):** Registration in Level IV of any Honours program in Classics with a Grade Point Average of at least 9.5, and permission of the Department

### CLASSICS 4U03 - THE SEVERE STYLE IN GREEK ART

This course examines the birth of the Classical Greek style and its earliest manifestation, the Severe style. Sculpture, vase painting and architectural examples will be considered and placed in their appropriate political and cultural contexts.

Seminar (two hours); one term

**Prerequisite(s):** Nine units of CLASSICS, including CLASSICS 2B03 or registration in Level III or above of an Honours program in Classics

**Cross-list(s):** ARTHIST 4U03

## Collaborative

Nursing Consortium (A) Stream (Collab) courses are administered by the School of Nursing.

Health Sciences Centre, Room 2J16, ext. 22407

<http://www.fhs.mcmaster.ca/nursing/>

#### Note

The following courses are open only to those students at the Mohawk College or Conestoga College sites who are registered in the McMaster/Mohawk/Conestoga Collaborative B.Sc.N program (A or E Streams) with the exception of COLLAB 2F03 (Medical Informatics) and COLLAB 2K03 (Introduction to Health Informatics) which are also open to students registered in the B.Sc.N. (A) Stream (McMaster Site).

#### Courses

See also courses in *Nursing*.

### COLLAB 1A53 - AGING AND SOCIETY

This course includes a multidisciplinary examination of the ways in which human aging is viewed - how we perceive the process of growing older and how society responds to the issues and challenges of aging. Course content will largely be based on the Canadian context, but will also include international research and knowledge.

Lecture (two hours), tutorial/fieldtrip (one hour); one term

**Prerequisite(s):** Permission of the instructor; and registration in either the B.Sc.N. Basic (A) Stream (Conestoga College site), or the Post Diploma R.P.N (E) Stream (Conestoga College site)

**Antirequisite(s):** HLTHAGE 1BB3

### COLLAB 1F03 - POLITICAL STRUCTURES AND ISSUES

Introduction to the study of politics within the Canadian context.

Lecture (one hour), tutorial (two hours); one term

**Prerequisite(s):** Registration in B.Sc.N. Basic (A) Stream or Post Diploma R.P.N. (E) Stream (Conestoga College site)



### COLLAB 1G03 - MULTICULTURALISM

An examination of the ethnic and cultural diversity of Canadian society, including an investigation of Canada's multicultural policy.

Lecture (one hour), tutorial (two hours); one term

**Prerequisite(s):** Registration in B.Sc.N. Basic (A) Stream or Post Diploma R.P.N. (E) Stream (Conestoga College site)

### COLLAB 2A03 - ABNORMAL PSYCHOLOGY

Applied principles and related theories of normal and abnormal personality development.

Lecture (one hour), tutorial (two hours); one term

**Prerequisite(s):** Registration in B.Sc.N. Basic (A) Stream or Post Diploma R.P.N. (E) Stream (Mohawk College site)

### COLLAB 2C03 - SOCIOLOGY I

The study of various aspects of Canadian society including social class, gender, religion, education, health care and family.

Lecture (one hour), tutorial (two hours); one term

**Prerequisite(s):** Registration in B.Sc.N. Basic (A) Stream or Post Diploma R.P.N. (E) Stream (Mohawk College site)

### COLLAB 2D03 - HUMAN SEXUALITY

An introduction to biological, behavioural and cultural aspects of human sexuality.

Lecture (one hour), tutorial (two hours); one term

**Prerequisite(s):** Registration in B.Sc.N. Basic (A) Stream or Post Diploma R.P.N. (E) Stream (Mohawk College site)

### COLLAB 2F03 - MEDICAL INFORMATICS

A study of current topics in Medical Informatics and their practical application in the workplace.

Lecture (one hour), tutorial (two hours); one term

**Prerequisite(s):** Registration in either Level III or above of the in B.Sc.N. Basic (A) Stream (McMaster or Mohawk College site) or Level III or above of the B.Sc.N. Post Diploma R.P.N. (E) Stream (McMaster or Mohawk College site)

### COLLAB 2G03 - QUEST FOR MEANING

Using insights from the arts, humanities and sciences, students will explore ways in which meaning is sought.

Lecture (one hour), tutorial (two hours); one term

**Prerequisite(s):** Registration in B.Sc.N. Basic (A) Stream or Post Diploma R.P.N. (E) Stream (Conestoga College site)

### COLLAB 2I03 - THE USES OF LAUGHTER: COMEDY AND SATIRE

This course will explore the history of comedy and satire through works ranging from ancient Greek comedy to contemporary film and fiction.

Lecture (one hour), discussion/seminar (two hours); one term

**Prerequisite(s):** Registration in B.Sc.N. Basic (A) Stream or Post Diploma R.P.N. (E) Stream (Conestoga College site)

### COLLAB 2K03 - INTRODUCTION TO HEALTH INFORMATICS

An introduction to the theory of data and information needs of health care professionals and the role of information management in patient care. Topics include decision support systems, electronic records, telemedicine, security, privacy and future trends.

Three hours; one term

**Prerequisite(s):** Registration in either Level II or above of the in B.Sc.N. Basic (A) Stream (Conestoga College site) or the B.Sc.N. Post Diploma R.P.N. (E) Stream (Conestoga College site)

### COLLAB 2M03 - MEDICAL ANTHROPOLOGY: ILLNESS AND HEALTHCARE IN CROSS-CULTURAL PERSPECTIVE AND SOCIAL ISSUES

Medical anthropology gains theoretical and practical knowledge by studying other societies' medical systems. It helps broaden the understanding of 'health' and address issues of inequality.

Lecture (one hour), tutorial (two hours); one term

**Prerequisite(s):** Registration in B.Sc.N. Basic (A) Stream or Post Diploma R.P.N. (E) Stream (Mohawk College site)

### COLLAB 2N03 - ORGANIZATIONAL BEHAVIOUR

This course allows participants to develop and practice the interpersonal skills necessary to work with and/or manage people effectively.

Lecture (one hour), tutorial (two hours); one term

**Prerequisite(s):** Registration in B.Sc.N. Basic (A) Stream or Post Diploma R.P.N. (E) Stream (Mohawk College site)

### COLLAB 2P03 - EPIDEMIOLOGY IN PUBLIC HEALTH

This course is designed to provide an introduction to the applications of epidemiology in public health. Fundamental methods will be introduced so that the work of public health professionals can fully be appreciated.

Lecture (one hour), tutorial (two hours); one term

**Prerequisite(s):** Registration in B.Sc.N. Basic (A) Stream or Post Diploma R.P.N. (E) Stream (Conestoga College site)

### COLLAB 2R03 - EPIDEMIOLOGICAL METHODS

This course is designed to provide an introduction to the epidemiological methods used to study health and disease in populations. Fundamental methods for the measurement of population health and disease study designs will be presented.

Lecture (one hour), tutorial (two hours); one term

**Prerequisite(s):** Registration in B.Sc.N. Basic (A) Stream or Post Diploma R.P.N. (E) Stream (Conestoga College site)

### COLLAB 2T03 - AGING IN PLACE

This course will explore and discuss the research, evidence, and trends related to predictors of 'Aging in place', which acknowledges that older adults wish to live in their own communities for as long as possible and that home and community services will support this aim while being cost effective. Throughout the course, knowledge related to theory and experience will be applied to examples of those who are part of this population or will become part in the near future.

Lecture (one hour), tutorial (two hours); one term

**Prerequisite(s):** Registration in Level II or above in either the B.Sc.N. Basic (A) Stream or Post Diploma R.P.N. (E) Stream (Conestoga College site).

### COLLAB 3B03 - SOCIOLOGY: DIVERSITY AND INEQUALITY

A study of the problems of daily life and social issues.

Lecture (one hour), tutorial (two hours); one term

**Prerequisite(s):** Registration in B.Sc.N. Basic (A) Stream or Post Diploma R.P.N. (E) Stream (Mohawk College site)

### COLLAB 3D03 - ILLNESS NARRATIVES IN FICTION AND NON-FICTION

This seminar-based course will use fictional literature (poetry, short stories and excerpts from novels) as well as first-person accounts (writings of actual patients and health-care workers) to explore the psychological, emotional and relational aspects of patient experiences of such conditions as cancer, heart disease, disability, AIDS, mental illness and chronic pain conditions.

Lecture (one hour), tutorial (two hours); one term

**Prerequisite(s):** Registration in Level III or above in either the B.Sc.N. Basic (A) Stream or Post Diploma R.P.N. (E) Stream (Conestoga College site)

### COLLAB 3IP3 - INTERPROFESSIONAL CASE MANAGEMENT

This interprofessional case management course is designed to immerse nursing students and pharmacy students in an active, collaborative learning process. Using a practice-based approach, students will gain knowledge and apply the theoretical foundations of teamwork to optimize patient care.

Tutorial (three hours); one term

**Prerequisite(s):** Registration in the BScN Basic (A) Stream or Post Diploma R.P.N.(E) Stream.

### COLLAB 4H03 - INTRODUCTION TO CONCEPTS IN GLOBAL HEALTH

An introduction to the determinants of inequalities in the health of select populations in a Canadian and international context as viewed through the lenses of historical development, political economy and medical anthropology. Lecture/seminar (three hours); one term

**Prerequisite(s):** HTHSCI 2RR3; and registration in either Level III or above of the B.Sc.N. Basic (A) Stream (Mohawk or Conestoga College Site) or Level III or above of the B.Sc.N. Post Diploma R.P.N. (E) Stream (Mohawk or Conestoga College site)

**Antirequisite(s):** HTHSCI 4H03, NURSING 4H03

## Commerce

Courses in Commerce are administered by the DeGroot School of Business (Faculty of Business).

DeGroot School of Business, Room 104, ext. 24433

<http://www.degroote.mcmaster.ca/>

Faculty Notes

1. The Commerce courses for the Minor in Finance, the Minor in Accounting and Financial Management Services and the Minor in Information Systems are open to students admitted to the Minor. Please take note that all prerequisites for these courses must also be satisfied. Students taking the Minor in Accounting and Financial Management Services or the Minor in Finance will also be required to have obtained an average of at least 7.0 in ECON 1B03 and 1BB3 as a prerequisite.
2. Non-Commerce students may enrol in specific upper-year Commerce courses if they have been accepted into a Specialized Minor offered by the Faculty of Business or can demonstrate that they are pursuing an interdisciplinary minor for which the specific Commerce courses are included.

#### Courses

### COMMERCE 1AA3 - INTRODUCTORY FINANCIAL ACCOUNTING

This is an introduction to the basic principles and practices of financial accounting, which includes an examination of income measurement and asset and liability valuation, to provide an understanding of financial accounting information and the ethics of financial reporting.

Lectures (two hours), tutorial (one hour)

**Antirequisite(s):** IBH 1AA3

### COMMERCE 1B03 - BUSINESS ENVIRONMENT & ORGANIZATION

This course will examine the relationship between business organizations, their functional areas and the environments - social, political, legal, regulatory and technological - that affect them.

Lectures (three hours)

**Prerequisite(s):** Registration in Level I or above in any Humanities, Social Sciences, Health Sciences, or Science program.

**Antirequisite(s):** COMMERCE 1E03; Not open to students registered in an Engineering, Business, or Commerce program.

### COMMERCE 1BA3 - ORGANIZATIONAL BEHAVIOUR

The central objective of this course is to develop an understanding of human behaviour in organizations with a view toward effective management of such behaviour.

Lectures (three hours), tutorial (one hour)

**Antirequisite(s):** IBH 1BA3

### COMMERCE 1DA3 - BUSINESS DATA ANALYTICS

The main emphasis will be on the applications of statistical data analysis in business. Students learn different aspects of working with and making sense of data and learn how to use data to provide insight into different business problems. Some examples include the application of visualization, probabilities, confidence intervals, hypothesis testing, simple and multiple regressions, etc. Application of data analysis techniques in business problems will be introduced and practiced using software (through a course project).

Lectures (three hours), tutorials (one hour)

**Antirequisite(s):** COMMERCE 2QA3, IBH 2AD3

### COMMERCE 1DE0 - BUSINESS I ORIENTATION

This course provides students with information and activities to facilitate their successful transition to university and success in the Business Program. Students will gain knowledge of the academic regulations, strategies for success, and the services available to them within the university.

Lectures (three hours)

**Prerequisite(s):** Registration in Business I

### COMMERCE 1E03 - BUSINESS ENVIRONMENT AND ORGANIZATION

This course will examine the relationship between business organizations, their functional areas and the environments - social, political, legal, regulatory and technological - that affect them.

Lectures (two hours), tutorial (one hour)

**Prerequisite(s):** Registration in Business I

**Antirequisite(s):** IBH 1AB3

### COMMERCE 1GR0 A/B - DEGROOTE STUDENT EXPERIENCE AND DEVELOPMENT I

This course provides experiential activities for students to develop (or enhance) and apply foundational knowledge of highly sought skills in the workplace such as critical thinking, collaboration, communication and self-management. Further, this course offers career development tools and learning experiences that facilitate students' transition to university and success in the Business Program. Students will gain knowledge of McMaster University's academic regulations, strategies for academic success, and the various services available

to them within the university.

Course will consist of in-person and online learning experiences such as presentations, videos, resources, self-assessment, workshops, competitions, conferences, etc.

**Prerequisite(s):** Registration in Level I or above in any Bachelor of Commerce Program

### COMMERCE 1MA3 - INTRODUCTION TO MARKETING

This foundation course introduces the basic principles and frameworks of marketing emphasizing the importance of a focus on the customer.

Lectures (three hours)

**Antirequisite(s):** COMMERCE 2MA3 and IBH 2AA3

### COMMERCE 2AB3 - MANAGERIAL ACCOUNTING I

An introduction to concepts underlying the use of cost accounting information for managerial planning and control and for inventory valuation. The nature and analysis of costs and the usefulness and limitations of accounting data for decision-making, including ethical considerations, will be discussed.

Lectures (two hours), tutorial (one hour)

**Prerequisite(s):** COMMERCE 1AA3 or IBH 1AA3; and registration in any four or five level program or applicable minor (see *Faculty Note 2.*)

**Antirequisite(s):** IBH 2BA3

### COMMERCE 2BC3 - HUMAN RESOURCE MANAGEMENT AND LABOUR RELATIONS

This course builds on COMMERCE 1BA3, focusing on human resource management and labour relations issues and practices from a general management education perspective.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 1BA3; and registration in any four or five level program or applicable minor (see *Faculty Note 2.*)

**Antirequisite(s):** IBH 2AC3

### COMMERCE 2DA3 - DECISION MAKING WITH ANALYTICS

The course will study five widely used quantitative management science tools (problem modelling, linear programming, decision analysis, simulation, and waiting lines) used in business data analytics when conditions are reasonably certain or somewhat uncertain. All five tools are implemented in Excel. The course is taught through lectures, computer work with Excel, lecture notes and textbook readings, practice problems, and online podcasts.

Lectures (three hours), tutorials (one hour)

**Prerequisite(s):** COMMERCE 1DA3 (or 2QA3), IBH 2AD3 or one of STATS 2MB3, 3J04, 3N03 or 3Y03; and registration in any four or five level program or applicable minor (see *Faculty Note 2.*)

### COMMERCE 2FA3 - INTRODUCTION TO FINANCE

This course introduces the main instruments and institutions in the Canadian financial system. The basic concepts and models of modern financial theory are introduced through lectures and 'hands-on' problem solving. Topics include: the time value of money, capital budgeting, the trade-off between risk and return and security valuation.

Lectures (two hours), tutorial (one hour)

**Prerequisite(s):** COMMERCE 1AA3 and ECON 1B03; one of MATH 1A03, 1LS3, 1M03, 1N03, 1X03, 1ZA3 or 1Z04; and registration in any four or five level program or applicable minor (see *Faculty Note 2.*)

**Antirequisite(s):** IBH 2BB3; Not open to students with credit or registration in ECON 2I03

### COMMERCE 2FB3 - MANAGERIAL FINANCE

This course examines various aspects of the financial management of the firm including the sources and methods of financing, capital structure, dividend policy, leasing, mergers and acquisitions, working capital management, effects of taxation on financial decisions and international aspects of finance.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FA3 or ECON 2I03; and registration in any four or five level program or applicable minor (see *Faculty Note 2.*)

**Antirequisite(s):** COMMERCE 3FA3; IBH 3AC3

### COMMERCE 2IN0 - CAREER DEVELOPMENT COURSE

A Career Development course designed to equip students with the tools necessary to successfully participate in summer, internship and full time job searches. Topics include: skills assessment, resume and cover letter development, interview skills, networking, job search strategies, business etiquette. Successful completion of this course is one of the requirements to participate in the Commerce Internship Program.

Lectures (two hours)

**Prerequisite(s):** Registration in Level II of a Bachelor of Commerce Program or Permission of the Manager of the Career and Professional Development  
A separate course fee of \$175 will be applied to your student account upon enrolment in the course. For more information on Commerce 2IN0 see <http://ug.degroote.mcmaster.ca/course-outlines/>. Please refer to the Commerce Internship Program section of the Undergraduate Calendar for a complete listing of requirements for participation.

### COMMERCE 2KA3 - INFORMATION SYSTEMS IN BUSINESS

This course emphasizes the strategic role of information systems in modern business. Topics include: the technical foundations of information systems, the impact of information systems on business operations and decision-making and the processes that are required for successful implementation of business information systems.

Lectures (three hours)

**Prerequisite(s):** Registration in any four or five level program or applicable minor (see *Faculty Note 2.*)

**Antirequisite(s):** IBH 2AB3

### COMMERCE 2MA3 - INTRODUCTION TO MARKETING

This course introduces the conceptual underpinnings and operational facets of marketing with a primarily consumer (as opposed to industrial) focus.

Lectures (three hours)

**Prerequisite(s):** ECON 1B03; and registration in any four or five level program or applicable minor (see *Faculty Note 2.*)

**Antirequisite(s):** IBH 2AA3

### COMMERCE 2OC3 - OPERATIONS MANAGEMENT

The course will cover both manufacturing and service operations topics at the strategic, tactical and operational levels. Topics include capacity planning, layout of facilities, forecasting, aggregate planning, scheduling, inventory control, purchasing, supply chains and quality control. Emphasis will also be placed on process improvement and project management. The course will look at supply chain issues related to globalization and sustainability including environmental and social issues.

Lectures (three hours), tutorial (one hour)

**Prerequisite(s):** One of ARTSSCI 2R03, COMMERCE 2QA3, ECON 2B03, ELECENG 3TQ4, ENGPHYS 3W04, HTHSCI 1F03, 2A03, NURSING 2R03, SOCSCI 2J03, STATS 1CC3, 2B03, 2MB3, 3J04, 3N03, 3Y03; and registration in any four or five level program or applicable minor (see *Faculty Note 2.*)

**Antirequisite(s):** COMMERCE 4QA3, IBH 2BC3 (or 3BE3), MECHENG 4C03

This course is not open to students in any Engineering and Management program.

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### COMMERCE 2QA3 - APPLIED STATISTICS FOR BUSINESS

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An introduction to the application of statistical analysis in managerial decision-making. The concepts of statistical analysis are applied to a variety of topics, including decision-making, estimation by sampling, hypothesis testing, analysis of variance, simple linear and multiple regression and forecasting.

Lectures (three hours), tutorial (one hour)

**Prerequisite(s):** Finite Math (or Mathematics of Data Management U or equivalent) or STATS 1L03; and registration in any four or five level program or applicable minor (see *Faculty Note 2.*)

**Antirequisite(s):** ARTSSCI 2R03, ECON 2B03, ELECENG 3TQ4, ENGPYS 3W04 A/B, HTHSCI 1F03, 2A03, IBH 2AD3, NURSING 2R03, SOCSCI 2J03, STATS 1CC3, 2B03, 2MB3, 3J04, 3N03, 3Y03

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### COMMERCE 3AB3 - INTERMEDIATE FINANCIAL ACCOUNTING I

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A first course in intermediate financial accounting dealing with the theory and practice of financial statement preparation and reporting. The emphasis will be on asset valuation and the related impact on income measurement.

Lectures (three hours), tutorial (one hour)

**Prerequisite(s):** COMMERCE 1AA3 or IBH 1AA3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

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### COMMERCE 3AC3 - INTERMEDIATE FINANCIAL ACCOUNTING II

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A second course in intermediate financial accounting dealing with reporting issues that relate to liabilities and owners' equity. In particular, the concepts of recognition, measurement and disclosure of such items as bonds, taxes, leases and pensions as well as the phenomenon of off-balance sheet financing are examined.

Lectures (three hours), tutorial (one hour)

**Prerequisite(s):** COMMERCE 3AB3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

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### COMMERCE 3DA3 - PREDICTIVE ANALYTICS

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This course is designed to introduce the basics of predictive analytics to undergraduate students. The course takes a computational approach to address the concept of prediction and forecasting within business problems. Students will learn about the most commonly used predictive analytics tools and methodologies and get to apply them to a series of problems to gain hands-on experience. In this process, students also learn the basics of predictive data analytics using state of the art analytics computational platforms and tools such as Anaconda and Jupyter Notebook. Upon the completion of the course, students are expected to have gained a basic but broad understanding of predictive data analytics, and are able to use the R programming language to perform a preliminary predictive analysis on a given data set.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2DA3 (or 3QA3); and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

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### COMMERCE 3FA3 - MANAGERIAL FINANCE

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This course examines various aspects of the financial management of the firm including the sources and methods of financing, capital structure, dividend policy, leasing, mergers and acquisitions, working capital management, effects of taxation on financial decisions and international aspects of finance.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FA3 or ECON 2I03 or IBH 2BB3; and registration in any Honours Bachelor of Commerce, Engineering and Management, Honours Actuarial and Financial Mathematics, or four or five-level non-Commerce program.

**Antirequisite(s):** IBH 3AC3

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### COMMERCE 3FB3 - SECURITIES ANALYSIS

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This course is concerned with the analysis of marketable securities, especially common stocks. Topics include: the institutional characteristics and operation of financial markets, securities analysis and valuation, investment characteristics and strategies to increase return.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FA3 or ECON 2I03 or IBH 2BB3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

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### COMMERCE 3FC3 - INTERNATIONAL FINANCE

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This course provides a framework for examining financial management decisions in an international setting. Issues examined include: foreign exchange risk management, multinational working capital management, foreign investment analysis and financing foreign operations.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

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### COMMERCE 3FD3 - FINANCIAL MODELLING

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What is the difference between making a purpose-built spread sheet and financial modeling? Financial modeling is much more flexible and can be easily modified to solve a wide array of problems. This course will examine the tools built into Excel and VBA and their use in financial modeling. A basic knowledge of Excel is assumed with no prior experience with VBA required.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FA3 or IBH 2BB3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

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### COMMERCE 3FH3 - ALTERNATIVE INVESTMENTS AND PORTFOLIO MANAGEMENT

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This course introduces students to a wide range of alternative investments, including hedge funds, private equity, commodities, real estate, and infrastructure. Students are also provided a deeper, cutting-edge treatment of modern hedge fund investment strategies as well as a rigorous analysis of the practical portfolio management process. This course is highly recommended for any student considering a career in investments, portfolio management, corporate finance, or the broader financial services.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)



### COMMERCE 3FI3 - MARKET TRADING WITH OPTIONS AND FUTURES

This experiential course develops practical skills in trading financial securities - money market instruments, bonds, equities, indices, ETFs, currencies, commodities and their corresponding options focusing on trading strategies that minimize market exposure through risk measurement.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 3FK3 - INTERMEDIATE CORPORATE FINANCE

This course will provide an overview of the theory, methods and concerns of Corporate Finance. The course will examine the important issues in corporate finance (capital budgeting, capital structure, dividend policy, interaction of investment and financing decisions) from the perspective of the financial manager. Although lecture-based, the course will also use a number of cases to illustrate the theory.

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3 and registration in level III or above in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 3FL3 - SUSTAINABLE AND SOCIAL FINANCE

Students will discuss how financial markets can play a socially-beneficial role. How public companies play a role in creating a more sustainable world. What role endowments play in the success of the nonprofit sector. The role socially-responsible businesses, impact investments and green bonds play in helping to improve social outcomes. A major focus will be learning to evaluate public companies from an Environmental, Social and Governance (ESG) perspective. ESG has become a critical skill set in evaluating investments.

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3); and registration in level III or above in any

Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 3KA3 - SYSTEM ANALYSIS AND DESIGN

This course examines the role of the system analyst in today's business environment. Traditional and modern approaches to systems analysis and design will be covered. Students participate in a hands-on team project for a real-world business application.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2KA3 or IBH 2AB3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 3KD3 - DATABASE DESIGN MANAGEMENT AND APPLICATIONS

This course is designed to introduce the basic concepts of database design, implementation and management. Students will gain hands on experience through assignments and a team project.

Lectures (three hours), tutorial (one hour)

**Prerequisite(s):** COMMERCE 2KA3 or ENGINEER 1D04 or IBH 2AB3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 3KE3 - MANAGEMENT OF ENTERPRISE DATA ANALYTICS

This course provides students with an overview of enterprise data analytics and an introduction to the concepts which underlie its effective deployment and management. The course encompasses managerial, technical and statistical perspectives, demonstrating how each area is dependent on the other to make enterprise analytics work. This course incorporates a variety of teaching and learning methods including lectures, assignments, case studies, group work, presentations, and readings.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2KA3 or IBH 2AB3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 3MA3 - MARKETING RESEARCH

This course covers the effective obtaining, communicating and using of competitive and market intelligence. Students work in groups with a company or public organization and receive training and experience in making business presentations.

Lectures (three hours), tutorial (one hour)

**Prerequisite(s):** COMMERCE 1MA3 (or 2MA3) or IBH 2AA3; COMMERCE 1DA3 (or 2QA3) or IBH 2AD3; or COMMERCE 1MA3 (or 2MA3) or IBH 2AA3 and one of STATS 2MB3, 3J04, 3N03 or STATS 3Y03; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 3MB3 - CONSUMER BEHAVIOUR

This course examines why people buy, ways of satisfying consumer needs more effectively and the creation of communications that will influence consumers.

Lectures (3 hours)

**Prerequisite(s):** COMMERCE 1MA3 (or 2MA3) or IBH 2AA3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 3MC3 - APPLIED MARKETING MANAGEMENT

Builds upon material in COMMERCE 2MA3 but is more applied in nature and covers the 4 P's in greater depth. It also has a heavier industrial and service sector component, and relies more on practical, real world cases. A major field project (student teams working with companies) is a critical part of the course.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 1MA3 (or 2MA3) or IBH 2AA3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

**Antirequisite(s):** IBH 3AB3

### COMMERCE 3MD3 - INTRODUCTION TO CONTEMPORARY APPLIED MARKETING

This course will introduce students to key marketing principles and concepts and explore their practical applications in business situations. Case studies are used to give practice in analyzing opportunities, solving marketing issues, and preparing implementation plans. This course is taught through a combination of lectures, case discussions, readings, assignments and a field project.

Lectures (three hours)

**Prerequisite(s):** Registration in Level III or above or relevant minor (see *Faculty Note 2.*)

**Antirequisite(s):** COMMERCE 2MA3, 3MC3, IBH 2AA3. Not open to students registered in any Commerce, or Engineering & Management program

### COMMERCE 3QA3 - MANAGEMENT SCIENCE FOR BUSINESS

This course is a study of analytical approaches that assist managerial decision-making; it provides coverage of decision theory and an introduction to optimization methods, computer simulation and the general approach of management science.

Lectures (three hours), tutorial (one hour)

**Prerequisite(s):** COMMERCE 2QA3 or IBH 2AD3; and registration in any Bachelor of Commerce program; or one of ELECENG 3TQ3, 3TQ4, STATS 2MB3, 3J04, 3N03, 3Y03, ENGPYS 3W04 (or 3W04 A/B) and registration in any Engineering and Management program

### COMMERCE 3S03 - MANAGEMENT SKILLS DEVELOPMENT

The purpose of this course is to provide the necessary cognitive and behavioural skills that students need to develop themselves as competent managers through the acquisition and practice of personal, interpersonal, and group skills.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2BC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

**Antirequisite(s):** IBH 3AA3

### COMMERCE 4AA3 - MANAGERIAL ACCOUNTING II

A consideration of advanced topics in management planning and control including cost behaviour determination, production planning, innovation in costing, cost allocations, variance analysis and performance evaluation for responsibility centres.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2AB3 or IBH 2BA3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 4AC3 - ADVANCED FINANCIAL ACCOUNTING

An advanced accounting course considering specific problems of accounting for the corporate entity, such as, business combinations, intercorporate investments, consolidated financial statements, accounting for foreign operations and foreign currency transactions, segment reporting.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 3AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 4AD3 - INTRODUCTION TO AUDITING

An examination of the attest function in accounting including ethical, legal, and statutory influences in the development of auditing standards. Control structure and audit evidence will be examined.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 3AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 4AF3 - ACCOUNTING THEORY

A review of accounting theory as a background for applying underlying concepts to current accounting problems. The course emphasizes current literature.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 3AC3; and registration in any Bachelor of

Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 4AK3 - ACCOUNTING INFORMATION FOR DECISION MAKING

This course covers the basic principles in financial and managerial accounting as well as the use of accounting information in decision making. In the financial accounting part of the course, the course covers the conceptual framework of accounting, Generally Accepted Accounting Principles, financial statements, and financial statement analysis. In the managerial accounting part of the course, the course covers cost behaviour, cost-volume profit relationships, budgeting, and the use of cost information in decision making.

Lectures (three hours)

**Antirequisite(s):** COMMERCE 1AA3, 2AB3, IBH 1AA3, 2BA3

*Not open to students registered in any Commerce, or Engineering and Management program.*

### COMMERCE 4BB3 - RECRUITMENT AND SELECTION

This course exposes students to staffing issues in the Canadian context. Topics include job analysis, methods of recruitment and selection, human rights legislation and decision making strategies.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2BC3 or IBH 2AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 4BC3 - COLLECTIVE BARGAINING

A survey of the nature, determinants, and impact of collective bargaining in Canada. Both the procedural and substantive aspects of collective bargaining will be studied.

Lectures (three hours)

**Prerequisite(s):** One of COMMERCE 2BC3, IBH 2AC3, or LABRST 2A03; and registration in any Bachelor of Commerce, Labour Studies or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 4BD3 - SETTLEMENT OF INDUSTRIAL DISPUTES

The nature and the role of industrial conflict as well as the techniques which have been developed to control the incidence of conflict in union-management situations.

Lectures (three hours)

**Prerequisite(s):** One of COMMERCE 2BC3, IBH 2AC3, or LABRST 2A03; and registration in any Bachelor of Commerce, Labour Studies or Engineering and Management program or relevant minor (see *Faculty Note 2.*) COMMERCE 4BC3 is recommended.

### COMMERCE 4BE3 - STRATEGIC COMPENSATION/REWARD SYSTEMS

Key issues in designing effective pay systems are discussed. Topics include: job evaluation, market pay surveys, pay structures, performance incentives, knowledge pay and employee benefits.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2BC3 or IBH 2AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 4BF3 - LABOUR LAW AND POLICY

An analysis of the concepts and fundamentals of Canadian labour law and analysis of Canadian labour policy.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2BC3 or IBH 2AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

**Cross-list(s):** LABRST 3C03

*This course is administered by the School of Labour Studies.*

### COMMERCE 4BG3 - PUBLIC SECTOR COLLECTIVE BARGAINING

This course examines unionization and collective bargaining for employees in the public sector. Topics include: bargaining issues, bargaining outcomes and impasse resolution.

**Prerequisite(s):** COMMERCE 2BC3 or IBH 2AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.) COMMERCE 4BC3 is also recommended.

**Cross-list(s):** LABRST 4C03

### COMMERCE 4BI3 - TRAINING AND DEVELOPMENT

This course provides a framework for establishing, revising and examining training programs in organizations. Topics include: needs assessment, development of training objectives, planning and delivery of instruction, learning principles and evaluation of training.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2BC3 or IBH 2AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

### COMMERCE 4BK3 - THE MANAGEMENT OF TECHNOLOGY

An introduction to the innovative management of technology including the integration of the firm and technology strategy, external sourcing of technology and the internationalization of technology management.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 1BA3 or IBH 1BA3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

### COMMERCE 4BL3 - OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT

This course enhances students' knowledge on managing occupational health and safety, teaches research skills, and assists students in developing strategies for creating healthy workplaces.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2BC3 or IBH 2AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

### COMMERCE 4BM3 - STRATEGIC HUMAN RESOURCE PLANNING

This course provides an understanding of the essential elements of Human Resource Planning processes in organizations. Students will acquire knowledge in analyzing, assessing and programming for human resource requirements of the organizational business plans and strategies.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2BC3 or IBH 2AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant

minor (see *Faculty Note 2*.)

### COMMERCE 4BN3 - LEADERSHIP DEVELOPMENT

This highly participative learning portfolio-based course on Leadership focuses on the potential for personal and professional growth of the student. The course provides an initial understanding of the fundamentals and theories of leadership, and then moves to an appreciation of students own leadership styles, behaviors, and experiences as well as an understanding of other individuals leadership styles, behaviors, and experiences. A major objective of the course is to encourage the student to become more reflective and self-aware.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 3S03 or IBH 3AA3; and registration in Level IV or above in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

### COMMERCE 4BP3 - PRINCIPLES OF LEADERSHIP

This course reviews the key concepts, approaches, models and theories of leadership. It develops students understanding of major elements of leadership research and will equip students to critically evaluate the popular writing on leadership and consider their own leadership potential and how to develop it. Fundamental leadership skills will be introduced with opportunities for student self-diagnosis.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 3S03 or IBH 3AA3; and registration in Level IV or above in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

### COMMERCE 4BX3 - SPECIAL TOPICS IN HUMAN RESOURCE MANAGEMENT

Various topics in Human Resource Management are considered. They will vary depending upon recent developments in the field and upon the research interests of the instructor. The topics to be included are announced at the time of course offering. For information on course offerings, please refer to the School of Business website at <http://ug.degroote.mcmaster.ca/course-outlines/> or contact the Student Experience Academic Office, DSB 112.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 1BA3 or IBH 1BA3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

### COMMERCE 4CA3 - MANAGING AND PROMOTING HEALTH AND HEALTHCARE SERVICES

This course provides coverage through a health lens of Social Marketing, Strategy, Segmentation and Targeting, Consumer Behaviour, Marketing Research and Ethical Issues, the '4Ps' and Controlling/Monitoring.

**Prerequisite(s):** COMMERCE 3MC3 or IBH 3AB3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

### COMMERCE 4DA3 - MODELLING AND ANALYTICS USING EXCEL

This course will enable students to gain familiarity with analytics, and then develop a comprehensive understanding of prescriptive analytics. They will develop the ability to logically model managerial problems drawn from various functional areas in MS Excel (and in some instances mathematically). Students will use Excel add-in functions (and other software as needed) to solve the

posed problems, and analyze them to develop useful managerial insights.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2DA3 (or 3QA3) or 4QA3; and registration in any Bachelor of Commerce or Engineering and Management program

### COMMERCE 4EL3 - EXPERIENTIAL LEARNING IN BUSINESS

This course is defined as a structured experiential learning based project that a student undertakes under the supervision of a faculty member, with the authorization of the Associate Dean (Academic), from the DeGroot School of Business. It may be completed as a team activity or as an independent project / leadership activity. The focus is on developing managerial decision making, project management, resource management and leadership skills in preparation for a career in business.

**Prerequisite(s):** Registration in Level III or above in any Bachelor of Commerce or Engineering and Management program

**Antirequisite(s):** COMMERCE 4EL3 (regardless of topic)

Project proposal forms are available online and must be completed by the student and signed by the Supervisor and Associate Dean Academic prior to enrolment.

### COMMERCE 4FA3 - APPLIED CORPORATE FINANCE

This course examines the application of financial theory to a variety of problems in corporate finance. The appropriate use of valuation principles and techniques, and the design of corporate strategies intended to create shareholder wealth, are considered.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 4FB3 - VALUATION FOR FINANCE PROFESSIONALS

The goal of the course is to build students' skills and confidence in answering the question: 'What is a company worth?' Through the use of case analysis (supplemented with lecture-based background material), we will examine the drivers of corporate value, traditional and alternative valuation models and approaches, and various valuation situations (IPO valuation, private equity and LBO valuation, valuation of high-growth and mature firms, among others).

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 4FC3 - ETHICS AND PROFESSIONAL PRACTICE IN FINANCE

This course introduces students to the practices and codes of conduct involved in the finance function. The course covers ethical issues and the roles of the corporate financial manager, other stakeholders and other participants in the investment industry. The emphasis of the course will be on readings, rules, and regulations from the CFA Institute. Cases and speakers will be employed to bring a real world perspective to the classroom.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 4FD3 - FINANCIAL INSTITUTIONS

This course examines, from a managerial perspective, the major types of financial institutions in Canada: chartered banks, trust companies, insurance companies, investment banks and other institutional investors.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce or Engineering and Management, Actuarial Financial Mathematics program, or relevant minor (see *Faculty Note 2.*)

### COMMERCE 4FE3 - OPTIONS AND FUTURES

This course provides an integrated approach to understanding the relations between options, futures, and their underlying assets. The theory of pricing of options and futures and the application of the theory to instruments currently traded in financial markets are considered.

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 4FF3 - PORTFOLIO THEORY AND MANAGEMENT

This course offers an advanced treatment of investment decision-making and the role of financial markets in pricing securities. Topics include: portfolio selection models, the institutional environment of investment decisions, and investment and asset pricing theory.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce, Engineering and Management, Actuarial Financial Mathematics program, or relevant minor (see *Faculty Note 2.*)

### COMMERCE 4FG3 - FINANCIAL THEORY

This course explores the theoretical foundations of finance and their applications to corporate finance policy. Topics covered include rational investment decisions, asset pricing, efficient markets, financial decisions and the role of information in financial decision-making.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3 or ECON 2103 and ECON 3G03; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 4FH3 - MERGERS, ACQUISITIONS AND CORPORATE CONTROL

This course examines the process by which mergers and other types of corporate control transactions take place, and the role of restructuring shifts in resource allocation by corporations.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

### COMMERCE 4FJ3 - FIXED INCOME ANALYSIS

This course provides an advanced treatment of investments in the field of fixed income analysis and focuses on fixed income securities, fixed income portfolio management and fixed income derivatives.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)



### COMMERCE 4FK3 - FINANCIAL STATEMENT ANALYSIS

This course provides a comprehensive and up-to-date treatment of the analysis of financial statements as an aid to decision making. The relationship between financial markets and financial statements is studied using computerized data sets on personal computers.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

### COMMERCE 4FL3 - PERSONAL FINANCIAL MANAGEMENT

The course covers various topics that are relevant to the financial decision making of individuals. These decisions include investment, retirement planning, debt and credit management, renting vs. buying a home, insurance and risk management and personal income tax planning and strategies.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FA3 or ECON 2I03 or IBH 2BB3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

### COMMERCE 4FM3 - PERSONAL FINANCIAL PLANNING AND ADVISING

Students will examine financial planning concepts by undertaking a major integrative project. This course is strongly recommended for students working towards the CFP designation.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 4FL3 or COMMERCE 4FP3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

### COMMERCE 4FN3 - FINANCIAL RISK MANAGEMENT

This course provides a systematic and advanced treatment of financial risk management. It focuses on interest rate risk, market risk, liquidity risk, credit risk and operational risk. It is designed for students pursuing careers in operations management as well as finance and accounting.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce, Engineering and Management or Actuarial Financial Mathematics program or relevant minor (see *Faculty Note 2*.)

### COMMERCE 4FO3 - SMALL BUSINESS AND ENTREPRENEURIAL FINANCE

This course is intended for students who wish to enhance their skills and knowledge in those areas of business that lead to successful entrepreneurship and/or small business management. The focus will be on those financial issues and decisions of particular concern to sole proprietors, partnerships, family-owned businesses and small non-public corporations.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FA3 or ECON 2I03 or IBH 2BB3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

### COMMERCE 4FP3 - PERSONAL FINANCE

A major objective of the course is to provide students with the tools and skills needed to make sound financial decisions throughout their lives. Financial planning is the process of managing one's money to achieve personal economic satisfaction. This process involves setting realistic goals and organizing financial activities toward the achievement of the goals. It also depends on the

control of financial affairs by avoiding excessive debt, building up wealth, and managing financial risk.

Lectures (three hours)

**Antirequisite(s):** COMMERCE 4FL3. Not open to students registered in any Commerce, or Engineering & Management program; or the Minor in Finance.

### COMMERCE 4FQ3 - WORKING CAPITAL MANAGEMENT

The course will apply the principles and concepts of financial theory to problems and decisions associated with short-term (working) capital and how it affects firm liquidity, default risk and shareholder wealth.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

### COMMERCE 4FR3 - INSURANCE AND RISK MANAGEMENT

The course covers different types of insurance, including life, health and disability, home, property and automobile insurance. Risk management is a lifelong process that involves five steps: identification, evaluation, control, financing and monitoring.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FA3 or ECON 2I03 or IBH 2BB3; and registration in any Bachelor of Commerce, Engineering and Management or Actuarial and Financial Mathematics program or relevant minor (see *Faculty Note 2*.)

### COMMERCE 4FS3 - PENSION, RETIREMENT AND ESTATE PLANNING

The course examines financial needs at retirement including inflation and taxation. It also examines methods of accessing savings at retirement. Estate planning ensures that assets are distributed with the wishes of the testator and the needs of the beneficiaries.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FA3 or ECON 2I03 or IBH 2BB3; and registration in any Bachelor of Commerce, Engineering and Management or Actuarial Financial Mathematics program or relevant minor (see *Faculty Note 2*.)

### COMMERCE 4FT3 - REAL ESTATE FINANCE AND INVESTMENT

Concepts and techniques introduced in the course include investing, financing, appraising, consulting, managing real estate portfolios, leasing, managing property, analyzing site locations and managing corporate real estate assets.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

### COMMERCE 4FU3 - BEHAVIOURAL FINANCE: THE PSYCHOLOGY OF MARKETS

An introduction to the emerging field of behavioural finance. Psychology and finance are integrated in studying how investors' emotions affect stock prices and markets.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

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### COMMERCE 4FV3 - VENTURE CAPITAL

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This course focuses on financing and value creation strategies for early- and growth-stage companies. It is designed for students considering careers in financial services or as entrepreneurs.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

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### COMMERCE 4FW3 - FINANCE FOR ENTREPRENEURS

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This course is intended for students who wish to enhance their skills and knowledge in those areas of business that lead to successful entrepreneurship and/or small business management. The focus will be on those financial issues and decisions of particular concern to sole proprietors, partnerships, family-owned businesses and small non-public corporations. This will include the financial aspects of the relationship between the firm and its owners.

Lectures (three hours)

**Prerequisite(s):** Students in a third or fourth year non-Commerce program or relevant minor (see *Faculty Note 2*.)

**Antirequisite(s):** COMMERCE 4FO3

*Not open to students registered in any Commerce, or Engineering & Management program; or the Minor in Finance or Innovation.*

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### COMMERCE 4FX3 - SPECIAL TOPICS IN FINANCE

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Various topics in Finance are considered. They will vary depending upon recent developments in the field and upon the research interests of the instructor. The topics to be included are announced at the time of the course offering.

For information on course offerings, please refer to the School of Business web site at <http://ug.degroote.mcmaster.ca/course-outlines/> or contact the Student Experience Academic Office, DSB 112.

Lectures (three hours)

**Prerequisite(s):** Announced at time of offering. COMMERCE 4FX3 may be repeated, if on a different topic, to a total of six units.

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### COMMERCE 4FY3 - INTRODUCTION TO FINTECH

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The course provides a broad overview of the financial technology (FinTech) industry. Specifically, it will cover; how financial services have evolved key players and their roles; existing products, how FinTech has evolved key players and their innovations; technologies underpinning FinTech innovations, major FinTech innovations and their impact on financial services, regulations governing the financial services industry and how to identify and analyze future trends/opportunities of FinTech.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

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### COMMERCE 4FZ3 - ISLAMIC FINANCE

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With rapid globalization, the world economy is becoming increasingly integrated across countries and societies with divergent economic practices. Predominantly Islamic countries are becoming important suppliers and users of financial capital. In this course, students will gain an appreciation of common Islamic financial concepts (Murabaha, Musharaka, Istisna) instruments (Sukuk), relevant legal (Western and Islamic) jurisprudence, and regulatory and disclosure standards.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and registration in any Bachelor of Commerce or Engineering and Management program or

relevant minor (see *Faculty Note 2*.)

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### COMMERCE 4IA0 - INTERNSHIP 1

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Full-time paid employment in an approved internship providing students with work experience related to their academic curriculum. After securing an internship position, students must successfully complete a minimum twelve months of experience as per the details outlined within their letter of offer, obtain satisfactory employer evaluation(s) and receive a passing grade on the work term report. All internship students will be enrolled in COMMERCE 4IA0 for the first term of their internship.

**Prerequisite(s):** COMMERCE 2INO and permission of the Manager of Student Experience - Career and Professional Development

This course will be evaluated on a complete/incomplete basis.

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### COMMERCE 4IB0 - INTERNSHIP 2

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Full-time paid employment in an approved internship providing students with work experience related to their academic curriculum. After securing an internship position, students must successfully complete a minimum twelve months of experience as per the details outlined within their letter of offer, obtain satisfactory employer evaluation(s) and receive a passing grade on the work term report. All internship students will be enrolled in COMMERCE 4IB0 for the second term of their internship.

**Prerequisite(s):** COMMERCE 2INO, COMMERCE 4IA0 and permission of the Manager of Student Experience - Career and Professional Development

This course will be evaluated on a complete/incomplete basis.

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### COMMERCE 4IC0 - INTERNSHIP 3

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Full-time paid employment in an approved internship providing students with work experience related to their academic curriculum. After securing an internship position, students must successfully complete a minimum twelve months of experience as per the details outlined within their letter of offer, obtain satisfactory employer evaluation(s) and receive a passing grade on the work term report. Students completing a 16-month internship will be enrolled in COMMERCE 4IC0 for the third term of their internship.

**Prerequisite(s):** COMMERCE 2INO, 4IA0, 4IB0 and permission of the Manager of Student Experience - Career and Professional Development

*This course will be evaluated on a complete/incomplete basis.*

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### COMMERCE 4ID0 - INTERNSHIP FINAL TERM

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Full-time paid employment in an approved internship providing students with work experience related to their academic curriculum. After securing an internship position, students must successfully complete a minimum twelve months of experience as per the details outlined within their letter of offer, obtain satisfactory employer evaluation(s) and receive a passing grade on the work term report. All internship students will be enrolled in COMMERCE 4ID0 for their final term of their internship.

**Prerequisite(s):** COMMERCE 2INO, 4IA0, 4IB0 and permission of the Manager of Student Experience - Career and Professional Development

*This course will be evaluated on a pass/fail basis.*

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### COMMERCE 4KF3 - PROJECT MANAGEMENT

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Topics include: project selection, project organization structures, life cycles, planning, estimation, budgeting, resource allocation, contracting, project management software, reporting and controlling issues and conflict management.

Lectures and online (three hours)

**Prerequisite(s):** Registration in level III or above in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note*

2.)

**Antirequisite(s):** COMMERCE 4QF3

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### COMMERCE 4KG3 - DATA MINING FOR BUSINESS ANALYTICS

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Business Analytics (BA) is a technology-driven process for analysing data and presenting actionable information to help corporate executives, business managers and other end users make more informed business decisions. The course is designed for students in multiple business areas. Students will learn the concepts, techniques, and applications of data mining and business analytics through lectures, class discussions, hands-on assignments, and seminar presentations.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 1DA3 (or 2QA3) or IBH 2AD3 or equivalent; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

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### COMMERCE 4KH3 - STRATEGIES FOR ELECTRONIC AND MOBILE BUSINESS

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This course covers the strategic issues that the modern business manager must deal with in making strategic decisions concerning the choice, implementation and execution of electronic and mobile business solutions for start-ups and established enterprises.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2KA3 or IBH 2AB3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

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### COMMERCE 4KI3 - BUSINESS PROCESS MANAGEMENT

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This course enables students to learn about the methodologies used in business process management and related information technologies in support of process innovation. These techniques are learned through hands-on practice with SAP Business One (B1) software and simulation targeted to small and medium sized enterprises.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2KA3 or IBH 2AB3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*) or permission of the instructor

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### COMMERCE 4KX3 - SPECIAL TOPICS IN INFORMATION SYSTEMS

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Various topics in information systems are considered. They will vary depending upon recent developments in the field and upon the research interests of the instructor. The topics to be included are announced at the time of course offering. For information on course offerings, please refer to the School of Business web site at <http://ug.degroote.mcmaster.ca/course-outlines/> or contact the Academic Programs Office, DSB 112.

**Prerequisite(s):** COMMERCE 2KA3 or IBH 2AB3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

*COMMERCE 4KX3 may be repeated, if on a different topic, to a total of six units.*

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### COMMERCE 4MA3 - ADVERTISING AND INTEGRATED MARKETING COMMUNICATION

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The course introduces learners to the strategic role of advertising and its various forms print, radio, television, social, experiential, events, viral and consumer generated content in effective marketing. Students understand

how to develop communications objectives, formulate a creative strategy, compare and select various forms of media to deliver on brand goals. It offers opportunity to practice the process of analyzing an opportunity, formulating strategy, developing creative and implementing an IMC plan.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2MA3 or IBH 2AA3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

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### COMMERCE 4MC3 - NEW PRODUCT MARKETING

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This course covers the management of new products from the idea stage through to product launch with a strong practical orientation. A field project is a major component of the course.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 3MC3 or IBH 3AB3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

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### COMMERCE 4MD3 - BUSINESS MARKETING

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An overview of business marketing including: derived demand, vendor analysis, the multiple buying unit, value analysis, competitive bidding, industrial design, key accounts, and trade shows.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 3MC3 or IBH 3AB3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

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### COMMERCE 4ME3 - SALES MANAGEMENT

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Cases, presentations, field work, library research, role playing and group exercises help to understand customers, the selling process, sales presentations, negotiation, legal and ethical responsibilities, self and team management.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2MA3 or IBH 2AA3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

**Antirequisite(s):** Not open to students with credit or registration in COMMERCE 4MX3, if the topic was Sales Management.

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### COMMERCE 4MF3 - RETAILING MANAGEMENT

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This course will familiarize students with key managerial and policy issues involved in the design, implementation and assessment of the retail mix. It will cover several areas relating to the institution of retailing, elements of the retail environment; and retail strategies.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 3MC3 or IBH 3AB3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

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### COMMERCE 4MG3 - STRATEGIC PHILANTHROPY AND LEADERSHIP

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In this course you will learn about the philanthropic sector in Canada through the hands-on process of granting over \$10,000 to a local charity(s). Seeded by a \$10,000 gift from the Learning by Giving Foundation, this course is designed to explore core aspects of the philanthropic and charitable sector. No previous experience with not-for-profit organizations is required. The purpose of this course is to introduce you to leadership practices in this sector and enhance your future capacity and expertise to make good investments for social,

economic and environmental change through the charitable sector, either personally or as a member of a corporate social responsibility team.

Lectures (three hours)

**Prerequisite(s):** Registration in Level III or above in any four or five year program; or Instructor permission

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### COMMERCE 4MH3 - ELECTRONIC MARKETING

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The purpose of this course is to explore cutting edge marketing strategies in a dynamic e-commerce environment. Students will cover a wide range of issues including online consumer behaviours, website analytics, search engine marketing, online CRM, online channel and pricing strategies, social media marketing, and mobile marketing. This course is taught primarily through the case method and lectures but also includes readings, videos, workshops, guest speakers and assignments.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2MA3 or IBH 2AA3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

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### COMMERCE 4MI3 - MARKETING ANALYTICS

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Marketing departments are increasingly utilizing data routinely collected by their organizations to improve marketing decision making and more effectively allocate resources. This course will familiarize students with tools necessary for converting raw data into valuable consumer insights. The course offers a hands-on, practical approach, giving students the opportunity to become familiar with data analysis software. The course will emphasize both inference and prediction and highlight the trade-offs associated with different marketing analytics methods.

**Prerequisite(s):** COMMERCE 3MA3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

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### COMMERCE 4OB3 - ANALYSIS OF PRODUCTION/ OPERATIONS PROBLEMS

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An examination of analytical approaches to problems in the field of production/ operations. The course will provide in-depth coverage of a limited number of topics. Enterprise resource planning system SAP is used to highlight some of the concepts covered in this course. This course is used towards SAP Certification in Business Integration.

Lectures (three hours)

**Prerequisite(s):** One of COMMERCE 20C3, COMMERCE 4QA3, MECHENG 4C03, or IBH 3BE3 (or 2BC3); and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

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### COMMERCE 4OD3 - PURCHASING AND SUPPLY MANAGEMENT

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Students will gain skills that are necessary to manage purchasing operations in the private and public sectors. Topics include: purchasing policies, procedures, supplier selection, order management (including quality, quantity, delivery and price decisions), spend analytics, negotiation and contract management, outsourcing, international procurement and sustainability issues. Relevant procurement components of SAPs enterprise resource planning system will be demonstrated. This course can be used towards SAP Certification in Business Integration.

Lectures (three hours), tutorial (one hour)

**Prerequisite(s):** One of COMMERCE 20C3, COMMERCE 4QA3, or IBH 3BE3 (or 2BC3); and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

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### COMMERCE 4O13 - SUPPLY CHAIN MANAGEMENT

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Supply chain, the network of materials, information and money, has become a key dimension in business competition. In this course, we will present the basic concepts and techniques in supply chain management using an integrated approach. We will also discuss the key drivers in supply chain management, and learn the success and failure stories of supply chain management. Enterprise resource planning system SAP is used to highlight some of the concepts covered in the course. This course is used towards SAP Certification in Business Integration.

Lectures (three hours)

**Prerequisite(s):** One of COMMERCE 20C3, 4QA3, or IBH 3BE3 (or 2BC3); and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

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### COMMERCE 4OT3 - TRANSPORTATION AND WAREHOUSING MANAGEMENT

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Transportation and warehousing play a critical role in the supply chain and the economy. They are a key enablers for customer-oriented strategies such as same-day or overnight deliveries. This course will help students understand the strategic role of transportation and logistics. The course covers concepts such as transportation costing and pricing; warehouse equipment and operations; warehouse layout; order processing; and transportation network design and optimization. The course will also use SAP.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2DA3 (or 3QA3); and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2.*)

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### COMMERCE 4PA3 - BUSINESS POLICY: STRATEGIC MANAGEMENT

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As the capstone to the program, this case course is designed to unify the student's learning experience by exploring the formulation and implementation of corporate strategy.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 3MC3 or IBH 3AB3; and registration in Level IV of any Bachelor of Commerce or Level V Engineering and Management program or relevant minor (see *Faculty Note 2.*)

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### COMMERCE 4QA3 - OPERATIONS MODELLING AND ANALYSIS

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A course that looks at productions and operations management as practiced in engineering and manufacturing industries and the services sector.

Lectures (three hours)

**Prerequisite(s):** One of STATS 2MA3, 3J04, 3N03, 3Y03, MATLS 3J03, ENGPYHS 3W04 A/B, or equivalent, and registration in any Engineering and Management, or Mechanical Engineering program; or registration in Level IV or V of any Engineering Physics program

**Antirequisite(s):** COMMERCE 20C3, IBH 2BC3, 3BE3

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### COMMERCE 4QX3 - SPECIAL TOPICS IN OPERATIONS MANAGEMENT

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Various topics in operations management are considered. They will vary depending upon recent developments in the field and upon the research interests of the instructor. The topics to be included are announced at the time of course offering. For information on course offerings, please refer to the School of Business website at <http://ug.degroote.mcmaster.ca/course-outlines/> or contact the Academic Programs Office, DSB 112.



Lectures (three hours)

**Prerequisite(s):** COMMERCE 20C3 or IBH 3BE3 (or 2BC3) or 4QA3; registration in any Bachelor of Commerce Program or Engineering & Management program

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### COMMERCE 4SA3 - INTERNATIONAL BUSINESS

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The key features of, and trends in, the global business environment. The implications of cultural and political differences. Comparative operational practices and multinational management.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 3MC3 or IBH 3AB3; and registration in Level IV of any Bachelor of Commerce or Level V of any Engineering and Management program or with instructor permission or relevant minor (see *Faculty Note 2*.)

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### COMMERCE 4SB3 - INTRODUCTION TO CANADIAN TAXATION

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The principles of Canadian federal income taxation are examined in detail, emphasizing the application of both statute and common law to individuals' and businesses' situations.

Lectures (three hours)

**Prerequisite(s):** Credit or registration in COMMERCE 3AB3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

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### COMMERCE 4SC3 - ADVANCED CANADIAN TAXATION

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This course continues the study of Canadian federal income taxation with an in-depth coverage of selected provisions of the Income Tax Act pertaining to business activities, particularly the activities of corporations.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 4SB3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

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### COMMERCE 4SD3 - COMMERCIAL LAW

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This course emphasizes those areas of law which are most relevant to business activity. Particular attention is given to the law relating to contracts and business organizations. Other areas of study include: sources of law, the judicial process, real and personal property, torts, agency, credit and negotiable instruments.

Lectures (three hours)

**Prerequisite(s):** Registration in Level III or above and in any Bachelor of Commerce or Engineering and Management program or Level IV of the Justice, Political Philosophy, and Law Program or relevant minor (see *Faculty Note 2*.)

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### COMMERCE 4SE3 - ENTREPRENEURSHIP

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The problems and experiences encountered in starting and developing new enterprises will be studied. A cornerstone of the course is the development of a detailed business plan for a local entrepreneur.

Lectures (three hours)

**Prerequisite(s):** COMMERCE 2FB3 (or 3FA3) or IBH 3AC3; and COMMERCE 3MA3, COMMERCE 3MC3, or IBH 3AB3; and registration in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

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### COMMERCE 4SG3 - SUSTAINABILITY: CORPORATIONS AND SOCIETY

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The goal of this course is to familiarize students with a variety of sustainability related concepts including the triple bottom line, resilience, stakeholder

engagement, the tragedy of the commons, sustainability and technology, and sustainable business models. Using cases, simulations, guest speakers, a group project and reflection, students will sharpen their ability to critically analyze and debate complex and systemic issues from an informed position. Students will emerge from this course understanding both the challenges and opportunities inherent in sustainability.

Lectures (three hours)

**Prerequisite(s):** Registration in Level III or IV of a four or five year program or instructor permission

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### COMMERCE 4SH3 - CASE ANALYSIS AND PRESENTATION SKILLS

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Cases allow students to directly apply and integrate theories from various business disciplines to real-world situations/problems. Students will be working in teams and will have the opportunity to present their analysis and recommendations to a panel of judges. Hence, they will also develop their presentation skills, team and time management and communication skills. The first half of the course will provide students with the tools they need to approach case analysis. These tools include problem solving methodologies, communication approaches and team building skills. The final half of the course will allow students to practice applying these tools in case analysis situations in a three hour format. The cases will cover various industries and companies as well as different disciplines. Students will also be able to critique the analysis and presentation skills of their peers.

Lectures (three hours)

**Prerequisite(s):** Registration in Level IV or above in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Note 5*)

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### COMMERCE 4SM3 - SPORTS MANAGEMENT

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This course emphasizes management principles as they relate to the business of sports. Students are introduced to the following sports management issues: marketing and advertising of sports events and brands, understanding of legal and ethical issues in sport, media and promotion, sponsorship and event management, sports equipment and product management, recreational sports management and other related areas. There is an emphasis on developing and improving communication skills as much of the course content will be case-based. An overview is provided with regard to career opportunities in the sports management field.

Lectures (three hours)

**Prerequisite(s):** Registration in Level IV or above in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

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### COMMERCE 4SX3 - SPECIAL TOPICS IN STRATEGIC MANAGEMENT

---

Various topics in business are considered. They will vary depending upon recent developments in the field and upon the interests of the instructor. The topics to be included are announced at the time of the course offering.

Lectures (three hours)

**Prerequisite(s):** Registration in Level III or above in any Bachelor of Commerce or Engineering and Management program or relevant minor (see *Faculty Note 2*.)

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### COMMERCE 4SY3 - INDEPENDENT STUDY IN BUSINESS

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Faculty supervised research project. A supervising faculty member from the DeGroote School of Business must be arranged, and authorization of the Associate Dean (Academic) secured, in the term preceding the term of study.

Lectures (three hours)

**Prerequisite(s):** To be determined by the supervising faculty member and registration in level III or above in any Honours Bachelor of Commerce or Engineering and Management program

**Antirequisite(s):** COMMERCE 4SY3 (regardless of topic)

Project proposal forms are available online and must be completed by the student and signed by the Supervisor and Associate Dean Academic prior to enrolment.

## Communication Studies

### Note Regarding Level IV Seminars

Level IV Communication Studies seminars are open only to students registered in Level IV of an Honours program in Communication Studies. The Department is only able to offer a selection of the courses listed below each year. As course size is limited, seminar places in each course will be allotted in March of every year for the succeeding session. It is essential that students apply early to the Department for the seminars they wish to take.

Courses in Communication Studies are administered by the Department of Communication Studies and Multimedia.

Togo Salmon Hall, Room 331, ext. 23488

<http://csmm.humanities.mcmaster.ca/>

### Courses

*If no prerequisite is listed, the course is open. See also courses in Multimedia.*

### CMST 1A03 - INTRODUCTION TO COMMUNICATION

This course examines communication and media industries, content, and audiences in historical, social, political, economic, technological, and cultural contexts. Students will be introduced to basic theoretical perspectives, policy concerns, professional practices, and social issues foundational to communication studies.

Lectures and tutorials (three hours); one term

### CMST 2BB3 - CULTURE AND COMMUNICATION

An introduction to theoretical and methodological approaches to cultural studies focusing on communicative practice. Students will analyse relationships between cultural identity, producers, consumers, institutions, technologies and practices of mediated communication.

Three hours; one term

**Prerequisite(s):** Completion of CMST 1A03 or MMEDIA 1A03, and registration in Level II or above

### CMST 2DD3 - MEDIA ORGANIZATIONS

An examination of the occupational, professional and organizational structures and processes of media production in the press, radio, television and digital media. Topics include news gathering, radio and TV production practices and media management.

Three hours; one term

**Prerequisite(s):** Completion of CMST 1A03 or MMEDIA 1A03, and registration in Level II or above

### CMST 2G03 - PERFORMANCE AND PERFORMATIVITY

An introduction to the study of performative modes of communication such as storytelling, gesture, movement, dress. Students will learn to analyze the relationship between cultural performances, such as games, garage bands, group facilitation, or live theatre and social structures.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Completion of CMST 1A03, MMEDIA 1A03 or THTRFLM 1T03, and registration in Level II or above

**Antirequisite(s):** SOTA 2G03, THTRFLM 2P03

### CMST 2H03 - GENDER AND PERFORMANCE

An examination of gender as identities performed or constructed in complex social, historical and cultural processes and conditions, including how gender gives meaning to different performance texts, as well as to a range of performance practices in daily life.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Completion of CMST 1A03, MMEDIA 1A03, WOMENST 1A03 or WOMENST 1AA3, and registration in Level II or above

**Antirequisite(s):** WOMENST 2J03

### CMST 2HM3 - HUMAN COMMUNICATION

This course examines how humans engage in interpersonal communications using self, group, nonverbal, intercultural and workplace communicative methods. Students will learn and demonstrate the importance of listening, critical thinking, and persuasive writing.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above

### CMST 2K03 - POLITICAL ECONOMY OF THE MEDIA

A comparative examination of changing patterns of ownership and control of the mass media in light of globalization, technological change, government policy, market restructuring and corporate consolidation.

Three lectures; one term

**Prerequisite(s):** Completion of one of the following: CMST 1A03, MMEDIA 1A03, POLSCI 1AA3, POLSCI 1AB3, SOCIOL 1C03 or SOCIOL 1Z03, and registration in Level II or above; or registration in Level II or above of the Justice, Political Philosophy and Law program

**Cross-list(s):** POLSCI 2EM3

### CMST 2LW3 - COMMUNICATION POLICY AND LAW

An examination of communication law and policy. Topics include freedom of expression and the press, telecommunications and broadcasting regulation, Internet law, privacy, and intellectual property.

Three hours; one term

**Prerequisite(s):** Completion of CMST 1A03, MMEDIA 1A03, POLSCI 1AA3 or POLSCI 1AB3, and registration in Level II or above; or registration in Level II or above of the Justice, Political Philosophy and Law program

**Antirequisite(s):** CMST 3I03

**Cross-list(s):** POLSCI 2LW3

### CMST 2PR3 - PUBLIC RELATIONS: PRINCIPLES AND PRACTICES

An introduction to fundamental skills, knowledge, theory and problem-solving techniques currently used in the practice of public relations, using the case study method.

Three lectures; one term

**Prerequisite(s):** Completion of CMST 1A03 and registration in Level II or above

### CMST 2RA3 - APPLICATION IN COMMUNICATION THEORY AND METHODS

Building from the theoretical and methodological foundations introduced in 2TM6, students develop, refine, and apply research skills in a comprehensive research project. Multiple modes of writing and presentation of research will be emphasized.

Three hours (lectures and tutorial); one term

**Prerequisite(s):** Completion of CMST 2TM6 and registration in Level II or

above of a program in Communication Studies

**Antirequisite(s):** CMST 2A03, 2B03 or 2C03

### CMST 2TM6 - FOUNDATIONS IN COMMUNICATION THEORY AND METHODS

A comprehensive introduction to communication research in an integrated format, where students learn about the research process, theoretical frameworks, epistemological questions, research questions, ethics, links between theory and method, and a survey of quantitative and qualitative methods and modes of analysis.

Lectures and tutorial (six hours); one term

**Prerequisite(s):** Registration in Level II or above of a program in Communication Studies

**Antirequisite(s):** CMST 2A03, 2B03 or 2C03

### CMST 3B03 A/B S - PRACTICAL ASPECTS OF MEDIA PRODUCTION

In consultation with a faculty member, students will complete an independent project or an applied placement on an approved topic involving the application of communication skills, theories and methodologies. It is the student's responsibility to obtain the agreement of the Instructor and to complete a proposal form (available in the Communication Studies Office). Independent Study proposals must be approved by the Committee of Instruction during the term before the project is to be done.

**Prerequisite(s):** Registration in Level III or IV of a program in Communication Studies or Multimedia with a Grade Point Average of at least 8.5 and permission of the Committee of Instruction

### CMST 3CY3 - CHILDREN, YOUTH, AND MEDIA

This course explores the relationship between children, youth, and media, including central debates, theories, and research. Core concerns involve media literacy; cultural, educational, and social policy; media analysis; identity, reception; social media and new technologies; and youth media production.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of a program in Communication Studies or Multimedia

**Antirequisite(s):** CMST 2EE3

### CMST 3D03 - POLITICAL COMMUNICATION

The relationship between politics and the media is analyzed in terms of issues such as political news coverage, electioneering, political marketing, policy formation and publicity, and agenda-setting and public opinion.

Three lectures (three hours); one term

**Prerequisite(s):** Registration in Level III or above in a Communication Studies or Political Science program

**Cross-list(s):** POLSCI 3BB3

*This course is administered by the Department of Political Science.*

### CMST 3H03 - CREATING CEREMONIES

An examination of the performative aspects of ceremonies and rituals such as weddings, funerals, political inaugurations, parades, mass, festivities around such religious celebrations as Christmas and Hanukkah, and the rituals associated with theatre and concert going.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Completion of CMST 1A03 or MMEDIA 1A03, and registration in Level III or above

### CMST 3HC3 - HISTORY OF COMMUNICATION

A survey of communication history with attention to the Canadian context.

This course will include discussions of orality and literacy; manuscript, print and electronic media; and the role of gender, race, and class in media history. Students will engage with methodologies including archival research, primary source analysis, and digital humanities approaches.

Lectures and tutorials (three hours); one term

**Prerequisite(s):** Registration in Level III or above of a program in Communication Studies

**Antirequisite(s):** CMST 2CC3

### CMST 3II3 - INTELLECTUAL PROPERTY

An examination of intellectual property from a practical/legal perspective, and in broader context. Exploring the politics of intellectual property online and offline: philosophies and practices, politics and institutions, and alternatives.

Three hours; one term

**Prerequisite(s):** Completion of CMST 1A03, MMEDIA 1A03, POLSCI 1AA3 or POLSCI 1AB3, and registration in Level III or above; or registration in Level III or above of the Justice, Political Philosophy and Law program

**Cross-list(s):** POLSCI 3IP3

### CMST 3JJ3 - THE RISE OF THE MUSIC INDUSTRY

This course examines the role of early media, technology, performance and business practices in the development of popular music styles, audiences and cultural meanings. Topics include Tin Pan Alley, race records and big bands on radio.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Completion of CMST 1A03 or MMEDIA 1A03, and registration in Level III or above

### CMST 3K03 - MEDIA AUDIENCES AND EFFECTS

An examination of the media/audience relationship in light of different theories of media effects including social learning, agenda-setting, uses and gratifications, active audiences and cultivation analysis.

Three lectures; one term

**Prerequisite(s):** Registration in Level III or above of a program in Communication Studies or Multimedia

### CMST 3RR3 - RACE, RELIGION AND MEDIA

This course examines historical constructions of different races and religions in the media, primarily film, television and the press, and asks how these constructions may manifest themselves in contemporary forms of media and in current events. Students will learn to deconstruct visual and written depictions across a variety of media.

Three hours; one term

**Prerequisite(s):** Completion of CMST 1A03 or MMEDIA 1A03, and registration in Level III or above

### CMST 3S03 - TELEVISION AND SOCIETY

This course will examine television as a socio-cultural and political phenomenon. This course will involve theoretical and empirical analysis of the television industry, production, texts and genres, and audiences. Major debates in television studies will be addressed.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of a program in Communication Studies or Multimedia

### CMST 3SM3 - BUILDING PUBLICS USING SOCIAL MEDIA

Survey of social media tools available to communications practitioners. Concept of 'building a public' is examined from an interdisciplinary perspective. Emphasis is placed on the techniques of rhetoric and persuasion. Three hours; one term

**Prerequisite(s):** Registration in Level III or above of a program in Communication Studies or Multimedia

### CMST 3WR3 - PROFESSIONAL WRITING

This course offers instruction on a variety of professional communication formats and styles in a variety of media and communication contexts. The course will include lecture, workshop, and hands-on practice at writing and revision. Students will gain an advanced skill set and produce portfolio-level professional writing product.

Three hours (lectures and workshops); one term

**Prerequisite(s):** Completion of CMST 1A03 or MMEDIA 1A03, and registration in Level III or above

**Antirequisite(s):** CMST 2F03

### CMST 3Z03 - MOBILE PRACTICES, TECHNOLOGIES AND ART

Mobility is explored as a concept informing communication technology development, the notion of the ideal consumer/citizen, and as an artistic device. Assignments explore mobility as a trope enabling expression, innovation or resistance via textual and aesthetic interventions.

Lectures and tutorial (three hours); one term

**Prerequisite(s):** Registration in Level III or above of a program in Communication Studies or Multimedia

### CMST 4A03 - INDEPENDENT RESEARCH PROJECT

Under the supervision of a Faculty Advisor students will complete an independent, original research project.

**Prerequisite(s):** Registration in Level IV of a program in Communication Studies with a Grade Point Average of at least 9.0; Departmental permission required

### CMST 4D03 - INTERNATIONAL COMMUNICATION

The relationship between globalization and the media is examined in light of the debates over cultural imperialism, information and technology flow, cultural hybridization and the media's impact on socio-economic development.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level IV of a program in Communication Studies; Departmental permission required

### CMST 4E03 - MEDIA AND PROMOTIONALISM

An examination of the media's role in the promotion of different interests, values and patterns of behaviour. Topics include advertising, public relations, social activism and public information campaigns.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level IV of a program in Communication Studies; Departmental permission required

### CMST 4M03 - COMMUNICATION, CULTURE AND TECHNOLOGY

This course surveys social patterns of reception and adaptation of communication technologies and their interaction with cultural constructions of (gendered) bodies, everyday life, organization of space and time, and other

cultural distinctions.

Lectures and discussion (Three hours); one term

**Prerequisite(s):** Registration in Level IV of a program in Communication Studies; Departmental permission required

### CMST 4N03 - NEWS ANALYSIS: THEORY AND PRACTICE

This course examines analysis of news media content and structure. Students will critically analyze and complete a major content analysis research project.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level IV of a program in Communication Studies; Departmental permission required

### CMST 4P03 - SOCIAL ACTIVISM AND THE MEDIA

This course examines the role of print, electronic and digital media in the relationship between social movements, the state and corporate interests.

Lecture and/or seminar (three hours); one term

**Prerequisite(s):** Registration in Level IV of a program in Communication Studies or Multimedia; Departmental permission required

### CMST 4Q03 - BROADCASTING TRANSFORMATION IN A MULTIMEDIA ERA

Students examine how public broadcasters in Canada and internationally deal with challenges of political, economic, cultural and technological change, e.g. audience evolution, shifting regional and demographic composition, and new funding models. The course explores how the very model of mass media changes in an interactive, multimedia environment.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level IV of a program in Communication Studies; Departmental permission required

### CMST 4X03 - COMMUNICATIONS FOR CAMPAIGNS AND ELECTIONS

Examination of tools, tactics and strategies employed by communications practitioners, strategists and managers during campaigns and elections. Effective use and construction of influence is analyzed using case studies and theory.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level IV of a program in Communication Studies; Departmental permission required

## Community Engagement

Courses in Community Engagement are administered by the Faculty of Social Sciences.

Kenneth Taylor Hall, Room 129, ext. 23772

socscfac@mcmaster.ca

### CMTYENGA 2A03 - FOUNDATIONS OF COMMUNITY ENGAGEMENT

Regardless of your degree, you will be a member of many communities - your workplace, your professional group, your neighbourhood, your city, your country, the world. You will be called upon to participate in community activities and community change. This course provides you with an understanding of how communities function, the politics and processes involved in community participation and leadership. It will focus on developing the beginning skills for effective and ethical community engagement.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above; priority will be given to



students in Level II

### **CMTYENGA 2MC3 - DESIGN AND CREATION OF ENGAGED LEARNING FOR COMMUNITY YOUTH**

In this introductory course students will learn to create either an interactive workshop or a digital experience for youth (ages 7 to 14) in collaboration with the community. Students will learn the best practices for (1) designing interactive experiences for youth; (2) the principles of community-engagement and (3) the art of knowledge translation and communication. In the second half of the course, working in small teams, those students interested in designing interactive workshops will learn the art of storytelling and presentation performance. Those students interested in creating a digital experience will learn digital storytelling and effective strategies to create interactive digital experiences. The topic for these creations can be in any discipline. Additionally, you will be provided the opportunity to take these projects out into the community as part of the McMaster Children and Youth University program if you take CMTYENGA 2MD3. No prior experience in coding or digital platform development is required. For more information, please see our website at [www.mcyu.ca](http://www.mcyu.ca).

Three hours; one term

**Prerequisite(s):** Enrollment in Level II or above

### **CMTYENGA 2MD3 - COMMUNITY-BASED LEARNING WITH MCMASTER CHILDREN AND YOUTH UNIVERSITY**

In partnership with the McMaster Children and Youth University (MCYU), students will take inquiry-based learning activities into Hamilton community schools, community centres and libraries. Completion of CMTYENGA 2MC3 prior to CMTYENGA 2MD3 is recommended. In this course, students will learn how to communicate research effectively to a younger audience and practice leadership, knowledge translation, and project management skills. Students will gain experiential learning opportunities through the deployment of their interactive workshops and digital experiences targeted at youth 7-14 years of age. Additional community engagement experience will also be gained through interacting with McMaster Faculty, teachers and parents. For more information, please see our website at [www.mcyu.ca](http://www.mcyu.ca).

Three hours; one term

**Prerequisite(s):** One of CMTYENGA 2A03, CMTYENGA 2MC3, or IBH 1AD3 and enrollment in Level II or above; or permission of the instructor

### **CMTYENGA 3A03 - THE ART OF CHANGE**

This interdisciplinary course will equip students with the skills and tools they need to support and lead change-based initiatives for a better world. Building on foundational principles of community engagement, students will learn about theories of change, systems thinking, organizational theory and structures, and facilitation techniques and tools used to support community change. Case studies of real-life change initiatives will ground these theories in real-life contexts that help students to understand both how change happens and how individuals can make change when tackling real-world issues. Students will also be provided with an opportunity to work with the Office of Community Engagement on a collaborative project that applies learning towards a real-life community issue.

Three hours; One term

**Prerequisite(s):** Registration in Level III or IV.

### **CMTYENGA 4A06 - SEMESTER AT CITYLAB: DESIGN AND DIALOGUE INQUIRY**

Semester at CityLAB (composed of both CMTYENGA 4A06 - Design and Dialogue Inquiry and CMTYENGA 4A09 - Applied Project Experience) is a project based experiential class where students work in interdisciplinary

teams mentored by City of Hamilton staff and course instructors to address real challenges faced by the City. Using an inquiry model and drawing on an associated city-identified challenge, this course develops disciplinary capabilities in design thinking, dialogue, project management, and public communication, and prepares students to co-create, test, and evaluate a project. This course requires permission from the Office of Community Engagement.

Six hours; One term

**Co-requisite(s):** CMTYENGA 4A09

**Prerequisite(s):** Registration in Level III or IV.

### **CMTYENGA 4A09 - SEMESTER AT CITYLAB: APPLIED PROJECT EXPERIENCE**

Semester at CityLAB (composed of both CMTYENGA 4A06 Design and Dialogue Inquiry and CMTYENGA 4A09 Applied Project Experience) is a project based experiential class where students work in interdisciplinary teams mentored by City of Hamilton staff and course instructors to address real challenges faced by the City. In addition to intensive workshops, field trips, and dialogue sessions with staff and community members, students will work in interdisciplinary teams to directly apply their theoretical knowledge and skills to develop and hone a real-life project that addresses a specific challenge faced by Hamilton today. Students will be exposed to, and participate actively in, the civic life of Hamilton. This course requires permission from the Office of Community Engagement.

One term

**Co-requisite(s):** CMTYENGA 4A06

**Prerequisite(s):** Registration in Level III or IV

## **Computer Engineering**

Courses in Computer Engineering are administered by the Department of Electrical and Computer Engineering.

Information Technology Building, Room A111, ext. 24347

<http://www.ece.mcmaster.ca/>

### **COMPENG 2DI4 - LOGIC DESIGN**

Binary numbers and codes; Boolean algebra; combinational circuit design; electrical properties of logic circuits; sequential circuit design; computer arithmetic; programmable logic; CPU organization and design.

Three lectures, one tutorial, one lab every other week; first term

**Prerequisite(s):** Registration in a program in Computer Engineering, Electrical Engineering, Engineering Physics (Photonics Engineering Stream), Physics, or Integrated Biomedical Engineering and Health Sciences (IBEHS)

**Antirequisite(s):** COMPSCI 2MF3, SFWRENG 2DA4

### **COMPENG 2DX4 - MICROPROCESSOR SYSTEMS PROJECT**

Microprocessor systems, introduction to the design process, project development by small teams of students, oral presentations and engineering report writing.

Lectures (two hours), labs (three hours), tutorial/design studio one hour every week; second term

**Prerequisite(s):** ELECENG 2CI5, COMPENG 2SH4

**Antirequisite(s):** COMPENG 2DP4

### **COMPENG 2SH4 - PRINCIPLES OF PROGRAMMING**

Fundamental concepts of programming languages: data types, assignment, control constructs, basic data structures, iteration, recursion, exceptions; imperative and object-orientated paradigms; composing and testing small programs.

Three lectures, one tutorial, one lab every other week; first term

**Prerequisite(s):** ENGINEER 1D04 and registration in a program in Electrical and Computer Engineering or the Integrated Biomedical Engineering and Health Sciences (IBEHS) program

**Antirequisite(s):** COMPSCI 2S03, SFWRENG 2S03

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### COMPENG 2SI4 - DATA STRUCTURES, ALGORITHMS AND DISCRETE MATHEMATICS

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Data abstraction; algorithm analysis; recursion; lists; stacks; queues; trees; searching; hashing; sorting; sets; relations; functions; modular arithmetic; graph theory and algorithms.

Three lectures, one tutorial, one lab every other week; second term

**Prerequisite(s):** ENGINEER 1D04, COMPENG 2SH4

**Antirequisite(s):** COMPSCI 2C03, 2DM3, SFWRENG 2C03, 2DM3

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### COMPENG 3DQ5 - DIGITAL SYSTEMS DESIGN

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Advanced design methods of digital systems including modelling, simulation, synthesis and verification using hardware description languages, timing analysis and hardware debugging; implementation of computer peripherals in programmable devices.

Three lectures, one tutorial, one lab (three hours) every week; first term

**Prerequisite(s):** COMPENG 2DI4 and 2DP4 or 2DX4

*Students taking this course as an elective must receive the permission of the instructor.*

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### COMPENG 3DY4 - COMPUTER SYSTEMS INTEGRATION PROJECT

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A computer engineering design and implementation project of reasonable complexity to be completed by small groups of students; oral presentations and written reports.

Two lectures, one lab, one tutorial/design studio 1 hour, second term

**Prerequisite(s):** COMPENG 2DX4, 3DQ5, ELECENG, 3EJ4, 3TP3

**Antirequisite(s):** COMPENG 3DR4, ELECENG 3EY4

**Co-requisite(s):** ELECENG 3CL4, 3TR4

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### COMPENG 3SK3 - COMPUTER-AIDED ENGINEERING

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Numerical analysis; linear and nonlinear systems; least squares and matrix decomposition; polynomials, elements of linear algebra, optimization; numerical integration and differentiation; interpolation; engineering applications.

Three lectures, one tutorial; second term

**Prerequisite(s):** ELECENG 2CJ4; and MATH 2Z03

**Antirequisite(s):** SFWRENG 3X03, 4X03, COMPSCI 4X03

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### COMPENG 4DK4 - COMPUTER COMMUNICATION NETWORKS

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Introduction to switching and communication networks; packet switching; shared media access and LANs; error control; network layer operation and the Internet; ISDN; wireless networks; performance and simulation.

Three lectures, one tutorial, one lab every other week; first term

**Prerequisite(s):** ELECENG 3TQ4 or ELECENG 3TQ3 or ENGPYHS 3W04

**Antirequisite(s):** COMPSCI 4C03

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### COMPENG 4DM4 - COMPUTER ARCHITECTURE

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Overview of CISC/RISC microprocessors; performance metrics; instruction set design; processor and memory acceleration techniques; pipelining; scheduling; instruction level parallelism; memory hierarchies; multiprocessor structures; storage systems; interconnection networks.

Three lectures, one tutorial, one lab every other week; first term

**Prerequisite(s):** COMPENG 3DR4

**Antirequisite(s):** COMPSCI 2GA3, SFWRENG 2GA3, 3GA3

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### COMPENG 4DN4 - ADVANCED INTERNET COMMUNICATIONS

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Advanced internet protocols; routing, security, encryption; quality of service; ATM, RSVP, video and voice over IP; terminals, gateways and gatekeepers; wireless networks; WDM systems; optical crossconnects.

Three lectures, one tutorial, one lab every other week; second term

**Prerequisite(s):** COMPENG 4DK4

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### COMPENG 4DS4 - EMBEDDED SYSTEMS

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Embedded processor architectures and SOC organization; EDA tools for hardware/software co-design; co-verification and testability; interfacing; co-processors, soft processors and ASIP design; real-time systems; applications.

Two lectures, one tutorial, one lab every week; second term

**Prerequisite(s):** COMPENG 3DQ5, or permission of the Department

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### COMPENG 4EK4 - MICROELECTRONICS

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CMOS and MOSFET integrated circuit design; fabrication and layout; simulation; digital and analog circuit blocks; computer-aided design and analysis; testing and verification.

Two lectures, one tutorial (two hours), one lab every other week; first term

**Prerequisite(s):** ELECENG 3EJ4, or ENGPYHS 3BA3

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### COMPENG 4OH4 - ADVANCED RESEARCH PROJECT

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A research-oriented project under the direct supervision of a faculty member to further foster initiative and independent creativity while working on an advanced topic. This research is based on the experience and results achieved in other research-based project courses.

First or second term

**Prerequisite(s):** COMPENG 4OJ4 or ELECENG 4OJ4; Prior arrangement with an Electrical and Computer Engineering faculty member, a minimum cumulative GPA of 9.5, registration in Level IV or V of any program in the Department of Electrical and Computer Engineering; or permission of the department.

**Antirequisite(s):** IBEHS 3I06 A/B

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### COMPENG 4OJ4 - RESEARCH PROJECT

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A research-oriented project under the direct supervision of a faculty member to foster initiative and independent creativity while working on an advanced topic.

First or second term

**Prerequisite(s):** Prior arrangement with an Electrical and Computer Engineering faculty member, a minimum cumulative GPA of 9.5, registration in Level IV or V of any program in the Department of Electrical and Computer Engineering; or permission of the department

**Antirequisite(s):** COMPENG 4OK4, ELECENG 4OK4, IBEHS 3I06 A/B

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### COMPENG 4OK4 - RESEARCH PROJECT

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A research-oriented project under the direct supervision of a faculty member to foster initiative and independent creativity while working on an advanced topic.

Second term

**Prerequisite(s):** Prior arrangement with an Electrical and Computer Engineering faculty member, inclusion on the Dean's Honour List, registration in Level IV or V of any program in the Department of Electrical and Computer Engineering; or permission of the Department

**Antirequisite(s):** COMPENG 40J4, ELECENG 40J4

### COMPENG 4SL3 - FUNDAMENTALS OF MACHINE LEARNING

Fundamental principles and algorithms of machine learning: linear and logistic regression, nearest neighbours, decision trees, neural networks, support vector machines, ensemble methods; clustering and principal component analysis; basics of reinforcement learning;

Three lectures, one tutorial, first term

**Prerequisite(s):** COMPENG 2SI4, STATS 3Y03 or HTHSCI 2G03, and ELECENG 3TQ3

**Antirequisite(s):** CHEMENG 4H03, COMPSCI 4ML3

### COMPENG 4TL4 - DIGITAL SIGNAL PROCESSING

Classical filter theory; DFT and FFT; FIR and IIR digital filters; effects of finite precision; implementation of DSP systems; adaptive filtering; spectral analysis, signal compression.

Three lectures, one tutorial, one lab every other week; first term

**Prerequisite(s):** ELECENG 3TP4 or 3TP3

### COMPENG 4TN4 - IMAGE PROCESSING

Digital image formation and representation; filtering, enhancement and restoration; edge detection; discrete image transforms; encoding and compression; segmentation; recognition and interpretation; 3D imagery; applications.

Three lectures, one tutorial, one lab every other week; second term

**Prerequisite(s):** ELECENG 3TP4 or 3TP3; one of ELECENG 3TQ4, 3TQ3 or STATS 3Y03 or permission of the instructor

## Computer Science

Courses in Computer Science are administered by the Department of Computing and Software.

### Department Notes

1. Students wishing to pursue a Minor in Computer Science should see the Honours Computer Science program in the Faculty of Engineering section of this Calendar.
2. Please note that not all elective courses will be offered in each academic year.

### Courses

*If no prerequisite is listed, the course is open.*

### COMPSCI 1DM3 - DISCRETE MATHEMATICS FOR COMPUTER SCIENCE

Sets, functions, relations, trees and graphs; counting principles, modular arithmetic, discrete probabilities; induction and recursion, recurrence relations.

Three lectures, one tutorial (two hours), second term

**Prerequisite(s):** MATH 1B03 or MATH 1ZC3 or registration in the Honours Computer Science as a Second Degree (B.A.Sc.)

**Antirequisite(s):** COMPSCI 1FC3, 2DM3, SFWRENG 2DM3, 2E03, 2F03

### COMPSCI 1JC3 - INTRODUCTION TO COMPUTATIONAL THINKING

Exploration of thinking that is inspired, supported, and enabled by computing. Survey of the salient ideas, methods, and technologies in the major areas of computing including basic data types, logic, operating systems, computer networking, web computing, information security, digital media, software development, and problem solving techniques. Introduction to the

fundamentals of functional programming.

Three lectures, one tutorial (two hours), first term

**Prerequisite(s):** One of MATH 1K03, Grade 12 Advanced Functions and Introductory Calculus U, Grade 12 Calculus and Vectors, or registration in Computer Science 1

### COMPSCI 1MD3 - INTRODUCTION TO PROGRAMMING

Introduction to fundamental programming concepts: values and types, expressions and evaluation, control flow constructs and exceptions, recursion, input/output and file processing.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** One of MATH 1K03, 1LS3, Grade 12 Advanced Functions and Introductory Calculus U, Grade 12 Calculus and Vectors

**Antirequisite(s):** ENGINEER 1D04, MATH 1MP3

### COMPSCI 1TA3 - ELEMENTARY COMPUTING AND COMPUTER USE

Organization of microcomputers (hardware and operating systems) and overview of computer communications; introduction to information exchange using word processing/ presentation software, the Internet and Web pages; problem solving using electronic spreadsheets and database applications.

Three lectures, one tutorial; one term

**Antirequisite(s):** COMPSCI 1BA3, COMPSCI 1MD3, 1SA3, ENGINEER 1D04, MMEDIA 1A03

*Not open to students with credit or registration in COMPSCI 1MA3, 1MC3, HUMAN 2E03.*

### COMPSCI 1XC3 - COMPUTER SCIENCE PRACTICE AND EXPERIENCE: DEVELOPMENT BASICS

Acquiring familiarity with professional software development settings via practical experience with interaction with UNIX-like systems, programming in C, with documentation, testing, benchmarking, profiling and debugging; shell interaction and programming, pipes and filters; revision control.

Two lectures, two labs (two hours each); second term

**Prerequisite(s):** One of COMPSCI 1MD3 or ENGINEER 1D04

**Antirequisite(s):** COMPENG 2SH4, COMPSCI 1XA3, 2XA3, 2S03, SFWRENG 2MP3, 2S03, 2XA3

### COMPSCI 1XD3 - COMPUTER SCIENCE PRACTICE AND EXPERIENCE: INTRODUCTION TO SOFTWARE DESIGN USING WEB PROGRAMMING

Introduction to different aspects of design: Identifying user needs, goals and desires and translating them into software, and structuring and communicating the structure of software to improve reliability, readability and adaptability.

Topics include web languages and protocols, types and design patterns.

Two lectures, two labs (two hours each); second term

**Prerequisite(s):** COMPSCI 1JC3 and 1MD3

**Antirequisite(s):** COMPSCI 1XA3

### COMPSCI 2AC3 - AUTOMATA AND COMPUTABILITY

Finite state machines, regular languages, regular expressions, applications of regular languages, grammars, context-free languages, models of computation, computability and decidability.

Three lectures, one tutorial (two hours); second term

**Prerequisite(s):** COMPSCI 2LC3, 2C03

**Antirequisite(s):** COMPSCI 2FA3, 2MJ3, SFWRENG 2FA3

First offered 2021-2022.

### COMPSCI 2C03 - DATA STRUCTURES AND ALGORITHMS

Basic data structures: stacks, queues, hash tables, and binary trees; searching and sorting; graph representations and algorithms, including minimum spanning trees, traversals, shortest paths; introduction to algorithmic design strategies; correctness and performance analysis.

Three lectures, one tutorial (one hour); second term

**Prerequisite(s):** COMPSCI 1DM3 or 2DM3; COMPSCI 1XC3 or 1XD3 or 1MD3

**Antirequisite(s):** SFWRENG 2C03

*Effective 2021-2022, this course will be offered in first term.*

### COMPSCI 2DB3 - DATABASES

Data modelling, integrity constraints, principles and design of relational databases, relational algebra, SQL, query processing, transactions, concurrency control, recovery, security and data storage.

Three lectures, one tutorial (one hour); second term

**Prerequisite(s):** COMPSCI 2LC3 or COMPSCI 2DM3

**Antirequisite(s):** COMPSCI 3DB3, 4DB3, SFWRENG 3DB3, 3H03, 4M03, 4DB3

First offered 2021-2022.

### COMPSCI 2DM3 - DISCRETE MATHEMATICS WITH APPLICATIONS I

Functions, relations and sets; the language of predicate logic, propositional logic; proof techniques, counting principles; induction and recursion, discrete probabilities, graphs, and their application to computing.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** MATH 1ZC3 or MATH 1B03 or registration in the Honours Computer Science as a Second Degree Program

**Antirequisite(s):** COMPSCI 1FC3, SFWRENG 2DM3

Last offered 2020-2021.

### COMPSCI 2FA3 - DISCRETE MATHEMATICS WITH APPLICATIONS II

Predicate logic and formal proofs, grammars and automata, modular arithmetic, and their applications to computing.

Three lectures, one tutorial (one hour); second term

**Prerequisite(s):** COMPSCI 1FC3 or 2DM3

**Antirequisite(s):** SFWRENG 2FA3

Last offered 2020-2021.

### COMPSCI 2GA3 - COMPUTER ARCHITECTURE

Introduction to logic gates, computer arithmetic, instruction-set architecture, assembly programming, translation of high-level languages into assembly. Computer system organization: datapath and control, pipelining, memory hierarchies, I/O systems; measures of performance.

Three lectures, one tutorial, (one hour); first term

**Prerequisite(s):** COMPSCI 1MD3 or ENGINEER 1D04 or IBEHS 1P10

**Prerequisite(s) (EFFECTIVE 2021-2022):** COMPSCI 1XC3 and 1DM3

**Antirequisite(s):** COMPENG 3DR4, 4DM4, SFWRENG 2GA3, 3GA3

### COMPSCI 2LC3 - LOGICAL REASONING FOR COMPUTER SCIENCE

Introduction to logic and proof techniques for practical reasoning: propositional logic, predicate logic, structural induction; rigorous proofs in discrete mathematics and programming.

Three lectures, one tutorial (two hours); first term

**Prerequisite(s):** COMPSCI 1DM3, COMPSCI 1MD3 or 1XC3 or 1XD3

**Antirequisite(s):** COMPSCI 2DM3, SFWRENG 2DM3

First offered 2021-2022.

### COMPSCI 2ME3 - INTRODUCTION TO SOFTWARE DEVELOPMENT

Classes and inheritance, class invariants, interface specifications; object-oriented design patterns; exception handling; tools for interface documentation, testing, program analysis; requirements documentation; quality attributes; development models.

Three lectures one tutorial (two hours); second term

**Prerequisite(s):** COMPSCI 2DM3, 2S03

**Prerequisite(s) (EFFECTIVE 2021-2022):** COMPSCI 1XC3 and 1XD3

Co-requisite(s) (EFFECTIVE 2021-2022): COMPSCI 2LC3

**Antirequisite(s):** SFWRENG 2AA4, SFWRENG 3K04, MECHTRON 3K04

Effective 2021-2022, this course will be offered in first term.

### COMPSCI 2S03 - PRINCIPLES OF PROGRAMMING

Fundamental concepts of programming: expressions, statements, procedures, control structures, iteration, recursion, exceptions; precise memory model of traditional imperative programming languages; basic data structures: records, arrays, dynamic structures; use of libraries.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** COMPSCI 1MD3 or ENGINEER 1D04 or MATH 1MP3 or IBEHS 1P10

**Antirequisite(s):** COMPENG 2SH4, 2SC3, SFWRENG 2MP3, 2S03

Last offered 2020-2021.

### COMPSCI 2SD3 - CONCURRENT SYSTEMS

Models of concurrency: process algebras, Petri nets, temporal logics and model checking; concurrency as software structuring principle: processes, threads, synchronization mechanisms, resource management and sharing; deadlock, safety and liveness; design, verification and testing of concurrent systems.

Three lectures, one tutorial (two hours); second term

**Prerequisite(s):** COMPSCI 2C03, 2LC3 or 2DM3, 2ME3

**Co-requisite(s):** COMPSCI 2AC3

**Antirequisite(s):** COMPSCI 3SD3, SFWRENG 3BB4

First offered 2021-2022.

### COMPSCI 2XA3 - COMPUTER SCIENCE PRACTICE AND EXPERIENCE: SOFTWARE DEVELOPMENT SKILLS

Unix and shell programming, makefiles, version control; assembly basics, translating high-level language into assembly, parameter passing, arrays, recursion; compiling, debugging, profiling, and software optimizations.

Two lectures, one lab (three hours per week), first term

**Prerequisite(s):** COMPSCI 1MD3 or ENGINEER 1D04 or IBEHS 1P10

**Co-requisite(s):** COMPSCI 2S03

**Antirequisite(s):** SFWRENG 2XA3

*Last offered 2020-2021.*

### COMPSCI 2XB3 - COMPUTER SCIENCE PRACTICE AND EXPERIENCE: BINDING THEORY TO PRACTICE

Open-ended design of computational solutions to practical problems that involve both theoretical (algorithmic) analysis and implementation; solving computational problems through an experiential approach.

Two lectures, one lab (three hours), second term

**Prerequisite(s):** COMPSCI 2S03, COMPSCI 2XA3

**Co-requisite(s):** COMPSCI 2C03, 2ME3

**Antirequisite(s):** SFWRENG 2XB3

*Last offered 2020-2021.*



### COMPSCI 2XC3 - COMPUTER SCIENCE PRACTICE AND EXPERIENCE: ALGORITHMS AND SOFTWARE DESIGN

Implementation of computational solutions to practical problems that combine algorithmic design and analysis with software design principles, through an experiential approach in simulated workplace environments. Communication skills: Technical documentation and presentation.

Two lectures, one lab (three hours), second term

**Prerequisite(s):** COMPSCI 1XC3, 1XD3, 2C03, 2ME3

**Antirequisite(s):** COMPSCI 2XB3, SFWRENG 2XB3

First offered 2021-2022.

### COMPSCI 3AC3 - ALGORITHMS AND COMPLEXITY

Basic computability models; the Church-Turing thesis, complexity classes; P versus NP; NP-completeness, reduction techniques; algorithmic design strategies; flows, distributed algorithms, advanced techniques such as randomization.

Three lectures, one tutorial (one hour), second term

**Prerequisite(s):** COMPSCI 2C03 or SFWRENG 2C03, COMPSCI 2AC3 or 2FA3 or SFWRENG 2FA3

### COMPSCI 3DB3 - DATABASES

Data modelling, integrity constraints, principles and design of relational databases, relational algebra, SQL, query processing, transactions, concurrency control, recovery, security and data storage.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** COMPSCI 1FC3 or COMPSCI 2DM3

**Antirequisite(s):** COMPSCI 4DB3, SFWRENG 3DB3, 3H03, 4M03, 4DB3

Last offered 2021-2022.

### COMPSCI 3EA3 - SOFTWARE AND SYSTEM CORRECTNESS

Formal specifications in software and system development; validation; verification; presentation of information; practical experience in formal specification and tool-supported verification.

Three lectures; one tutorial (one hour); one term

**Prerequisite(s):** COMPSCI 2LC3 or 2DM3, 2AC3 or 2FA3, 2ME3, 2SD3 or 3SD3

Offered on an irregular basis.

### COMPSCI 3FP3 - FUNCTIONAL PROGRAMMING

Functional programming; lists and algebraic data types, pattern matching, parametric polymorphism, higher-order functions, reasoning about programs; lazy and strict evaluation; programming with monads; domain-specific languages.

Three lectures, one tutorial; one term

**Prerequisite(s):** COMPSCI 2DM3 or 2LC3, 2FA3 or 2AC3

**Antirequisite(s):** SFWRENG 3FP3

Offered on an irregular basis.

### COMPSCI 3GC3 - COMPUTER GRAPHICS

Mathematical foundations, the graphics pipeline, geometrical transformations, 3D visualization, clipping, illumination and shading models and the impact of graphics on society.

Three lectures, one tutorial (two hours every other week); one term

**Prerequisite(s):** MATH 1B03 or 1ZC3, and COMPSCI 2C03

**Antirequisite(s):** SFWRENG 3GC3

Offered on an irregular basis.

### COMPSCI 3I03 - COMMUNICATION SKILLS

Oral and written presentation skills; types and structure of technical documents; software documentation for the user; formulating and presenting proposals.

Three hours (lectures, discussion, group project, seminars); first term

**Prerequisite(s):** Registration in Level II or above of Honours Computer Science or Honours Business Informatics

**Antirequisite(s):** COMPSCI 2CS3, 2I03, SFWRENG 3I03

**Cross-list(s):** SFWRENG 3I03

*Not open to students with credit or registration in ISCI 1A24 A/B.*

### COMPSCI 3IS3 - INFORMATION SECURITY

Basic principles of information security; threats and defences; cryptography; introduction to network security and security management.

Three lectures; one term

**Prerequisite(s):** COMPSCI 2AC3 or 2FA3 or SFWRENG 2FA3, and COMPSCI 2C03 or SFWRENG 2C03

*Offered on an irregular basis.*

### COMPSCI 3MI3 - PRINCIPLES OF PROGRAMMING LANGUAGES

Principles of definition of and reasoning about programming languages and domain-specific languages; use of semantics for interpretation and in program analyses for correctness, security and efficiency.

Three lectures; one tutorial (one hour); first term

**Prerequisite(s):** COMPSCI 2C03, and COMPSCI 2LC3 or 2DM3, and COMPSCI 2AC3 or 2FA3, and COMPSCI 2ME3

### COMPSCI 3N03 - COMPUTER NETWORKS AND SECURITY

Physical networks, TCP/IP protocols, switching methods, network layering and components, network services. Information security, computer and network security threats, defence mechanisms, encryption.

Three lectures, one tutorial (one hour); second term

**Prerequisite(s):** COMP SCI 3MH3 or credit or registration in COMPSCI 3SH3

**Antirequisite(s):** COMP SCI 3CN3, 3C03, COMPSCI 4C03, SFWRENG 4C03, COMPENG 4DN4

First offered 2022-2023.

### COMPSCI 3RA3 - SOFTWARE REQUIREMENTS AND SECURITY CONSIDERATIONS

Software requirements gathering. Critical systems requirements gathering. Security requirements. Traceability of requirements. Verification, validation, and documentation techniques. Software requirements quality attributes. Security policies. Measures for data confidentiality. Design principles that enhance security. Access control mechanisms.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** COMPSCI 2AC3 or 2FA3, COMPSCI 2ME3

**Antirequisite(s):** SFWRENG 3RA3

**Cross-list(s):** SFWRENG 3RA3

### COMPSCI 3SD3 - CONCURRENT SYSTEMS

Models of concurrency: process algebras, Petri nets, temporal logics and model checking; concurrency as software structuring principle: processes, threads, synchronization mechanisms, resource management and sharing; deadlock, safety and liveness; design, verification and testing of concurrent systems.

Three lectures, one tutorial (two hours); first term

**Prerequisite(s):** COMPSCI 2C03, 2FA3, 2ME3

**Antirequisite(s):** SFWRENG 3BB4

Last offered 2021-2022.

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### COMPSCI 3SH3 - COMPUTER SCIENCE PRACTICE AND EXPERIENCE: OPERATING SYSTEMS

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Processes and threads, synchronization and communication; scheduling, memory management; file systems; resource protection; structure of operating systems.

Two lectures, one tutorial, two labs (one hour each); second term

**Prerequisite(s):** COMPSCI 2SD3 or 3SD3, COMPSCI 2C03, and COMPSCI 2GA3

**Antirequisite(s):** SFWRENG 3SH3

Effective 2021-2022, this course will be offered in first term.

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### COMPSCI 3TB3 - SYNTAX-BASED TOOLS AND COMPILERS

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Lexical analysis, syntax analysis, type checking; syntax-directed translation, attribute grammars; compiler structure; implications of computer architecture; mapping of programming language concepts; code generation and optimization.

Two lectures, one tutorial, two labs (one hour each); second term

**Prerequisite(s):** COMPSCI 2C03 or SFWRENG 2C03, and COMPSCI 2GA3 or SFWRENG 2GA3 or 3GA3, and COMPSCI 2AC3 or 2FA3 or SFWRENG 2FA3, and COMPSCI 3MI3 or registration in Level IV or above of a Software Engineering program

First offered 2022-2023.

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### COMPSCI 4AD3 - ADVANCED DATABASES

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Advanced topics in database systems technology and design. Topics include: query processing; query optimization; data storage; indexing; crash recovery; physical database design; introductory data mining techniques.

Three lectures, one tutorial; one term

**Prerequisite(s):** COMPSCI 3DB3

**Antirequisite(s):** SFWRENG 4AD3

**Cross-list(s):** SFWRENG 4AD3

Offered on an irregular basis.

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### COMPSCI 4AR3 - SOFTWARE ARCHITECTURE

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Software architecture concepts; architectural styles; design patterns, components, libraries, configurations; modelling languages; software re-engineering.

Three lectures; one term

**Prerequisite(s):** Credit or registration in COMPSCI 3RA3 or 3SR3

Offered on an irregular basis.

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### COMPSCI 4C03 - COMPUTER NETWORKS AND SECURITY

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Physical networks, TCP/IP protocols, switching methods, network layering and components, network services. Information security, computer and network security threats, defence mechanisms, encryption.

Three lectures, one tutorial (one hour); second term

**Prerequisite(s):** Credit or registration in COMP SCI 3MH3 or COMPSCI 3SH3

**Antirequisite(s):** COMPSCI 3CN3, 3C03, SFWRENG 4C03, COMPENG 4DN4

Last offered 2022-2023.

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### COMPSCI 4DC3 - DISTRIBUTED COMPUTING

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Models of distributed computation, formal reasoning about distributed systems, time and message complexity, distributed agreement under adversarial attacks, distributed coordination and symmetry breaking, peer-to-peer computing, simulation as a tool for building more advanced functionality, actor-model programming.

Three lectures, one tutorial; one term

**Prerequisite(s):** One of COMPSCI 2C03 or SFWRENG 2C03 or SFWRENG 2MD3, and one of COMPSCI 2SD3 or 3SD3 or SFWRENG 3BB4 or SFWRENG 3SH3

Offered on an irregular basis.

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### COMPSCI 4E03 - PERFORMANCE ANALYSIS OF COMPUTER SYSTEMS

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Use of queuing models and simulation to predict computer system performance and find bottlenecks in a system. Types of models, distributions. Markov models. Modelling storage and network behaviour, locks, critical sections, concurrency. Introduction to analytical system reliability.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** One of STATS 2D03, 2MA3, 3N03 or 3Y03

**Antirequisite(s):** SFWRENG 4E03

**Cross-list(s):** SFWRENG 4E03

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### COMPSCI 4EN3 A/B - SOFTWARE ENTREPRENEURSHIP

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Issues in starting up a new software enterprise, with the focus on independent startups. This course will cover the technical, financial, legal and operational issues encountered by software startups. Small groups of students will take an idea and turn it into a prototype, a business plan, and a sales pitch. Lectures will cover issues from team formation to appropriate software development processes to patent protection to venture capital.

Three lectures; two terms

**Prerequisite(s):** Registration in Level III or IV of any Computer Science program

Offered on an irregular basis.

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### COMPSCI 4F03 - PARALLEL COMPUTING

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Parallel architectures, design and analysis of parallel algorithms; distributed-memory, shared-memory and GPU computing; communication cost, scalability; MPI, OpenMP and OpenACC; tuning parallel programs for performance.

Three lectures, one tutorial (one hour); one term

**Prerequisite(s):** COMPSCI 2SD3 or credit or registration in COMPSCI 3SD3.

Completion of COMPSCI 3N03 or 4C03 is recommended.

**Antirequisite(s):** SFWRENG 4F03

**Cross-list(s):** SFWRENG 4F03

Offered on an irregular basis.

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### COMPSCI 4HC3 - HUMAN COMPUTER INTERFACES

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Design of user interfaces. Principles of good interface design. Task-oriented design. User experience design. Inclusive design. Communicating with graphics. Modes and mode awareness problem. Human cognition (memory, perception, motor systems). Help systems. Interface design tools.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** COMPSCI 2C03

**Antirequisite(s):** SFWRENG 4D03, 4HC3

**Cross-list(s):** SFWRENG 4HC3

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### COMPSCI 4ML3 - INTRODUCTION TO MACHINE LEARNING

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Regression, Classification and Decision Theory, Bias-Variance Trade-off, Linear Models, Kernel Methods, Probabilistic Models, Neural Networks, Model Aggregation, Unsupervised Learning.

Three lectures, one tutorial; one term

**Prerequisite(s):** One of COMPSCI 2C03 or SFWRENG 2C03 or SFWRENG 2MD3. One of STATS 1L03, STATS 2D03, STATS 3Y03. One of COMPSCI 4003 or 4X03 or SFWRENG 3003 or 4X03 is recommended.

Offered on an irregular basis.

### COMPSCI 4003 - LINEAR OPTIMIZATION

Modelling and solutions for engineering and science problems using linear optimization, including networks, transportation, assignment, and scheduling problems. Solution methods include combinatorial algorithms such as simplex methods, primal-dual formulations, branch and bound formulations for mixed integer programming, and heuristics.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** COMPSCI 2C03

**Antirequisite(s):** SFWRENG 3003, 4003

**Cross-list(s):** SFWRENG 3003

### COMPSCI 4TB3 - SYNTAX-BASED TOOLS AND COMPILERS

Lexical analysis, syntax analysis, type checking; syntax-directed translation, attribute grammars; compiler structure; implications of computer architecture; mapping of programming language concepts; code generation and optimization.

Two lectures, one tutorial, two labs (one hour each); second term

**Prerequisite(s):** COMPSCI 2C03 or SFWRENG 2C03, and COMPSCI 2GA3 or SFWRENG 2GA3 or 3GA3, and COMPSCI 2AC3 or 2FA3 or SFWRENG 2FA3, and COMPSCI 3MI3 or registration in Level IV or above of a Software Engineering program

Last offered 2022-2023.

### COMPSCI 4TE3 - CONTINUOUS OPTIMIZATION

Fundamental algorithms and duality concepts of continuous optimization. Motivation, applicability, information requirements and computational cost of the algorithms is discussed. Practical problems will illustrate the power of continuous optimization techniques.

Three lectures, one tutorial (one hour); one term

**Prerequisite(s):** One of MATH 2A03 or ZZ3

**Antirequisite(s):** SFWRENG 4TE3

**Cross-list(s):** SFWRENG 4TE3

Offered on an irregular basis.

### COMPSCI 4TH3 - THEORY OF COMPUTATION

Formal languages, models of computation, decidability, reduction techniques, time and space complexity classes.

Three lectures, one tutorial (one hour); one term

**Prerequisite(s):** COMPSCI 2AC3 or 2FA3, 2C03

**Antirequisite(s):** SFWRENG 4TH3

**Cross-list(s):** SFWRENG 4TH3

Offered on an irregular basis.

### COMPSCI 4TI3 - FUNDAMENTALS OF IMAGE PROCESSING

Discrete-time signals and systems, digital filter design, photons to pixels, linear filtering, edge-detection, non-linear filtering, multi-scale transforms, motion estimation.

Three lectures; one term

**Prerequisite(s):** Registration in Level III or above of a program offered by the Department of Computing and Software

Offered on an irregular basis.

### COMPSCI 4WW3 - WEB SYSTEMS AND WEB COMPUTING

Network protocols underlying the world wide web; client-side programming: markup, styles, scripts, design, mobile/desktop; server-side programming: databases, dynamic languages; web services; cloud technologies; security.

Three lectures; one term

**Prerequisite(s):** COMPSCI 2ME3 or SFWRENG 2AA4; completion of COMPSCI 2DB3 or 3DB3, 3IS3, or 3N03 or 4C03 is recommended.

Offered on an irregular basis.

### COMPSCI 4X03 - SCIENTIFIC COMPUTATION

Computer arithmetic, stability, sensitivity. Numerical methods for polynomial manipulation, interpolation, data fitting, integration, differentiation, solving linear and non-linear systems, ordinary differential equations and eigenvalue problems.

Three lectures, one tutorial (one hour); second term

**Prerequisite(s):** MATH 1AA3 or 1ZB3, and MATH 1B03 or 1ZC3

**Antirequisite(s):** COMPENG 3SK3, 3SK4, SFWRENG 3X03, 4X03

**Cross-list(s):** SFWRENG 4X03

### COMPSCI 4Z03 - DIRECTED READINGS

Directed readings in an area of computer science of interest to the student and the instructor.

**Prerequisite(s):** Permission of the Chair of the Department and registration in Level IV of an Honours program in Computer Science

### COMPSCI 4ZP6 A/B - CAPSTONE PROJECT

Students, in teams of two to four students, undertake a substantial project in an area of computer science by performing each step of the software life cycle. The lecture component presents an introduction to software management and project management.

Lecture component in term one, weekly tutorials; two terms

**Prerequisite(s):** Registration in Level IV of an Honours Computer Science program, Honours Business Informatics or Honours Computer Science as a Second Degree (B.A.Sc.)

## Earth Sciences

Courses in Earth Sciences are offered by the School of Earth, Environment & Society.

General Science Building, Room 206, ext. 24535

<http://www.science.mcmaster.ca/~geo/>

#### School Notes

1. Students aiming to fulfill the academic requirements for professional registration of Geoscientists in Ontario should seek academic advice from the School of Earth, Environment & Society during March counselling in Level II to ensure that their program and course choices are appropriate.
2. Students are advised that not all courses will be offered in every year.

#### Courses

*If no prerequisite is listed, the course is open.*

See also courses in *Environmental Science* and *Environment & Society*.

### EARTHSC 1G03 - EARTH AND THE ENVIRONMENT

An introduction to Earth's composition and processes including topics such as rocks, fossils, plate tectonics, earthquakes, volcanoes, and glaciers. We will consider the interactions between people and Earth's environments and the implications for sustainable development. Two field trips will be held during regular lab periods.

Three lectures, one lab (two hours); one term

**Antirequisite(s):** ENVIRSC 1G03

*Not open to students with credit or registration in ISCI 1A24 A/B.*

### EARTHSC 2E03 - EARTH HISTORY

Geological evolution of the Earth and paleontological evidence for the evolution of marine life, with emphasis on the geological history of North America.

Students enrolling in this course must purchase a field kit available through the School of Earth, Environment & Society.

Two lectures, one lab (three hours); one term

**Prerequisite(s):** EARTHSC 1G03, ENVIRSC 1G03 or ISCI 1A24 A/B

**Antirequisite(s):** ENVIRSC 2E03

*Not open to students with credit or registration in ISCI 2A18 A/B*

### EARTHSC 2FE3 - INTRODUCTION TO FIELD METHODS IN EARTH SCIENCES

A field camp to introduce students to field equipment and methodologies used by earth and environmental scientists focusing on recognition and description of rock types, construction of geological maps and cross-sections. Most of this course occurs outside the regular academic term, usually the first two weeks of May; details and applications are available in January.

Students enrolling in this course must pay both the incidental fees as prescribed by the School of Earth, Environment & Society and the regular tuition fees. Students intending to enrol in this course must submit an application by February 15 of the academic year prior to registration.

Application forms are available from the School of Earth, Environment & Society main office after January 15. Students will be informed of acceptance of their application by March 1 subject to fulfillment of the requirements.

**Prerequisite(s):** One of EARTHSC 1G03, ENVIRSC 1G03, ISCI 1A24 A/B; and permission of the instructor

### EARTHSC 2GG3 - NATURAL DISASTERS

A study of natural processes including plate tectonics, earthquakes, volcanoes, landslides, river erosion and climate change and their impacts on human populations.

Lectures (three hours); one term

**Prerequisite(s):** Registration in Level II or above

### EARTHSC 2K03 - OPTICAL CRYSTALLOGRAPHY AND MINERALOGY

Introduction to crystallography, optical theory, and the polarizing microscope. Identification of minerals in igneous and sedimentary rocks and discussion of their structure and chemistry.

Two lectures, one lab (three hours); one term

**Prerequisite(s):** ENVIRSC 1G03 or ISCI 1A24 A/B

### EARTHSC 2T03 - GEOLOGY OF CANADA

Description and understanding of the tectonic processes involved in the development and evolution of the Precambrian rocks of Canada.

Students enrolling in this course must purchase a field kit available through the School of Earth, Environment & Society.

Two lectures, one lab (three hours); one term

**Prerequisite(s):** One of EARTHSC 1G03, ENVIRSC 1G03, ISCI 1A24 A/B

### EARTHSC 3CC3 - EARTH'S CHANGING CLIMATE

The earth's climatic history including natural causes of past climate change and human influences on climate will be explored.

Lectures (three hours); one term

**Prerequisite(s):** One of EARTHSC 2C03, 2E03, 2Q03, ENVIRSC 2C03, 2E03, 2Q03, ISCI 2A18 A/B; and registration in Level III or above

**Antirequisite(s):** ENVIRSC 3CC3

### EARTHSC 3E03 - CLASTIC SEDIMENTARY ENVIRONMENTS

Sedimentary processes, stratigraphy and depositional environments of clastic systems. A mandatory local field trip will be included.

Two lectures, one lab (two hours); one term

**Prerequisite(s):** One of EARTHSC 2E03, ENVIRSC 2E03, ISCI 2A18 A/B

**Antirequisite(s):** ENVIRSC 3E03

### EARTHSC 3FE3 - FIELD CAMP

A field camp to introduce students to field equipment and methodologies used by earth and environmental scientists. Most of this course occurs outside the regular academic term, usually the two weeks preceding the start of term in September; details and applications are available in March.

Students enrolling in this course must pay both the incidental fees as prescribed by the School of Earth, Environment & Society and the regular tuition fees. Students intending to enrol in this course must submit an application by April 1 of the academic year prior to registration. Application forms are available from the School of Earth, Environment & Society main office after March 1. Students will be informed of acceptance of their application by April 15 subject to fulfillment of the requirements.

**Prerequisite(s):** One of EARTHSC 2E03, ENVIRSC 2E03, ISCI 2A18 A/B; and EARTHSC 2T03; and registration in Level III or above of Honours Earth and Environmental Sciences; and permission of the instructor

### EARTHSC 3K03 - PETROLOGY

Introduction to igneous and metamorphic petrology, including thin section examination of rock suites, use of phase diagrams in petrology, and discussion of petrogenesis.

Two lectures, one lab (three hours); one term

**Prerequisite(s):** EARTHSC 2K03

### EARTHSC 3RD3 - RESEARCH DESIGN AND DISSEMINATION IN EARTH AND ENVIRONMENTAL SCIENCES

Review of approaches to the formulation of research questions, and to the gathering and interpretation of evidence, using a variety of environmental and earth sciences-based topics. The course includes the formulation of a research proposal, and develops skills in the communication of research results.

Two lectures, one lab (two hours); one term

**Prerequisite(s):** Registration in Level III or above of an Honours B.Sc. program in the School of Earth, Environment & Society (Faculty of Science)

### EARTHSC 3V03 - ENVIRONMENTAL GEOPHYSICS

Introduction to principles and applications of geophysics in groundwater and environmental investigations. Practical demonstrations in magnetics, gravity, shallow seismic, radar, borehole logging, surface EM and electrical methods.

Two lectures, one lab (three hours); one term

**Prerequisite(s):** EARTHSC 2E03 or ENVIRSC 2E03; and one of PHYSICS 1A03, 1C03; or ISCI 2A18 A/B

**Antirequisite(s):** EARTHSC 4VW3

### EARTHSC 3W03 - PHYSICAL HYDROGEOLOGY

Mechanisms and processes of water movement in the subsurface including the saturated zone (groundwater) and the unsaturated zone (soil water).

Two lectures, one lab (three hours); one term

**Prerequisite(s):** One of CIVENG 2J04, EARTHSC 2B03, 2W03, ENVIRSC 2B03, 2W03; and one of ISCI 1A24 A/B, MATH 1A03, 1B03, 1K03, 1LS3, 1M03, 1N03, 1ZA3

**Antirequisite(s):** ENVIRSC 3W03



### EARTHSC 3Z03 - STRUCTURAL GEOLOGY

Introduction to mapping and geometric description of geologic structures and analysis of stress and strain in the subsurface.

Two lectures, one lab (three hours); one term

**Prerequisite(s):** One of EARTHSC 2E03, 2T03, ENVIRSC 2E03, ISCI 2A18 A/B. Completion of PHYSICS 1A03 (or 1C03) is strongly recommended.

### EARTHSC 4CC3 - STABLE ISOTOPES IN EARTH AND ENVIRONMENTAL SYSTEMS

Stable isotopes are widely used in modern earth and environmental sciences because of their unique chemical properties that enable us to trace past and current environmental processes. This course will discuss the basic principles of stable isotope geochemistry and their applications to paleo and modern climate and environmental reconstruction.

Two lectures, one lab (three hours); one term

**Prerequisite(s):** One of EARTHSC 2Q03, EARTHSC 3CC3, ENVIRSC 2Q03, 3CC3. One of EARTHSC 2E03, ENVIRSC 2E03, ISCI 2A18 A/B is strongly recommended.

**Co-requisite(s):** WHMIS 1A00 if not already completed. Must be completed prior to the first lab.

**Antirequisite(s):** ENVIRSC 4CC3

### EARTHSC 4FF3 - TOPICS OF FIELD RESEARCH

Selected topics in field research in the environmental and earth sciences.

Topics may vary from year to year, and the timing of the course will depend on the offerings. Details will be posted in the School.

Students enrolling in this course must pay the incidental fees, as prescribed by the School of Earth, Environment & Society, and the regular tuition fees.

Students intending to enrol in this course must submit an application by April 1 of the academic year prior to registration. Application forms are available from the School of Earth, Environment & Society main office after March 1.

Students will be informed of acceptance of their application by April 15 subject to fulfillment of the requirements.

**Prerequisite(s):** Registration in Level III or above of an Honours B.Sc. program and permission of the instructor

**Antirequisite(s):** ENVIRSC 4FF3

*EARTH SC 4FF3 may be repeated, if on a different topic, with the permission of the School of Earth, Environment & Society.*

### EARTHSC 4G03 - GLACIAL SEDIMENTS AND ENVIRONMENTS

The development and movement of glaciers, glacial depositional processes and sedimentary successions in terrestrial, lacustrine and marine environments. A mandatory one day, local field trip will be included.

Students enrolling in this course must pay both the incidental fees as prescribed by the School of Earth, Environment & Society and the regular tuition fees.

Two lectures, one lab (two hours); one term

**Prerequisite(s):** One of EARTHSC 3E03, ENVIRSC 3E03

**Antirequisite(s):** ENVIRSC 4G03

### EARTHSC 4J03 - BASIN ANALYSIS

Focus on the evolution of sedimentary basins in a global context, based upon their structural and stratigraphic styles. Factors that affect basin evolution such as sea-level change, sediment supply and climate will be discussed. A review of the principles of sequence stratigraphy and its application to geologists, mining and petroleum exploration will be explored.

Two lectures, one lab (three hours); one term

**Prerequisite(s):** One of EARTHSC 3E03, ENVIRSC 3E03 ; and EARTHSC 3Z03

### EARTHSC 4MT6 A/B - SENIOR THESIS

Students will select research topics and prepare a thesis either individually or in teams.

Students intending to enrol in this course must submit an application to the course coordinator by April 1 of the academic year prior to registration. Application forms are available from the School of Earth, Environment & Society main office after March 1. Students will be informed of acceptance of their application on April 15 subject to fulfillment of the GPA requirement.

Two terms

**Prerequisite(s):** One of EARTHSC 3RD3, ENVSOCTY 3MA3, GEOG 3MA3; and registration in Level IV of an Honours program in the School of Earth, Environment & Society; and a GPA of at least 7.5; and permission of the course coordinator

**Cross-list(s):** ENVIRSC 4MT6 A/B, ENVSOCTY 4MT6 A/B

*Not open to students with credit or registration in ISCI 4A12 A/B.*

### EARTHSC 4P03 - CORAL REEF ENVIRONMENTS

Modern and ancient reef environments and their geological evolution. Students are encouraged to take concurrently Topics in Field Research (EARTHSC 4FF3) which studies coral reef systems in the Bahamas during the Winter mid-session break.

Two lectures, one lab (three hours); one term

**Prerequisite(s):** One of EARTHSC 2E03, ENVIRSC 2E03, ISCI 2A18 A/B

**Antirequisite(s):** EARTHSC 3P03, ENVIRSC 3P03

### EARTHSC 4T03 - PLATE TECTONICS AND ORE DEPOSITS

Synthesis of plate tectonics, with application to crustal evolution and genesis of ore deposits.

Two lectures, one lab (two hours); one term

**Prerequisite(s):** One of EARTHSC 2E03, ENVIRSC 2E03, ISCI 2A18 A/B.

EARTHSC 2K03 and EARTHSC 2T03 are strongly recommended.

### EARTHSC 4WB3 - CONTAMINANT HYDROGEOLOGY

Physical and chemical aspects of the fate and transport of contaminants in soils and groundwater, including fundamental processes, multiphase flow and groundwater remediation.

One lecture (two hours), one lab (two hours); one term

**Prerequisite(s):** Credit or registration in EARTHSC 3W03 or ENVIRSC 3W03

**Antirequisite(s):** ENVIRSC 4WB3

## Economics

Courses in Economics are administered by the Department of Economics.

Kenneth Taylor Hall, Room 426, ext. 22765

<http://www.economics.mcmaster.ca>

### Department Notes

1. Not all the Economics courses listed in this Calendar are taught every year. Students are advised to consult the timetable published by the Office of the Registrar, or the Department website for information on current offerings.
2. Students who complete ECON 2I03 are well placed to enrol in the Canadian Securities Course (a correspondence course operated by the Canadian Securities Institute which represents the licensing requirement for individuals training to become investment advisors).
3. Students interested in an M.A. in Economics should consider the Honours Economics (Specialist Option). Also note that some, but not all, graduate programs in Economics require ECON 3G03, 4T03 and 4TT3. For this reason, students interested in an M.A. in Economics are advised to consult

a departmental advisor for more detailed information.

4. MATH 1M03 is required for any student planning to transfer into Commerce and strongly recommended for any student with a minor in Business or Finance. MATH 1M03 is required for ECON 3G03 and is strongly recommended for students planning any graduate study in economics.

#### Courses

If no prerequisite is listed, the course is open.

### ECON 1B03 - INTRODUCTORY MICROECONOMICS

An introduction to the method and theory of microeconomics, and their application to the analysis of contemporary economic problems.

In-class and online; one term

**Antirequisite(s):** ARTSSCI 2E03, ECON 1BX3

ECON 1B03 and ECON 1BB3 can be taken in either order or concurrently.

### ECON 1BA3 - INTRODUCTORY MACROECONOMICS FOR ECONOMICS STUDENTS

An introduction to the method and theory of macroeconomics, and their application to the analysis of contemporary economic problems.

In-class and online; one tutorial; one term

**Antirequisite(s):** ARTSSCI 2E03, ECON 1BB3

Open to students enrolled in Economics I only.

ECON 1B03 and 1BA3 can be taken in either order or concurrently.

### ECON 1BB3 - INTRODUCTORY MACROECONOMICS

An introduction to the method and theory of macroeconomics, and their application to the analysis of contemporary economic problems.

In-class and online; one tutorial; one term

**Antirequisite(s):** ARTSSCI 2E03, ECON 1BA3

ECON 1B03 and 1BB3 can be taken in either order or concurrently.

### ECON 1BX3 - INTRODUCTORY MICROECONOMICS FOR BUSINESS STUDENTS

An introduction to the method and theory of microeconomics, and their application to the analysis of contemporary economic problems.

In-class and online; one term

**Antirequisite(s):** ARTSSCI 2E03, ECON 1B03

Open only to students enrolled in Business I or the Integrated Business & Humanities Program.

ECON 1BX3 and ECON 1BB3 can be taken in either order or concurrently.

### ECON 2A03 - ECONOMICS OF LABOUR-MARKET ISSUES

This course applies economic analysis to issues of importance in the labour market. Topics vary and may include: women in the Canadian labour market; discrimination in hiring and promotion; unemployment; job loss and workplace closing; work sharing.

Three lectures; one term

**Prerequisite(s):** ECON 1B03 and 1BB3; or ARTSSCI 2E03

**Cross-list(s):** LABRST 3A03

Not open to students with credit or registration in ECON 3D03.

### ECON 2B03 - ANALYSIS OF ECONOMIC DATA

Application of statistical concepts to the analysis of economic data, with attention to Canadian sources. Regression analysis and the use of spreadsheets are included. Topics may also include index numbers.

Three lectures; one term

**Prerequisite(s):** ECON 1B03, 1BB3 (or ARTSSCI 2E03); and one of MATH 1F03, 1K03, Grade 12 Calculus and Vectors U (or Grade 12 Advanced Functions and

Introductory Calculus U); and STATS 1L03 or Grade 12 Mathematics of Data Management U

**Antirequisite(s):** COMMERCE 2QA3, ENVSOCTY 3MB3, GEOG 3MB3

Not open to students with credit or registration in ARTSSCI 2R03, CHEMENG 4C03, ELECENG 3TQ4, HTHSCI 2A03, MATLS 3J03, POLSCI 3N06 A/B, 3NN3, PNB 2XE3, 3XE3, SOCIOI 3H06 A/B, STATS 2B03, 2D03, 2MB3, 3Y03. Not open to students enrolled in any Business 1 or Bachelor of Commerce program.

### ECON 2CC3 - HEALTH ECONOMICS AND ITS APPLICATION TO HEALTH POLICY

Economic analysis of health and health care, with a special emphasis on policy issues in the Canadian health care system.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** HEALTHST 2C03

**Cross-list(s):** HLTHAGE 2C03

Not open to students registered in an Economics program or with credit or registration in ECON 2G03, 2X03 or 3Z03. Students excluded from ECON 2CC3 or those wishing to do further work in Health Economics are referred to ECON 3Z03. May not be used to satisfy Economics unit requirements by students in Economics programs or a minor in Economics.

### ECON 2D03 - ECONOMIC ISSUES

Applications of economics to important public issues, from a general interest perspective. Since topics vary from year to year, interested students should consult the Economics Department for further details.

Three lectures; one term

**Prerequisite(s):** ECON 1B03 and ECON 1BB3 (or ARTSSCI 2E03)

### ECON 2GG3 - INTERMEDIATE MICROECONOMICS II

Theory of consumer choice and applications to intertemporal choice and labour supply decisions; theory of exchange, welfare economics and general equilibrium analysis.

Three lectures; one term

**Prerequisite(s):** ECON 2G03 or ECON 2X03; and one of MATH 1F03, MATH 1M03, Grade 12 Calculus and Vectors U (or Grade 12 Advanced Functions and Introductory Calculus U) or equivalent

Not open to students with credit or registration in ECON 2Z03 or 2ZZ3.

### ECON 2H03 - INTERMEDIATE MACROECONOMICS I

Determinants of national income, employment, the rate of interest and the price level; introduction to the open economy.

Three lectures; one term

**Prerequisite(s):** ECON 1BB3 (or ARTSSCI 2E03); and one of MATH 1K03 or Grade 12 Advanced Functions U. Students without credit in one of MATH 1F03, 1M03, Grade 12 Calculus and Vectors U (or Grade 12 Advanced Functions and Introductory Calculus U) or equivalent are strongly advised to register in MATH 1F03 or MATH 1M03, concurrently with ECON 2H03.

### ECON 2HH3 - INTERMEDIATE MACROECONOMICS II

This course uses macroeconomic theory based on microeconomic underpinnings to study common topics including business cycles, growth and financial crises.

Three lectures; one term

**Prerequisite(s):** ECON 2H03; and one of MATH 1F03, 1M03, Grade 12 Calculus and Vectors U (or Grade 12 Advanced Functions and Introductory Calculus U) or equivalent

### ECON 2I03 - FINANCIAL ECONOMICS

Detailed investigation of the financial sector. Topics include the role of capital markets in facilitating investment and growth, bond markets, stock markets, financial statements and taxation.

Three lectures; one term

**Prerequisite(s):** ECON 1B03 and 1BB3 (or ARTSSCI 2E03)

*Not open to students with credit or registration in COMMERCE 2FA3. Not open to students enrolled in any Business 1 or Bachelor of Commerce program.*

### ECON 2J03 - ENVIRONMENTAL ECONOMICS

Allocation of environmental services: efficiency and market failure; measuring environmental benefits; environmental regulation in Canada and elsewhere: taxes, tradable permits and other instruments; further topics.

Three lectures; one term

**Prerequisite(s):** ECON 1B03 (or ARTSSCI 2E03)

### ECON 2K03 - ECONOMIC HISTORY OF CANADA

A survey of the changing structure of the Canadian economy from the colonial period to the present; early significance of primary production for export markets; emerging domestic markets and industrialization; government's role in promoting the development of the national economy.

Three lectures; one term

**Prerequisite(s):** ECON 1B03 and 1BB3 (or ARTSSCI 2E03)

### ECON 2N03 - PUBLIC POLICY TOWARD BUSINESS

The economic effects of federal competition policy and the regulation of business by all levels of government.

Three lectures; one term

**Prerequisite(s):** ECON 1B03 (or ARTSSCI 2E03)

**Antirequisite(s):** ECON 3N03

### ECON 2P03 - ECONOMICS OF PROFESSIONAL SPORTS

The application of economic principles to team and individual professional sports. Theory of sports leagues, demand for sports, the market for athletes, broadcasting rights, competition policy issues, the public finance aspects of stadium financing.

Three lectures; one term

**Prerequisite(s):** ECON 1B03 (or ARTSSCI 2E03)

### ECON 2Q03 - ECONOMICS OF BAD BEHAVIOUR

This course will apply economic principles to analyze human behaviour. Topics include criminal behaviours, legal but risky behaviour, and the behaviour of corporate and public sector organizations.

Fully on-line; one term

**Prerequisite(s):** ECON 1B03 and 1BB3; or ARTSSCI 2E03

### ECON 2T03 - ECONOMICS OF TRADE UNIONISM AND LABOUR

Topics include the economics of the labour market, of trade unionism, of work, the impact of trade unions on the labour market, economic theories of strikes and trade unions and the state.

Three lectures; one term

**Prerequisite(s):** ECON 1B03 and 1BB3 (or ARTSSCI 2E03)

**Cross-list(s):** LABRST 3B03

### ECON 2Z03 - INTERMEDIATE MICROECONOMICS I

Theory of consumer choice; elements of production and cost; price and output determination in perfectly competitive markets.

Two lectures; one tutorial; one term

**Prerequisite(s):** ECON 1B03 (or ARTSSCI 2E03); and credit or registration in one of MATH 1A03, 1LS3, or 1M03 (or equivalent such as ARTSSCI 1D06 A/B, MATH 1N03, 1X03, 1Z04, or 1ZA3)

**Antirequisite(s):** ECON 2G03, ECON 2X03

### ECON 2Z23 - INTERMEDIATE MICROECONOMICS II

Firm and consumer behaviour in imperfectly competitive markets and the markets for factors of production; the role of taxes and subsidies; theory of exchange, welfare economics and general equilibrium analysis. May include other special topics.

Three lectures; one term

**Prerequisite(s):** ECON 2Z03; and one of MATH 1A03, 1LS3, or 1M03 (or equivalent such as ARTSSCI 1D06 A/B, MATH 1N03, 1X03, 1Z04, or 1ZA3)

**Antirequisite(s):** ECON 2GG3, ECON 2X03

### ECON 3B03 - PUBLIC SECTOR ECONOMICS: EXPENDITURES

Theory and practice of public finance. Topics are selected from growth of the public sector, market failure, theory of public goods, incentive mechanisms, logic of group decisions and the political process, theory of benefit-cost analysis, intergovernmental fiscal relations, government budgeting.

Three lectures; one term

**Prerequisite(s):** ECON 2G03, 2Z03 or ECON 2X03

### ECON 3BE3 - BEHAVIOURAL ECONOMICS

Economic theory rests upon the assumptions that all economic actors (consumers, firms, governments) are fully rational and narrowly self-interested. Behavioural economics examines the consequences and realism of these assumptions by designing laboratory and field experiments and conducting empirical analyses that test economic theory and its core assumptions and by incorporating psychologically plausible assumptions and motivations into economic theory. This course provides a survey of some of the central and current topics in behavioural economics.

Three lectures; one term

**Prerequisite(s):** ECON 2G03, 2Z03 or 2X03

### ECON 3C03 - PUBLIC SECTOR ECONOMICS: TAXATION

Theory and practice of public finance: analysis and comparison of the efficiency, equity and distribution effects of the taxation of income, wealth and expenditure, analysis of social insurance, intergovernmental fiscal relations.

Three lectures; one term

**Prerequisite(s):** ECON 2G03, 2Z03 or ECON 2X03

### ECON 3D03 - LABOUR ECONOMICS

Introduction to the economics of the labour market; demand for labour by the firm and industry; supply of labour by the individual; investment in human capital.

Three lectures; one term

**Prerequisite(s):** ECON 2G03, 2Z03 or ECON 2X03

*Not open to students with credit or registration in ECON 2A03.*

### ECON 3E03 - APPLIED ECONOMETRICS

Formerly ECON 3WW3

Students acquire hands-on experience, using statistical software, in the

application of econometric methods to empirically analyze economic issues. This course emphasizes understanding economic data, economic model estimation, hypothesis testing, and interpretation of results.

Three hours; one tutorial; one term

**Prerequisite(s):** ECON 2G03, 2Z03 or 2X03; and 2H03; and 2B03 and enrolment in an Honours Economics program

**Antirequisite(s):** ECON 3U03 [Inactive], ECON 3WW3, ECON 3EE3  
ECON 2B03 may be substituted with one of CHEMENG 4C03, COMMERCE 2QA3, POLSCI 3N06 A/B, 3NN3, PNB 2XE3, 3XE3, SOCIOL 3H06 A/B, STATS 2D03 or another course that is approved by a departmental counselor as equivalent to ECON 2B03.

Not open to students with credit in STATS 2MB3, 3D03 or credit or registration in ECON 4G03.

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### ECON 3EE3 - ECONOMETRICS I

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Formerly ECON 3U03

Elaboration of regression techniques developed in ECON 2B03 and their applications. Problems of inference and interpretation in the analysis of economic data. Introduction to forecasting in economics.

Three lectures; one tutorial; one term

**Prerequisite(s):** ECON 2G03, 2Z03 or 2X03; and 2H03; and 2B03 with a grade of at least B-; and registration in an Honours Economics program with a GPA of at least 6. The ECON 2B03 prerequisite can be met by getting a grade of at least B+ in one of the following alternative statistics courses: CHEMENG 4C03, COMMERCE 2QA3, POLSCI 3N06 A/B, POLSCI 3NN3, PNB 2XE3, 3XE3, SOCIOL 3H06 A/B, STATS 2D03 or another course that is approved by a departmental counselor as equivalent to ECON 2B03.

**Antirequisite(s):** ECON 3WW3, ECON 3U03, ECON 3E03

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### ECON 3G03 - INTRODUCTION TO ADVANCED ECONOMIC THEORY

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An introduction to the application of mathematics in economic theory.

Three lectures; one term

**Prerequisite(s):** MATH 1M03 or equivalent; and a grade of at least B- in each of ECON 2GG3 (or 2ZZ3) and ECON 2HH3 and registration in an Economics program.

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### ECON 3H03 - INTERNATIONAL MONETARY ECONOMICS

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Macroeconomic problems of an open economy with special reference to Canada; the international financial system and proposals for its reform.

Lectures and seminars (three hours); one term

**Prerequisite(s):** ECON 2H03

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### ECON 3HH3 - INTERNATIONAL TRADE

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Real theory of international trade; interregional and international specialization; effect of commercial and industrial policies.

Three lectures; one term

**Prerequisite(s):** ECON 2G03, 2Z03 or ECON 2X03

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### ECON 3K03 - MONETARY ECONOMICS

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Introduction to a modern treatment of monetary theory. Topics include why does money exist; links between monetary policy, inflation and business cycles; how might inflation and economic growth be connected?

Three lectures; one term

**Prerequisite(s):** ECON 2G03, 2Z03 or ECON 2X03; and ECON 2H03

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### ECON 3M03 - INTRODUCTION TO GAME THEORY

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An introduction to the theory of games, including strategic, extensive and coalitional games. Applications in economics, political science and evolutionary biology are discussed.

Three lectures; one term

**Prerequisite(s):** ECON 1B03 (or ARTSSCI 2E03); and MATH 1K03 (or equivalent)

Not open to students with credit in ECON 3Y03 if the topic was Introduction to Game Theory.

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### ECON 3Q03 - THE ECONOMICS OF AGING

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Topics include the macroeconomics of population aging and its impact on national pension and health plans and the microeconomics of retirement and income security.

Three lectures; one term

**Prerequisite(s):** ECON 2G03, 2Z03 or ECON 2X03; and ECON 2H03

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### ECON 3S03 - INDUSTRIAL ORGANIZATION

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A study of the structure, conduct and performance of industrial markets.

Three lectures; one term

**Prerequisite(s):** ECON 2G03, 2Z03 or ECON 2X03

**Antirequisite(s):** ECON 3N06

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### ECON 3T03 - ECONOMIC DEVELOPMENT

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Topics may include the measurement of structural change, dual economies, agriculture and production, technical and institutional change, and health and nutrition.

Three lectures; one term

**Prerequisite(s):** ECON 2G03, 2Z03 or ECON 2X03

**Antirequisite(s):** ECON 3J06

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### ECON 3W03 - NATURAL RESOURCES

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Competitive and socially optimal management of nonrenewable resources; market failure as illustrated by mineral cartels, fisheries and forestry, including analysis of bioeconomic models.

Three hours (lectures and seminars); one term

**Prerequisite(s):** One of ECON 2G03, 2Z03, ECON 2J03, or ECON 2X03

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### ECON 3Y03 - SELECTED TOPICS

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Topics will vary from year to year depending on student interests and faculty availability. Students should consult the Department on topics to be offered.

Three hours; one term

**Prerequisite(s):** ECON 2G03, 2Z03 or ECON 2X03; and ECON 2H03

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### ECON 3Z03 - HEALTH ECONOMICS

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Analysis of allocation of resources in health care. Topics include markets for health care, insurance, biomedical research, technology assessment, organization and public policy.

Three lectures; one term

**Prerequisite(s):** ECON 2G03, 2Z03 or ECON 2X03. ECON 2B03 or another course in statistics is recommended.

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### ECON 4A03 - HONOURS ECONOMIC ANALYSIS

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Students discuss papers on a theme that is specific to each section and write short paper reviews and policy briefs on current economics issues.

Three hours (seminars); one term

**Prerequisite(s):** ECON 4F03 (or 3F03) or ECON 4FF3 (or 3FF3); and ECON



3E03 (or 3WW3) or ECON 3EE3 (or 3U03); and ECON 2GG3 (or 2ZZ3), and ECON 2HH3; and enrolment in level IV of an Honours Economics Program

**Antirequisite(s):** ECON 4AA3

### ECON 4AA3 - ECONOMIC SPECIALIST SEMINAR

Under the supervision of a faculty member students present and discuss papers and write a paper presenting original research.

3 hours; one term

**Prerequisite(s):** ECON 4FF3 (or 3FF3) with a grade of at least B-, and ECON 3EE3 (or 3U03) with a grade of at least B-; or ECON 3E03 (or 3WW3) with a grade of at least A-, and an average of at least 6 in ECON 2G03 (or 2Z03), 2GG3 (or 2ZZ3), 2H03, and 2HH3, and enrolment in Level III or Level IV Honours Economics (Specialist Option) with a GPA of at least 6.

**Antirequisite(s):** ECON 4A03

### ECON 4B03 - SELECTED TOPICS

Topics will vary from year to year depending on student interests and faculty availability. Students should consult the Department on topics to be offered.

Three hours; one term

**Prerequisite(s):** Permission of the Department

### ECON 4F03 - METHODS OF INQUIRY IN ECONOMICS

Formerly ECON 3F03

This course develops skills for investigating a research question in economics, through workshops (eg. writing, library, internet, data), and the subsequent application of the skills to an economic issue.

Three hours; one term

**Prerequisite(s):** ECON 2G03, 2Z03 or 2X03; and 2H03; Credit or registration in ECON 3E03 (or 3WW3) or ECON 3EE3 (or 3U03), registration in Level III or Level IV of an Honours Economics program

**Antirequisite(s):** ECON 3FF3, ECON 3F03, ECON 4FF3

This course is only offered in the Fall term.

### ECON 4FF3 - RESEARCH METHODS IN ECONOMICS

Formerly ECON 3FF3

Students discuss and present papers, learn research methods and write a critical review of the literature on an economic topic of their choice.

3 hours; one term

**Prerequisite(s):** ECON 2G03 (or 2Z03) with a grade of at least C+; and ECON 2H03 with a grade of at least C+; and Credit or enrolment in ECON 3EE3 (or 3U03); or a grade of at

least A- in ECON 3E03 (or 3WW3); and registration in Level III or Level IV of an Honours Economics program with a GPA of at least 6.

**Antirequisite(s):** ECON 3F03, ECON 3FF3, ECON 4F03

*This course is only offered in the Fall term.*

### ECON 4G03 - ECONOMETRICS II

Development of regression models appropriate to economics. Illustrations from applied micro- and macroeconomics.

Three lectures; one tutorial; one term

**Prerequisite(s):** ECON 2G03, 2Z03 or 2X03; and ECON 2H03; and at least B- in ECON ECON 3EE3 (or 3U03) or at least A- in ECON 3E03 (or 3WW3) or another course that is approved by a departmental counselor

### ECON 4M06 A/B S - DIRECTED RESEARCH I

A reading and/or research program supervised by a Department member. A major paper is required. Interested students should consult the Department concerning admission.

**Prerequisite(s):** Permission of the Department

### ECON 4N03 - DIRECTED RESEARCH II

As per ECON 4M06 A/B.

**Prerequisite(s):** Permission of the Department

### ECON 4T03 - ADVANCED ECONOMIC THEORY I

Mathematically oriented approaches to the analysis of the behaviour of individual consumers, workers and firms.

Three lectures; one term

**Prerequisite(s):** A grade of at least C in one of ECON 3G03, MATH 2Q04, MATH 2X03 (or MATH 2A03); and a grade of at least B- in ECON 2GG3 (or 2ZZ3) and ECON 2HH3 and registration in an Economics program.

**Antirequisite(s):** ECON 3A03

### ECON 4TT3 - ADVANCED ECONOMIC THEORY II

Analysis of dynamic macroeconomic models including models of endogenous growth and other selected topics.

Three lectures; one term

**Prerequisite(s):** A grade of at least C in one of ECON 3G03, MATH 2Q04, MATH 2X03 (or MATH 2A03); and a grade of at least B- in ECON 2GG3 (or 2ZZ3) and ECON 2HH3 and registration in an Economics program.

**Antirequisite(s):** ECON 3AA3

## Electrical Engineering

Courses in Electrical Engineering are administered by the Department of Electrical and Computer Engineering.

Information Technology Building, Room A111, ext. 24347

<http://www.ece.mcmaster.ca/>

#### Department Notes

1. All students in the Electrical Engineering program initially follow a common curriculum consisting of a combination of Electrical Engineering and Computer Engineering courses. In their senior year, students are given the opportunity to customize their program by selecting from a wide range of technical electives.
2. All Electrical and Computer Engineering courses are open to students registered in any Electrical or Computer Engineering program or the Electrical and Biomedical Engineering program, subject to prerequisite requirements. Prior permission of the Department is necessary for students from other Engineering departments or faculties.

### ELECENG 2CI5 - INTRODUCTION TO ELECTRICAL ENGINEERING

Current, potential difference; Kirchhoff's laws; Ohm's Law; circuit elements; mesh/nodal analysis of electrical circuits; first and second order circuits; complex arithmetic; phasors, impedance and admittance; AC power.

Three lectures, one tutorial, one lab every week; first term

**Prerequisite(s):** Registration in a Computer Engineering or Electrical Engineering program

### ELECENG 2CJ4 - CIRCUITS AND SYSTEMS

Advanced circuit analysis including dependent sources; second order circuits; Laplace transforms with applications; frequency response; 2-port networks; coupled circuits; power relationships.

Three lectures, one tutorial, and one lab every other week; second term

**Prerequisite(s):** ELECENG 2CI5

### ELECENG 2E15 - ELECTRONIC DEVICES AND CIRCUITS I

Semiconductor devices and electronic circuits; electrical characteristics, principles of operation, circuit models of diodes, field-effect and bipolar transistors, and operational amplifiers; analysis and design of basic application circuits.

Three lectures, one tutorial, one lab every week; second term

**Prerequisite(s):** ELECENG 2C15

### ELECENG 2FH4 - ELECTROMAGNETICS I

Mathematical foundations of electromagnetics (selected topics of vector calculus); electrostatics, magnetostatics and conduction; introduction to time-varying fields through Faraday's law.

Three lectures, two tutorials; second term

**Prerequisite(s):** ELECENG 2C15 and PHYSICS PHYSICS 1E03, registration in Electrical Engineering or the Integrated Biomedical Engineering and Health Sciences (IBEHS) Program

### ELECENG 2FL3 - APPLIED ELECTROMAGNETICS

Fundamental electrostatic and magnetostatic forces, fundamentals of wave motion; sinusoids and complex numbers; transmission lines and impedance match; electrostatics; conduction; magnetostatics; superconductors; Faraday's law; plane waves and polarization; radiation and antennas.

Three lectures, one tutorial; second term

**Prerequisite(s):** ELECENG 2C15 and PHYSICS PHYSICS 1E03; registration in Computer Engineering or Electrical and Biomedical Engineering.

**Antirequisite(s):** ELECENG 2FH3 or ELECENG ELECENG 2FH4

*This course is not open to students enrolled in the Integrated Biomedical Engineering and Health Sciences (IBEHS) Program.*

### ELECENG 3CL4 - INTRODUCTION TO CONTROL SYSTEMS

Modelling of control systems in the continuous-time domain; state space representations; model linearization; performance of control systems in time and frequency; stability; control design.

Three lectures, one tutorial, one lab every other week; second term

**Prerequisite(s):** ELECENG 3TP4 or 3TP3

**Antirequisite(s):** IBEHS 4A03, MECHENG 4R03, MECHTRON 3DX4, SFWRENG 3DX4

### ELECENG 3EJ4 - ELECTRONIC DEVICES AND CIRCUITS II

Analog and digital electronics; operational amplifier circuits; multistage amplifiers; oscillators; analog and digital integrated circuits; data converters; amplifier frequency response; feedback and stability; computer aids to analysis and design.

Three lectures, one tutorial, one lab every other week; first term

**Prerequisite(s):** ELECENG 2CJ4 and ELECENG 2E15; and ELECENG 2C15

### ELECENG 3EY4 - ELECTRICAL SYSTEMS INTEGRATION PROJECT

An electrical engineering design and implementation project of reasonable complexity to be completed by small groups of students; oral presentations and written reports.

Two lectures, one lab, one tutorial/design studio; second term

**Prerequisite(s):** COMPENG 2DX4, ELECENG 3TP3 or 3TP4 or IBEHS 3A03, ELECENG 2C15, 2CJ4, COMPENG 2DI4, 2SH4

**Antirequisite(s):** COMPENG 2DP4, 3DY4

### ELECENG 3FK4 - ELECTROMAGNETICS II

Time-varying fields, uniform plane waves, reflection and transmission, dispersion, transmission lines and impedance matching, waveguides, elements of theory of radiation and antennas.

Three lectures, one tutorial, one lab every other week; first term

**Prerequisite(s):** ELECENG 2FH3 or 2FH4 or ENGPYS 2A04

### ELECENG 3PI4 - ENERGY CONVERSION

Analyze, model, and predict the performance of energy conversion devices and systems including single-phase and balanced three-phase systems, transformers, introduction to DC generators and motors, AC generators and motors.

Three lectures, one tutorial, one lab every other week; second term

**Prerequisite(s):** ELECENG 2CJ4, 2FH3 or 2FH4 and 2C15

### ELECENG 3TP3 - SIGNAL & SYSTEMS

Complex variables and integration in the complex plain; Fourier transforms, properties; Laplace transforms and inversion; input-output relations of linear systems; discrete time systems.

Three lectures, one tutorial; first term

**Prerequisite(s):** ELECENG 2CJ4 and 2C15

**Antirequisite(s):** ELECENG 3TP4, MECHENG 4R03, SFWRENG 3MX3

### ELECENG 3TQ3 - ADVANCED PROBABILITY AND RANDOM PROCESSES

Probability theory; random variables; expectations; random processes; autocorrelation; power spectral densities.

Three lectures, one tutorial; first term

**Prerequisite(s):** MATH 2Z03

**Antirequisite(s):** COMMERCE 2QA3, ELECENG 3TQ4

### ELECENG 3TR4 - COMMUNICATION SYSTEMS

Review of continuous-time signals and systems; amplitude modulation, phase and frequency modulation schemes; digital modulation; stochastic processes; noise performance.

Three lectures, one tutorial, one lab every other week; second term

**Prerequisite(s):** ELECENG 3TP3; One of ELECENG 3TQ4, 3TQ3 or STATS 3Y03; or ENGPYS 3W04

### ELECENG 4BB3 - CELLULAR BIOELECTRICITY

Generation and transmission of bioelectricity in excitable cells; ionic transport in cellular membranes; propagation of electricity within and between cells; cardiac and neural physiology; measurement of extracellular fields; electrical stimulation of excitable cells.

Three lectures, one tutorial; second term

**Prerequisite(s):** Registration in Level III Electrical and Biomedical Engineering or level IV or V of the Integrated Biomedical Engineering and Health Sciences (IBEHS) Program or level IV of Electrical Engineering

**Antirequisite(s):** ELECENG 3BB3

### ELECENG 4BC3 - MODELLING OF BIOLOGICAL SYSTEMS

Introduction to mathematical and engineering methods for describing and predicting the behaviour of biological systems; including sensory receptors, neuromuscular and biomechanical systems; statistical models of biological function; kinetic models of biological thermodynamics.

Three lectures, one tutorial; first term

**Prerequisite(s):** Registration in Level IV Electrical and Biomedical Engineering

**Cross-list(s):** IBEHS 4QZ3

### ELECENG 4BD4 - BIOMEDICAL INSTRUMENTATION

Generation and nature of bioelectric potentials; electrodes and other transducers; principles of instrumentation; electrical safety; neuromuscular and cardiovascular instrumentation; ultrasonics and other medical imaging.

Three lectures, one tutorial, one lab every other week; first term

**Prerequisite(s):** One of ELECENG 3EJ4, ENGINEER 3N03 or PHYSICS 3B06; and registration in Biomedical and Electrical Engineering Level IV, or permission of the department.

**Cross-list(s):** IBEHS 4F04

### ELECENG 4BE4 - MEDICAL ROBOTICS

Fundamentals of robotics and telerobotics; feedback from the environment using sensors and machine vision; application of robotics to medicine and surgery.

Three lectures, one tutorial, one lab every other week; second term

**Prerequisite(s):** ELECENG 3CL4, 3TP4 or 3TP3; or permission of the department

### ELECENG 4BF4 - ADVANCED MEDICAL IMAGING

Physical principles of medical image acquisition and formation; post-processing for magnetic resonance imaging and spectroscopy; comparisons to other medical imaging modalities.

Three lectures, one tutorial, one lab every other week; second term

**Prerequisite(s):** ELECENG 2FH3 or 2FH4, ELECENG 3TP4 or 3TP3; and registration in Level IV Electrical and Biomedical Engineering or Level IV and above in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program or permission of the department.

**Antirequisite(s):** ELECENG 4BF3

### ELECENG 4B16 A/B - BIOMEDICAL DESIGN PROJECT

The design process; safety; a term project composed of small teams of students including an oral presentation and written report.

Three lectures, two tutorials, one capstone project; both terms

**Prerequisite(s):** Registration in Level IV Electrical and Biomedical Engineering

**Antirequisite(s):** ELECENG 4O16 A/B, ENGINEER 4M06 A/B, IBEHS 5P06 A/B

### ELECENG 4CL4 - CONTROL SYSTEM DESIGN

Design of linear control systems using classical and state-space techniques; performance limitation; sampled-data control; nonlinear systems; multi-input multi-output control systems.

Three lectures, one tutorial, one lab every other week; first term

**Prerequisite(s):** ELECENG 3CL4, ELECENG 3TP4 or 3TP3

**Antirequisite(s):** IBEHS 4A03

### ELECENG 4EM4 - PHOTONIC DEVICES AND SYSTEMS

Fundamentals of light. Optical fibers and their propagation characteristics. Lasers and photo-diodes. Optical amplifiers and modulators. Photonic networks.

Three lectures, one tutorial, one lab every other week; second term

**Prerequisite(s):** ELECENG 3EJ4; or ENGPYHS 3BA3 and 3BB3

**Antirequisite(s):** ENGPYHS 4K03

### ELECENG 4FJ4 - DEVICES AND ANTENNAS FOR WIRELESS SYSTEMS

This course provides the fundamentals of the technology of wireless communications. transmission lines and waveguides, scattering parameters, impedance matching, power dividers, directional couplers, microwave resonators and filters, microwave sources and active devices, antenna fundamentals, microwave and antenna measurements.

Three lectures, one tutorial, one lab every other week; first term

**Prerequisite(s):** ELECENG 2FL3 or 3FK4

### ELECENG 4OH4 - ADVANCED RESEARCH PROJECT

A research-oriented project under the direct supervision of a faculty member to further foster initiative and independent creativity while working on an advanced topic. This research is based on the experience and results achieved in other research-based project courses.

First or second term

**Prerequisite(s):** COMPENG 4OJ4 or ELECENG 4OJ4; Prior arrangement with an Electrical and Computer Engineering faculty member, a minimum cumulative GPA of 9.5, registration in Level IV or V of any program in the Department of Electrical and Computer Engineering; or permission of the department.

**Antirequisite(s):** IBEHS 3I06 A/B

### ELECENG 4O16 A/B - ENGINEERING DESIGN

The design process; safety; a term project composed of small teams of students including an oral presentation and written report.

Lectures, tutorials, one capstone project; both terms

**Prerequisite(s):** Registration in Level IV or V of any Electrical or Computer Engineering program

**Antirequisite(s):** ELECENG 4B16 A/B, ENGINEER 4M06 A/B, IBEHS 5P06 A/B

### ELECENG 4OJ4 - RESEARCH PROJECT

A research-oriented project under the direct supervision of a faculty member to foster initiative and independent creativity while working on an advanced topic.

First or second term

**Prerequisite(s):** Prior arrangement with an Electrical and Computer Engineering faculty member, a minimum cumulative GPA of 9.5, registration in Level IV or V of any program in the Department of Electrical and Computer Engineering; or permission of the department.

**Antirequisite(s):** COMPENG 4OK4, ELECENG 4OK4, IBEHS 3I06 A/B

### ELECENG 4PK4 - POWER ELECTRONICS

To analyze, model, and predict the performance of basic power converter configurations. To explain topologies of power electronics, AC/DC, DC/DC, DC/AC and AC/AC. To design proper switching circuits.

Three lectures, one tutorial, one lab every other week; first term

**Prerequisite(s):** ELECENG 2CJ4, ELECENG 3EJ4

### ELECENG 4PM4 - ELECTRICAL POWER SYSTEMS

Analysis of transmission lines, unsymmetrical electrical systems, load flow studies, dynamic stability of electrical power systems, power system protection, emerging systems and issues relating to electrical power quality and the impact thereof on plant and customer loads, new generation and connection concepts for large electrical power systems with-regard-to sustainable energy resources, their management, technical challenges and solutions, high voltage DC (HVDC) networks.

Three lectures, one tutorial, one lab every other week; first term

**Prerequisite(s):** ELECENG 3PI4

### ELECENG 4PN4 - ELECTRIC MOTOR DRIVES

Fundamentals of electric motor drives are studied. The operating principles of different electric motor types and drives, speed and position control, starting, and braking are covered.

Three lectures, one tutorial, one lab every other week; second term

**Prerequisite(s):** ELECENG 3PI4

### ELECENG 4PP4 - SMART AND MICRO GRIDS

Micro grids for transportation systems and terrestrial applications are studied. Then, fundamentals of renewable energies are explained and the concept of smart grid is introduced.

Three lectures, one tutorial, one lab every other week; second term

**Prerequisite(s):** ELECENG 3CL4, 3PI4, 4PM4

### ELECENG 4TK4 - DIGITAL COMMUNICATIONS SYSTEMS

Digital modulation systems, intersymbol interference, equalization, synchronization; ASK, FSK, PSK, MSK, optimal receiver, noncoherent detection; introduction to information theory; entropy, source coding, mutual information, channel capacity.

Three lectures, one tutorial (two-hours); first term

**Prerequisite(s):** ELECENG 3TR4, 3TQ4 or 3TQ3

**Antirequisite(s):** SFWRENG 4J03

### ELECENG 4TM4 - DIGITAL COMMUNICATIONS II

This course continues the study of modern communications systems following ELECENG 4TK4. Topics include wireless communications systems, multiple antenna systems, channel models and error control coding.

Three lectures, one tutorial (two-hours); second term

**Prerequisite(s):** ELECENG 4TK4

## Energy Engineering Tech

Courses in Energy Engineering Technologies are administered by the Bachelor of Technology Program.

Engineering Technology Building (ETB), Room 121, ext. 20195

<http://mybtechdegree.ca>

#### Notes

1. Renewable Energy Technologies students must complete (a project in Renewable Energy Technology), 4RE3 and 4RT3.

### ENRTECH 3EP3 - POWER SYSTEMS AND ELECTRICAL MACHINES

Basic electric circuits, basic electrical theorems, network analysis, phasors, three phase systems, transformers, motors, electric power generation, power plants components (transformers, motors, exciters, synchronous machines).

Three lectures; one lab (two hours every other week); one term

**Prerequisite(s):** Registration in Power and Energy Engineering Technology

### ENRTECH 3IE3 - INDUSTRIAL ELECTRONICS

Introduction to power electronic devices: diodes, transistors, triacs, SCRs, IGBTs. Electrical machines characteristics: motors, transformers. Power control circuits, solid state converter drives. Harmonics and filtering.

Three lectures; one term

**Prerequisite(s):** ENRTECH 3EP3, 3MA3 and registration in Power and Energy Engineering Technology

### ENRTECH 3IN3 - INDUSTRIAL NETWORKS AND COMMUNICATION SYSTEMS

Corporate and industrial network standards; proprietary buses and protocols and interfaces; distributed I/O; drivers and devices and their implementation in PC and PLC based systems.

Three lectures; one lab (two hours every other week); one term

**Prerequisite(s):** Registration in Power and Energy Engineering Technology

### ENRTECH 3MI3 - MEASUREMENTS AND INSTRUMENTATION

Transducers, logic circuits, basic electronic devices and their applications.

Calculate/measure the input(s) and output(s) of various systems. Recognize, install and apply instruments within power plants.

Three lectures; one lab (two hours every other week); one term

**Prerequisite(s):** Registration in Power and Energy Engineering Technology

### ENRTECH 3PD3 - POWER DISTRIBUTION I

Principle concepts and theories of power distribution. Skills required to work at an industrial environment and/or power utilities (generation, transmission, distribution). Based on the Ontario Hydro system, a power flow computer program will be introduced.

Three lectures; one term

**Prerequisite(s):** ENRTECH 3EP3 and registration in Power and Energy Engineering Technology

### ENRTECH 4EM3 - TRANSMISSION LINES AND ELECTROMAGNETICS

Field concepts. Maxwells equations, integral and differential forms. Free space and guided wave propagation, transmission lines. Radiation from current elements.

Three lectures; one term

**Prerequisite(s):** ENRTECH 3EP3, ENGTECH 3MA3 and registration in Power and Energy Engineering Technology

### ENRTECH 4PD3 - POWER SYSTEM ANALYSIS AND CONTROL

This course introduces the different types of operating constraints as encountered by power system operators and engineers during real time operation of interconnected power grids. For each type of operating constraint, the most common operating strategies and control measures will be discussed and analyzed.

Three lectures; one term

**Prerequisite(s):** ENRTECH 3PD3 and registration in Power and Energy Engineering Technology

### ENRTECH 4PM3 - POWER PROTECTION AND MAINTENANCE I

Various power devices such as relays, circuit breaker, power monitor, control devices and other components used in a power system protection. Other devices such as CTs, and Pts and substation hardware will also be covered.

Three lectures; one term

**Prerequisite(s):** ENRTECH 3MI3, 3PD3, and registration in Power and Energy Engineering Technology



### ENRTECH 4PP3 - POWER PROTECTION AND MAINTENANCE II

New generation of digital fault detection systems. Balanced faults, computer-based fault studies, symmetrical components and sequence networks, unbalanced short-circuit and open-circuit faults.

Three lectures; one lab (two hours every other week); one term

**Prerequisite(s):** ENRTECH 4PM3 and registration in Power and Energy Engineering Technology

### ENRTECH 4PQ3 - POWER QUALITY

Analyze and monitor power quality. Case studies for EMI/RFI related problems that are commonly encountered in commercial and industrial loads.

Three lectures; one term

**Prerequisite(s):** ENRTECH 3EP3, 3PD3, and registration in Power and Energy Engineering Technology

### ENRTECH 4RE3 - FUEL CELL, GEOTHERMAL AND BIOMASS POWER GENERATION

Outline the design, installation and commissioning of Bio-Mass, Fuel-Cells and Geothermal powered systems. The environmental and economical impacts of such technologies. Federal and provincial rules, regulations, and legislation.

Three lectures; one term

**Prerequisite(s):** ENRTECH 3EP3, 3TD3, ENGTECH 4TF3 and registration in Power and Energy Engineering Technology

### ENRTECH 4RT3 - RENEWABLE POWER GENERATION FROM WIND, SOLAR AND HYDRO

Design, installation and commissioning of Solar, Wind and Hydro power plants. The environmental and economical impacts of such technologies, rules, regulations, federal and provincial legislation.

Three lectures; one term

**Prerequisite(s):** ENRTECH 3EP3, 3TD3, ENGTECH 4TF3 and registration in Power and Energy Engineering Technology

## Engineering

John Hodgins Engineering Building, Room A214, ext. 24646

<http://www.eng.mcmaster.ca/>

#### Note

Enrolment in these courses is limited to students registered in an Engineering program.

### ENGINEER 1C03 - ENGINEERING DESIGN AND GRAPHICS

Graphical visualization and communication; technical sketching, 2D and 3D computer-aided design; use of solid modelling software.

One lecture, one tutorial (two hours), one lab (three hours); first or second term

**Prerequisite(s):** Registration in any Engineering program

**Antirequisite(s):** ENGINEER 1P13 A/B, 1BEHS 1P10 A/B

*Offered only during Spring/Summer term.*

*Departmental permission is required.*

### ENGINEER 1D04 - ENGINEERING COMPUTATION

Development and analysis of simple algorithms. Implementation of algorithms in computer programming language. Design and testing of computer programs.

One lecture, one tutorial (two hours), one lab (three hours); first or second term

**Prerequisite(s):** Registration in any Engineering program

**Antirequisite(s):** COMPSI 1MA3, 1MC3, 1SA3, 1TA3, ENGINEER 1P13 A/B, 1BEHS 1P10 A/B

*Offered only during Spring/Summer term.*

*Departmental permission is required.*

### ENGINEER 1EE0 - INTRODUCTION TO THE ENGINEERING CO-OP PROGRAM

Orientation to Engineering Co-op programs, self-assessment exercises, job and employer research, cover letter and resume writing, interviewing skills and work place professionalism.

**Cross-list(s):** IBEHS 1EE0

**Prerequisite(s):** Registration in a Co-op program in the Faculty of Engineering

*Not open to students in their final level.*

### ENGINEER 1P03 - ENGINEERING PROFESSION AND PRACTICE

Introduction to professional engineering including ethics, health and safety, roles and responsibilities to society, sustainability, engineering communication; design skills; team design projects.

Two lectures, one tutorial (two hours); first term

**Prerequisite(s):** Registration in any Engineering program

**Antirequisite(s):** ENGINEER 1P13 A/B, IBEHS 1P10 A/B

*Offered only during Spring/Summer term.*

*Departmental permission is required.*

### ENGINEER 1P13 A/B - INTEGRATED CORNERSTONE DESIGN PROJECTS IN ENGINEERING

Project-based integrated learning course that introduces a range of foundational (i.e., cornerstone) topics in engineering, including engineering design and communication, computation, graphic design, materials and the engineering profession. These topics are applied through a series of integrated team-based design projects in simulated workplace environments.

Three lectures, one tutorial (two hours), two labs (three hours each); both terms

**Prerequisite(s):** Registration in any Engineering program

**Antirequisite(s):** ENGINEER 1C03, ENGINEER 1D04, ENGINEER 1P03, IBEHS 1P10 A/B, MATLS 1M03

### ENGINEER 2B03 - ENGINEERING ECONOMICS

Engineering criteria for decision-making. Money flow. Financial ventures.

Personal financing. Total project investment. Production and operations costs.

Economic analysis. Financial attractiveness.

Lectures, applications, discussions (three hours); second term

**Prerequisite(s):** Registration in any Engineering Program

**Antirequisite(s):** CHEMENG 4N04, CIVENG 3RR3, ENGINEER 4B03

*Not open to students registered in an Engineering and Management program.*

### ENGINEER 2EC0 - ENGINEERING WORK TERM

Minimum of 12 weeks of full-time employment in a professional environment.

First or second term

**Prerequisite(s):** Registration in a Co-op program in the Faculty of Engineering and ENGINEER 1EE0 and permission from the Engineering Co-Op and Career Services

*Not open to students in their final level.*

### ENGINEER 2H03 - THERMODYNAMICS

An introduction to thermodynamics and its statistical basis at the microscopic level, with applications to problems originating in a modern laboratory or engineering environment.

Three lectures; second term

**Prerequisite(s):** Registration in Level II or above of any Engineering program

except Engineering Physics

**Antirequisite(s):** ENGINEER 2V04, ENGPYS 2H04, MECHENG 2W04, PHYSICS 2H04

### ENGINEER 2MM3 - ELECTRICAL CIRCUITS AND POWER

Fundamentals of electromechanical energy conversion. Motors and generators, transformers, single and polyphase power circuits, synchronous and induction machines, power measurements.

Two lectures and one lab or tutorial; first or second term

**Prerequisite(s):** PHYSICS 1E03; MATH 2Z03; registration in Software Engineering - Embedded Systems Co-op

**Antirequisite(s):** ENGINEER 3M03

### ENGINEER 2P04 - ENGINEERING MECHANICS

Principles of statics as applied to deformable solid bodies. Stress and strain, elastic behaviour of simple members under axial force, torsion, bending and traverse shear. Principal stresses; statical indeterminacy.

Three lectures, one tutorial; first term

**Prerequisite(s):** PHYSICS 1D03 and registration in Level II or above of any Engineering program

**Antirequisite(s):** MECHENG 2P04, CIVENG 2P04, ENGPYS 2P04

### ENGINEER 3CX3 A/B - EXPERIENTIAL LEARNING IN COMPLEMENTARY STUDIES

This course will provide students an opportunity for formal recognition of experiential learning achieved through a substantial contribution to a non-technical co-curricular activity. This course will allow Engineering students to obtain credit in complementary studies.

One lecture (three hours); term one and two

**Prerequisite(s):** Registration in Level III or above in the Faculty of Engineering

### ENGINEER 3IC0 - FULL-TIME INTERNSHIP FOR INTERNATIONAL STUDENTS

Full-time, paid internships of 8, 12 or 16 months enable international Engineering students to explore career opportunities and work environments, gain employability skills, and an understanding of employer expectations and employment practices in a Canadian professional work environment.

**Prerequisite(s):** ENGINEER 1EE0 and permission of the Engineering Career and Co-Op Services.

### ENGINEER 3MF3 - MATERIALS FABRICATION

Processing methods for a wide range of materials, including metals, ceramics and plastics. The analytical basis for understanding and optimizing materials processes. Exercises in mathematical modelling and the use of software packages to optimize processes.

Three lectures; one term

**Prerequisite(s):** MATLS 3M03 or MECHENG 3A03 or registration in Level IV or above in Civil Engineering; or permission of the department

**Antirequisite(s):** ENGINEER 4J03

### ENGINEER 3N03 - ELECTRONICS AND INSTRUMENTATION

Semiconductor devices; diodes, transistors and silicon-controlled rectifiers. Transistor characteristic and load lines. Amplifier circuits with and without feedback. Rectifier and passive filter circuits. Operational amplifiers and active filters. Digital circuits, Microcomputers, Interfacing.

Two lectures, one tutorial, one lab (three hours) every other week; second term

**Prerequisite(s):** One of ENGINEER 2M04, 2MM3 or 3M03

### ENGINEER 4A03 - ETHICS, EQUITY AND LAW IN ENGINEERING

General introduction to the ethical, equitable and legal aspects of engineering practice. Topics include the engineering act and code of ethics, employment equity, legal duties and liabilities of the professional engineer, contracts, and the tort of negligence.

Three lectures; both terms

**Prerequisite(s):** Registration in Level III or above of any Engineering program except Engineering and Society

**Antirequisite(s):** ENGPYS 2S03, 4C03

### ENGINEER 4EX3 A/B - EXPERIENTIAL ENGINEERING DESIGN

This course will provide students an opportunity for formal recognition of the design-based experiential learning conducted within the atmosphere of technically-oriented McMaster Engineering teams. Arrangements for participation in this course must be made with the faculty supervisor in the Spring semester prior to enrolment.

One lecture (three hours); term one and two

**Prerequisite(s):** Registration in Level 3 or above in the Faculty of Engineering

### ENGINEER 4F00 A/B - MECH ENG WORK TERM REPORT

Requirements for the accelerated option of the M.Eng. (Manufacturing) Program, including: industrial work-term placement report and completion of two approved 600 level courses.

Report to be submitted by end of September.

**Prerequisite(s):** Permission of Program Director

### ENGINEER 4IW3 - INCLUSION IN THE ENGINEERING WORKPLACE

Engineering workplaces are diverse but can pose challenges to underrepresented groups. Students will develop the vocabulary and tools to master perceptual, institutional, and psychological mechanisms of inclusion as allies and targets.

Lectures (three hours); second term

**Prerequisite(s):** Registration in Level III or above of any Engineering Program

### ENGINEER 4K01 A/B S - ENGINEERING REPORT FOR EXCHANGE STUDENTS

Exchange students prepare a written report and make an oral presentation on an engineering problem encountered during summer work experience. Written and oral communications and substantive context are assessed.

One seminar/lecture; one term

**Prerequisite(s):** Permission of the instructor

### ENGINEER 4L00 A/B - INTRODUCTION TO THE OVERSEAS WORKPLACE

Short seminars intended to prepare outgoing exchange students for placements overseas. Topics include work place professionalism and report writing.

One seminar/lecture; one term

**Prerequisite(s):** Permission of the instructor

### ENGINEER 4T04 - MATERIALS SELECTION IN DESIGN AND MANUFACTURING

Materials indices, materials selection charts, materials selection and design with mechanical and thermo-mechanical constraints, design of hybrid

materials, sustainable materials selection and design.

Four lectures, one tutorial; first term

**Prerequisite(s):** One of ENGINEER 2P04, MECHENG 2P04, and one of CHEMENG 3A04, MECHENG 3R03; or registration in Level IV or above in Civil Engineering; or permission of the department

### ENGINEER 4V04 - PHYSICO-CHEMICAL PROCESSES IN WATER AND WASTEWATER

Water/waste water quality/characteristics; physical and chemical unit processes including coagulation, flocculation, sedimentation and filtration for particle removal in water treatment; inactivation of microorganisms in disinfection; advanced treatment, including ion exchange, adsorption, advanced oxidation using radical reactions and membrane filtration.

Three lectures, one lab or one tutorial; one term

**Prerequisite(s):** CIVENG 3L03 or CHEMENG 2D04 or registration in Level IV or above in the Integrated Biomedical Engineering & Health Sciences (IBEHS) program or permission of the department

## Engineering & Society Program

John Hodgins Engineering Building, Room 316, ext. 27679

<https://www.eng.mcmaster.ca/engineering-and-society-program>

The Engineering and Society Programs are described in the Faculty of Engineering section in this Calendar. These programs lead to the B.Eng.Society degree.

### Courses

*If no prerequisite is listed, the course is open.*

### ENGSOCT 2X03 - INQUIRY IN AN ENGINEERING CONTEXT I

Inquiry is a non-disciplinary approach to the study of issues of public concern. In terms of the design process, inquiry focuses on the problem definition stage, in which formulating questions, researching underlying issues, and analyzing opposing arguments are essential. The first course involves teaching how to use the university and community resources in research, how to write a research paper, and how to express ideas orally. The theme is sustainable society.

Three hours (lectures, discussion, group work); first term

**Prerequisite(s):** Registration in an Engineering and Society Program or permission of the instructor

### ENGSOCT 2Y03 - CASE STUDIES IN HISTORY AND TECHNOLOGY

History and philosophy of technology, from antiquity to modern times, with a special emphasis on the cultural aspects of technology, are addressed on a case study basis.

Three hours (lectures, discussion, group work); second term

**Prerequisite(s):** Registration in an Engineering and Society Program

### ENGSOCT 3X03 - INQUIRY IN AN ENGINEERING CONTEXT II

This inquiry course builds on the skills developed in previous courses, focusing on a specific issue related to the role of engineering and technology in society. The course is devoted to the study of one topic such as: automation and employment, technology and the quality of life, the deteriorating environment, or the information society.

Three hours (lectures, discussion, group presentations); second term

**Prerequisite(s):** ENGSOCT 2X03 and registration in Level IV of an Engineering and Society Program

### ENGSOCT 3Y03 - TECHNOLOGY AND SOCIETY

A study of the nature and structure of technology, the nature of culture, and the role and place of different groups, including engineers, in a culture dominated by technology; and mechanisms for the social control of technology.

Lectures, discussion, group work, seminars (three hours); first term

**Prerequisite(s):** ENGSOCT 2Y03 and registration in level III or above of an Engineering and Society Program

### ENGSOCT 3Z03 - PREVENTIVE ENGINEERING: ENVIRONMENTAL PERSPECTIVES

The basic concepts of preventive engineering are studied and applied to specific case studies. The focus is on sustainability and the natural environment.

Three hours (lectures, discussion, group projects); first term

**Prerequisite(s):** Registration in Level III or IV of an Engineering and Society Program

### ENGSOCT 4X03 A/B - INQUIRY IN AN ENGINEERING CONTEXT III

Under the supervision of a faculty member, students write an inquiry paper and present their findings orally. Topics for inquiry must bear on the relation of technology to society and have implications for the practising engineer.

Both terms

**Prerequisite(s):** ENGSOCT 3X03 and registration in level V of an Engineering and Society Program

### ENGSOCT 4Y03 - SOCIETY CAPSTONE DESIGN

In multi-disciplinary teams, students will complete a capstone design project that incorporates holistic design, social sustainability, community resilience and aesthetic elements.

Two lectures; two hour design studio; first term

**Prerequisite(s):** Registration in Level V of an Engineering and Society Program

**Antirequisite(s):** COMMERCE 4ID3, ENGINEER 4ID3, SOCSCI 4ID3

## Engineering & Management Program

John Hodgins Engineering Building, Room 316, ext. 27679

<https://www.eng.mcmaster.ca/engineering-management-program>

The Engineering & Management Programs are described in the Faculty of Engineering section in this Calendar. These programs are administered jointly by the DeGroot School of Business and the Faculty of Engineering and lead to the B.Eng.Mgt. degree.

### Courses

*If no prerequisite is listed, the course is open.*

### ENGNMGT 2AA3 - COMMUNICATION SKILLS

Writing skills including formal reports; speaking, listening and presentation skills, speeches, technical presentations and electronic communication technology.

One lecture (three hours); one term

**Prerequisite(s):** Registration in any Engineering and Management program

**Antirequisite(s):** CHEMENG 2G03, ENGNMGT 2AA2

### ENGNMGT 4A03 - INNOVATION DRIVEN PROJECT DEVELOPMENT AND MANAGEMENT

What is innovation and how is it managed? Team-based creativity skills will be developed with a focus on delivering innovation. Participants develop teamwork skills while using project management tools to develop a project. Three hours; first term

**Prerequisite(s):** One of CHEMENG 2G03 or ENGNMGT 2AA2; and registration in any Engineering and Management program

**Antirequisite(s):** ENGNMGT 3AA1, 4A01

### ENGNMGT 5B03 - ENGINEERING AND MANAGEMENT PROJECTS

Capstone course: Students work in multidisciplinary teams to solve an integrated engineering and business problem in an organization. Team, project and client management skills are developed.

No lectures, individual meetings with course instructor (two hours); first term

**Prerequisite(s):** ENGN MGT 4A01, ENGNMGT 4A03 and registration in any Engineering and Management program

**Antirequisite(s):** ENGNMGT 5EP3, ENGINEER 4ID3, SOCSCI 4ID3, COMMERCE 4ID3

## Engineering Physics

Courses in Engineering Physics are administered by the Department of Engineering Physics.

John Hodgins Engineering Building, Room A315, ext. 27925

<https://www.eng.mcmaster.ca/engphys/>

#### Department Note

All Engineering Physics courses are open to students registered in any Engineering or Science Program who meet the prerequisites unless otherwise stated. Prior permission of the instructor is necessary for students from other Faculties or from Engineering or Science who do not meet the course prerequisites.

### ENGPYS 2A04 - ELECTRICITY AND MAGNETISM

Development of electromagnetic theory - fields, Gauss' law, electric potential, Laplace equation, dielectrics, Ampere's law, magnetism, Faraday's law, inductance, development of Maxwell's equations via vector calculus.

Three lectures, one tutorial, one lab (three hours each) every other week, first term

**Prerequisite(s):** Registration in any Engineering Physics or Mechatronics Engineering Program; PHYSICS 1E03; and credit or registration in MATH 2Z03

**Antirequisite(s):** ENGPYS 2A03

### ENGPYS 2CM4 - COMPUTATIONAL MULTIPHYSICS

Mathematical modelling and computational multiphysics for engineering design synthesizing E&M, thermodynamics, statics, dynamics, and quantum mechanics.

Three lectures, one lab (two hours each); second term

**Prerequisite(s):** ENGPYS 2P04, MATH 2Z03

### ENGPYS 2E04 - ANALOG AND DIGITAL CIRCUITS

Design and analysis of analog and digital electrical circuits - component analysis, circuit analysis and theorems, binary numbers, Boolean analysis and digital circuit design.

Three lectures, one lab (three hours each); second term

**Prerequisite(s):** PHYSICS 1E03 and registration in an Engineering program

### ENGPYS 2H04 - STATISTICAL THERMODYNAMICS

An introduction to thermodynamics and its statistical basis at the microscopic level, with applications to problems originating in a modern laboratory or engineering environment.

Three lectures, one tutorial, one lab (three hours each) every other week; second term

**Prerequisite(s):** Registration in Level II Engineering Physics

**Antirequisite(s):** ENGINEER 2H03, 2V04, MATLS 2B03

**Cross-list(s):** PHYSICS 2H04

*Not offered in 2020-2021.*

### ENGPYS 2NE3 - THERMAL SYSTEMS DESIGN

Thermal Systems Design covers the physics, thermodynamics and design of energy conversion systems utilized in many engineering systems. The topics include the first and second law of thermodynamics, irreversibility, the Rankine and Brayton cycles, and common refrigeration cycles.

Three lectures, one tutorial; first term

**Prerequisite(s):** Registration in Level II or above of an Engineering program

**Antirequisite(s):** MECHENG 2W04

### ENGPYS 2P04 - COMPUTATIONAL MECHANICS

Classical mechanics topics including coupled oscillators, elasticity, force and bending moment diagrams, tensors, Voigt notation, flexure, and beam resonance explored computationally using finite element method and computer algebra system software.

Three lectures, one lab (two hours each); first term

**Prerequisite(s):** PHYSICS 1D03; and credit or registration in MATH 2Z03

### ENGPYS 2QM3 - INTRODUCTION TO QUANTUM MECHANICS

Basic foundations of quantum mechanics; wave-particle duality, uncertainty principle, Hydrogen atom, Schrodinger Equation, barriers and tunnelling, probability, spin, quantum statistics, selected applications.

Three lectures, one tutorial; second term

**Prerequisite(s):** Registration in Level II or above of an Engineering program

**Antirequisite(s):** PHYSICS 2C03

### ENGPYS 3BA4 - ELECTRONICS I: CIRCUITS WITH NON-LINEAR AND ACTIVE COMPONENTS

P-N junctions, diodes, bipolar junction transistors, field effect transistors, DC and AC modeling, differential amplifiers and operational amplifiers, feedback and oscillators, digital circuits and multivibrators, signal processing.

Two lectures, lab (four hours); first term

**Prerequisite(s):** One of ENGPYS 2A03, 2A04, 2E04, PHYSICS 2BB3

**Antirequisite(s):** PHYSICS 3B06, 3BA3, ENGPYS 3BA3

### ENGPYS 3BB4 - ELECTRONICS II: EMBEDDING AND PROGRAMMING A MICRO-CONTROLLER

Design and synthesis project in electronics, focused on integrating analog electronics with a microcontroller to create a PID-controlled device.

Programming and interfacing the microcontroller are taught in weeks 1-6; the device is designed and built in weeks 7-12. Prior knowledge of basic electronics, including op-amps and transistors is required.

Two lectures, lab (four hours); second term

**Prerequisite(s):** ENGPYS 3BA3 or PHYSICS 3BA3

**Antirequisite(s):** PHYSICS 3B06, 3BB3, ENGPYS 3BB3



### ENGPYHS 3D03 - PRINCIPLES OF NUCLEAR ENGINEERING

Introduction to fission and fusion energy systems. Energetics of nuclear reactions, interactions of radiation with matter, radioactivity, design and operating principles of fission and fusion reactors.

Three lectures, one lab (three hours each) three times per term; second term

**Prerequisite(s):** Registration in Level II or above of an Engineering program

### ENGPYHS 3E04 - FUNDAMENTALS OF PHYSICAL OPTICS

Geometrical optics, electromagnetic waves, interference of light, Fraunhofer and Fresnel diffraction, polarized light, Fresnel equations, optical properties of materials, introduction to optical systems and precision optics experiments, selected topics in modern optics.

Three lectures, one tutorial, one lab (three hours each) three times per term; first term

**Prerequisite(s):** Registration in Level II or above of any Engineering Program, and one of ISCI 2A18 A/B, MATH 2A03, 2Q04, 2XX3, 2ZZ3; and one of MATH 2C03, 2P04, 2Z03; and one of PHYSICS 2B03 or ENGPYHS 2A04

**Antirequisite(s):** ENGPYHS 3E03, PHYSICS 3N03

**Cross-list(s):** PHYSICS 3N04

### ENGPYHS 3EC4 - PROFESSIONAL COMMUNICATION AND PROJECT MANAGEMENT

Introduction to communication styles, team dynamics, oral and written presentation skills, effective two-way communication strategies, project management, problem analysis, and job skills.

Three lectures, one tutorial (two hours); first term

**Prerequisite(s):** Registration in an Engineering program

**Antirequisite(s):** ENGPYHS 4ES3

### ENGPYHS 3ES3 - INTRODUCTION TO ENERGY SYSTEMS

A survey course on energy systems with emphasis on the analytic tools needed to evaluate them in terms of performance, resources and environmental sustainability, costs, and other relevant factors over their life cycles.

Three lectures; first term

**Prerequisite(s):** Registration in Level II or above of an Engineering program

**Antirequisite(s):** MECHENG 4004 and CHEMENG 4A03

### ENGPYHS 3F03 - PRINCIPLES OF SOLID-STATE MATERIALS AND DEVICES

Application of quantum mechanics to the electronic, structural and optical behaviour of solids. Topics will include crystal structures, diffraction, electrical conductivity, band theory, lattice vibrations and semiconductors.

Three lectures; first term

**Prerequisite(s):** ENGPYHS 2QM3 or PHYSICS 2C03 and registration in an Engineering program

### ENGPYHS 3H04 A/B S - RESEARCH PROJECT IN ENGINEERING PHYSICS

A special program of studies to be arranged by mutual consent of a professor and the student, to carry out experiments and/or theoretical investigations. A written report and oral defence are required.

Two terms (Fall/Winter or Spring/Summer)

**Prerequisite(s):** A GPA of at least 8.0. Registration in the second last year of an Engineering Physics program (for Fall/Winter enrolment) or the third last year for Spring/Summer enrolment. Subject to Department approval, students are permitted to be supervised by faculty members in other Engineering departments. Subject to Department approval, students from other Departments are permitted to take this course if their supervisor is a faculty

member of the Department of Engineering Physics.

**Antirequisite(s):** IBEHS 3106 A/B

### ENGPYHS 3L04 - ENGINEERING METROLOGY: FUNDAMENTALS AND APPLICATIONS

Statistics for engineering measurements, error analysis of experimental data, sensors for pervasive engineering measurements, radiation detectors (thermal, optical, nuclear), noise and interference, instrument response and uncertainty, signal conditioning, data communications, reliability and safety, introduction to feedback and control, and selected topics in state-of-the-art technologies.

Three lectures, one lab (three hours each) every other week, one tutorial; first term

**Prerequisite(s):** Registration in Level III or above of any Engineering Physics program

### ENGPYHS 3NM4 - NUMERICAL METHODS FOR ENGINEERING

Algebraic solutions; Numerical integration and differentiation; Finite difference and finite element methods; Euler method; Runge-Kutta techniques; Partial differential equations; Monte Carlo simulation.

Three lectures, one laboratory (three hours); first term

**Prerequisite(s):** Registration in Level II or above of an Engineering program

**Antirequisite(s):** ENGPYHS 2CE4

### ENGPYHS 3004 - INTRODUCTION TO FLUID MECHANICS AND HEAT TRANSFER

Fluid properties and statics are introduced. Basic equations of continuity, energy and momentum for internal and external flows are discussed.

Similitude, dimensional analysis, measuring devices, fluid machinery and hydraulic networks. Conduction and convection heat transfer.

Three lectures, one lab (three hours each) every other week; one tutorial, second term

**Prerequisite(s):** MATH 2Z03 and credit or registration in MATH 2ZZ3

### ENGPYHS 3PD3 - PHOTONIC DEVICES

This course covers the theory, design and operation of photonic devices, with an emphasis on their application in integrated and fiber optical systems for communications.

Three lectures; second term

**Prerequisite(s):** ENGPYHS 3E03, 3E04 or PHYSICS 3N03

### ENGPYHS 3PN4 - SEMICONDUCTOR JUNCTION DEVICES

Electronic properties of semiconductors: non-equilibrium carrier conditions; steady state and non-steady state; p-n junctions; Schottky diodes; bipolar junction transistors. Detailed coverage of a range of diodes including photodiodes, solar cells, light emitting diodes, zener diodes, and avalanche diodes.

Three lectures, one lab (three hours each); second term

**Prerequisite(s):** MATLS 2Q04, or credit or registration in ENGPYHS 3F03

**Antirequisite(s):** MATLS 3Q03

### ENGPYHS 3SM3 - STATISTICAL MECHANICS

An introduction to statistical distributions and their properties, and the statistical basis of thermodynamics at the microscopic level, with applications to problems originating in a modern laboratory or engineering environment.

Lectures (three hours), tutorial (one hour); second term

**Prerequisite(s):** Enrolment in Level III or above of an Engineering program

**Antirequisite(s):** ENGPYHS 2H04, PHYSICS 2H04, PHYSICS 3K03

### ENGPYS 3W04 - SIGNALS AND SYSTEMS FOR ENGINEERING

A systems approach to measurement in which synthesis of topics such as Fourier transforms, signal processing and enhancement, data reduction, modelling and simulation is undertaken.

Two lectures, one lab (three hours each), one tutorial; second term

**Prerequisite(s):** Registration in Level III or above of any Engineering or Science program

**Antirequisite(s):** IBEHS 3A03

### ENGPYS 4A06 A/B - ENGINEERING PHYSICS DESIGN AND SYNTHESIS PROJECT

Engineering design capstone project synthesizing undergraduate Engineering Physics knowledge to select a meaningful real-world problem, and engineer a solution by mathematically modelling the impact of design decisions and implementing them physically as part of an engineering team.

Two labs (three hours each), one capstone project; both terms

**Prerequisite(s):** Registration in the final level of an Engineering Physics program

### ENGPYS 4D03 - NUCLEAR REACTOR PHYSICS

Introduction to nuclear fission and the physics of nuclear reactors; reactor statics for homogeneous reactors; reactor kinetics for simple time-dependent situations; effects of saturating fission products (Xe-135); reactivity coefficients

Three lectures; first term

**Prerequisite(s):** ENGPYS 3D03

### ENGPYS 4H04 A/B S - RESEARCH PROJECT IN ENGINEERING PHYSICS

A special program of studies to be arranged by mutual consent of a professor and the student, to carry out experiments and/or theoretical investigations. A written report and oral defence are required.

Two terms (either Fall/Winter or Spring/Summer)

**Prerequisite(s):** A GPA of at least 8.0. Registration in the second last year of an Engineering Physics program (for Fall/Winter enrolment) or the third last year for Spring/Summer enrolment. Subject to Department approval, students are permitted to be supervised by faculty members in other Engineering departments. Subject to Department approval, students from other Departments are permitted to take this course if their supervisor is a faculty member of the Department of Engineering Physics.

**Antirequisite(s):** IBEHS 3I06 A/B

### ENGPYS 4I03 - INTRODUCTION TO BIOPHOTONICS

This course covers the basic principles of light interaction with biological systems and specific biomedical applications of photonics such as optical light microscopy, endoscopic imaging, spectroscopy in clinical diagnosis, flow cytometry, micro-optical sensors, etc.

Three lectures; second term

**Prerequisite(s):** Registration in Level III or above in a Faculty of Engineering, or Science, or Health Science Program, or the Integrated Biomedical Engineering & Health Sciences (IBEHS) Program.

### ENGPYS 4MD3 - NANOSCALE SEMICONDUCTOR DEVICES

Nanoscale semiconductor devices and associated materials including organic electronics (OLEDs, organic solar cells), quantum well devices (LEDs, high electron mobility transistors), quantum dots, quantum wires, graphene, emerging nanoscale materials and devices.

Three lectures; second term

**Prerequisite(s):** ENGPYS 3F03; and credit or registration in ENGPYS 3PN4 or credit or registration in both MATLS 3Q03 and 4Q03

### ENGPYS 4NE3 - ADVANCED NUCLEAR ENGINEERING

Energy generation and conversion, heat transfer and transport in a nuclear reactor. Characteristics and performance of nuclear fuels. Thermal margins and safety limits. Aging of core structural materials. Structural integrity of components.

Three lectures; second term

**Prerequisite(s):** ENGPYS 3D03

### ENGPYS 4P03 - NUCLEAR POWER PLANT SYSTEMS AND OPERATION

Systems and overall unit operations relevant to nuclear power plants; includes all major reactor and process systems; self-study using interactive nuclear power plant.

Three lectures; second term

**Prerequisite(s):** Registration in Level IV or above of any Engineering program (familiarity with ENGPYS 4D03 or other nuclear course desirable)

### ENGPYS 4PP3 - PLASMA PHYSICS APPLICATIONS

An introduction to plasma physics with emphasis on occurrence of plasmas in nature, and applications of plasmas in thermonuclear fusion and other engineering disciplines.

Three lectures; one-time demonstration lab (three hours); first term

**Prerequisite(s):** ENGPYS 2A04, or PHYSICS 2B03 and 2BB3, or ELECENG 2FH3

### ENGPYS 4QC3 - INTRODUCTION TO QUANTUM COMPUTING

An introduction to quantum computing including qubits, entanglement, quantum key cryptography, teleportation, quantum circuits and algorithms, spin qubits.

Three lectures; second term

**Prerequisite(s):** ENGPYS 2QM3 or PHYSICS 2C03

*Not offered in 2020-2021.*

### ENGPYS 4S03 - LASERS AND ELECTRO-OPTICS

Basic principles and applications of lasers, nonlinear optics (materials and devices), and optical modulation.

Three lectures; first term

**Prerequisite(s):** ENGPYS 3E03, PHYSICS 3N03, or ELECENG 4EM4 or 3FK4

### ENGPYS 4UB2 - MODERN AND APPLIED PHYSICS LABORATORY: BIOMEDICAL

Students will complete the fabrication and testing of a working MOSFET/ISFET using semiconductor fabrication methods.

One lab (three hours each); second term

**Prerequisite(s):** one of ENGPYS 3PN4, MATLS 3Q03 or ELECENG 3EJ4, and registration in one of the Faculty of Engineering or the Integrated Biomedical Engineering & Health Sciences (IBEHS) program.

**Antirequisite(s):** ENGPYS 4U02, 4U04

### ENGPYS 4UM2 - MODERN AND APPLIED PHYSICS LABORATORY: NANO- AND MICRO-DEVICES

Students will learn semiconductor device fabrication by constructing and testing a semiconductor device, such as a photovoltaic solar cell. The ISFET

forms the foundation for different classes of electronic biosensors used for health monitoring.

One lab (three hours each); first term

**Prerequisite(s):** one of ENGPYHS 3PN4, MATLS 3Q03 or ELECENG 3EJ4

**Antirequisite(s):** ENGPYHS 4U02, 4U04

### ENGPYHS 4UN2 - MODERN AND APPLIED PHYSICS LABORATORY: NUCLEAR LABS

Students perform a choice of labs involving the McMaster Nuclear Reactor. The learning outcome is an experience with an actual nuclear reactor and an understanding of the nuclear physics processes underlying its operation and its applications (neutron radiography).

One lab (three hours each); one term

**Prerequisite(s):** ENGPYHS 3D03

**Antirequisite(s):** ENGPYHS 4U02, 4U04

### ENGPYHS 4UP2 - MODERN AND APPLIED PHYSICS LABORATORY: PHOTONICS

The course will explore the design, fabrication and characterization of integrated photonic devices such as waveguides, couplers, modulators and detectors. Students will study the operation of such devices in photonic integrated circuits for applications including high-speed communications.

One lab (three hours each); second term

**Prerequisite(s):** ENGPYHS 3E03 or 3E04

**Antirequisite(s):** ENGPYHS 4U02, 4U04

### ENGPYHS 4US2 - MODERN AND APPLIED PHYSICS LABORATORY: SMART SYSTEMS

The course will explore the design, assembly and test of smart systems based on software, computer, electronic, and photonic components. Students will study the operation of such systems to address real-world problems.

One lab (three hours each); first term

**Prerequisite(s):** ENGPYHS 2E04

**Antirequisite(s):** ENGPYHS 3G03, 3G04, 4G03, 4U02, 4U04

### ENGPYHS 4X03 - INTRODUCTION TO PHOTOVOLTAICS

A review of photovoltaic devices including solar cell operation, characterization, manufacturing, economics and current and next generation technologies.

Three lectures; first term

**Prerequisite(s):** One of ELECENG 2E15, MATLS 3Q03 or ENGPYHS 3BA3

### ENGPYHS 4Z03 - SEMICONDUCTOR MANUFACTURING TECHNOLOGY

Detailed description of fabrication technologies used in the semiconductor industry; computer modelling of device fabrication; analysis of device performance.

Two classroom-based lectures, one computer cluster-based lecture; first term

**Prerequisite(s):** ENGPYHS 3F03 or MATLS 3Q03; and registration in the Faculty of Engineering or the Integrated Biomedical Engineering & Health Sciences (IBEHS) program.

## Engineering Technology

Courses in Engineering Technology are administered by the Bachelor of Technology Program.

Engineering Technology Building (ETB), Room 121, ext. 20195

<http://mybtechdegree.ca>

### ENGTECH 1AC3 - ANALYTICAL CHEMISTRY

Introduction to laboratory procedures used in chemical analysis for classical wet and instrumental methods; statistical data treatment, gravimetric analysis, volumetric analysis, pH measurements and optical methods.

Three lectures, one lab (three hours); second term

**Prerequisite(s):** ENGTECH 1CH3 and registration Automation Engineering Technology or Biotechnology

### ENGTECH 1BI3 - BIOLOGY

This course provides basic introduction to the following topics: chemistry of life, cells, genetics, evolution and diversity and plant and animal form and function.

Two lectures, one lab (three hours every other week); second term

**Prerequisite(s):** Registration in Biotechnology

### ENGTECH 1CH3 - CHEMISTRY

Basic chemical concepts, calculations and laboratory procedures. Chemical formulae and equations, chemical stoichiometry, nomenclature, acids and bases, gases, chemical equilibrium, thermochemistry and thermodynamics, redox reactions and electrochemistry.

Three lectures, one tutorial, one lab (three hours every other week); first term

**Prerequisite(s):** Registration in Automation Engineering Technology, or Automotive and Vehicle Engineering Technology, or Biotechnology

### ENGTECH 1CP3 - C++ PROGRAMMING

Programming concepts and introduction to C++ programming. C++ syntax, functions, decision-making, looping, operators, arrays and data structures.

Two lectures, one lab (two hours); first term

**Prerequisite(s):** Registration in Automation Engineering Technology, or Automotive and Vehicle Engineering Technology

**Antirequisite(s):** COMPTECH 3PD3

### ENGTECH 1EL3 - ELECTRICITY AND ELECTRONICS I

Introduction to electronic circuits; DC and AC sources, resistors, inductors, and capacitors; phasors and impedance; transient and steady-state analysis; network analysis; energy and power.

Four lectures, one lab (three hours); second term

**Prerequisite(s):** Registration in Automation Engineering Technology, or Automotive and Vehicle Engineering Technology, or Biotechnology

### ENGTECH 1ET0 - INTRODUCTION TO THE TECHNOLOGY CO-OP PROGRAM

Orientation to Technology Co-op programs and the workplace; self-assessment and goal setting; application procedures and materials; occupational health and safety.

**Prerequisite(s):** Registration in a Degree Completion Technology program

### ENGTECH 1MC3 - MATHEMATICS I

Pre-calculus concepts: algebra, trigonometry, complex numbers, exponential and logarithmic functions, systems of equations, matrices, determinants and vectors. Limits, continuity, differential calculus, partial derivatives, applications, sequences and series.

Four lectures; first term

**Prerequisite(s):** Registration in Automation Engineering Technology, or Automotive and Vehicle Engineering Technology, or Biotechnology

### ENGTECH 1ME3 - STATICS AND MECHANICS OF MATERIALS

Statics and kinematics of particles and rigid bodies: force vectors; equilibrium; trusses, frames and machines; internal forces; centroids; friction; axial load, torsion, bending and shear; stress and strain. Newton's Second Law; moments of inertia; plane motion.

Four lectures; second term

**Prerequisite(s):** Registration in Automotive and Vehicle Engineering Technology

### ENGTECH 1MT3 - MATHEMATICS II

Integral calculus involving all the techniques of integration, applications, improper integrals, multiple integrals and integral theorems, infinite sequences and series.

Four lectures; second term

**Prerequisite(s):** ENGTECH 1MC3 and registration Automation Engineering Technology, or Automotive and Vehicle Engineering Technology, or Biotechnology

### ENGTECH 1PH3 - PHYSICS

Sound, light, kinematics, forces, work, energy, fluid and thermal physics.

Four lectures, one lab (two hours every other week); first term

**Prerequisite(s):** Registration in Automation Engineering Technology, or Automotive and Vehicle Engineering Technology, or Biotechnology

### ENGTECH 1PP3 - PYTHON PROGRAMMING

Programming concepts and introduction to Python programming. Python syntax, functions, decision-making, looping, operators, arrays and data structures.

Two lectures, one lab (two hours); first term

**Prerequisite(s):** Registration in Biotechnology

### ENGTECH 1PR3 - OBJECT-ORIENTED PROGRAMMING

Project-based course covering computer programming. Object-oriented, event-driven programs involving decisions, looping, arithmetic calculations, string handling and data file handling.

Two lectures, one lab (two hours); second term

**Prerequisite(s):** ENGTECH 1CP3 and registration in Automation Engineering Technology or Automotive and Vehicle Engineering Technology

### ENGTECH 2EE0 - FOUR MONTH CO-OP EXPERIENCE I

Minimum of 15 weeks of full-time employment in a professional environment.

**Prerequisite(s):** GENTECH 2PW3 and registration in a Four-Year Technology Program and permission of the Engineering Co-op and Career Services Office.

### ENGTECH 2ES3 - ENGINEERING STATISTICS

An introductory statistics course covering the following topics with engineering applications: organization and description of data, probability and distributions, confidence intervals and hypothesis testing and bivariate data analysis using regression.

Two lectures, one tutorial; first term

**Prerequisite(s):** ENGTECH 1MT3; and registration in Automotive and Vehicle Engineering Technology

**Antirequisite(s):** ENGTECH 3ES3, 3ST3

### ENGTECH 2ET0 - FOUR MONTH CO-OP EXPERIENCE I

Minimum of 15 weeks of full-time employment in a professional environment.

**Prerequisite(s):** ENGTECH 1ET0, registration in a Degree Completion

Technology Co-op program, and permission of the Engineering Co-op and Career Services Office

### ENGTECH 2MA3 - MATHEMATICS III

Techniques for solving first and second order ordinary differential equations with applications; initial value and boundary value problems, systems of differential equations, partial differential equations.

Three lectures, one tutorial; first term

**Prerequisite(s):** ENGTECH 1MT3; and registration in Automation Engineering Technology, Automotive and Vehicle Engineering Technology, or Biotechnology

### ENGTECH 2MS3 - MODELLING AND NUMERICAL SOLUTIONS

Number systems and errors; solutions to nonlinear equations; interpolation by polynomials; matrices and systems of linear equations; differentiation and integration; differential equations; applications to mechanical systems.

Three lectures; second term

**Prerequisite(s):** ENGTECH 1CP3, ENGTECH 1MT3; and registration in Automotive and Vehicle Engineering Technology

**Antirequisite(s):** CIVTECH 3MN3, ENGTECH 3MN3

### ENGTECH 2MT3 - MATHEMATICS IV

Continuous time signals and systems; convolution; Laplace transform, Fourier series and transform; Discrete time signals and systems.

Four lectures; second term

**Prerequisite(s):** ENGTECH 2MA3; and registration in Automation Engineering Technology or Automotive and Vehicle Engineering Technology

### ENGTECH 3DM3 - DISCRETE MATHEMATICS

Fundamental discrete mathematics concepts relevant to IT: sets, relations, functions, graphs, propositional logic. State machines. Input/output specifications. Invariants.

Three lectures; one term

**Prerequisite(s):** Registration in Software Engineering Technology

### ENGTECH 3EE0 - FOUR MONTH CO-OP EXPERIENCE II

Minimum of 15 weeks of full-time employment in a professional environment. First term

**Prerequisite(s):** ENGTECH 2EE0; registration in a Four-Year Technology Program; and permission of the Engineering Co-op and Career Services Office

### ENGTECH 3ES3 - ENGINEERING STATISTICS

An introductory statistics course covering the following topics with engineering applications: organization and description of data, probability and distributions, confidence intervals and hypothesis testing and bivariate data analysis using regression.

Two lectures, one tutorial; first term

**Prerequisite(s):** ENGTECH 1MT3; and registration in Level III of Automation Engineering Technology or Biotechnology

**Antirequisite(s):** ENGTECH 2ES3, 3ST3

### ENGTECH 3ET0 - FOUR MONTH CO-OP EXPERIENCE II

Minimum of 15 weeks of full-time employment in a professional environment.

**Prerequisite(s):** ENGTECH 2ET0, registration in a Degree Completion Technology Co-op program, and permission of the Engineering Co-op and Career Services Office



### ENGTECH 3FE3 - FINITE ELEMENT ANALYSIS

Matrix techniques; eigenvalue problems; equations of elasticity: plane stress, plane strain, 3D problems; variational methods; element types, element stiffness, mass matrices and load vector; assemblage of elements, boundary conditions.

Two lectures; first term

**Prerequisite(s):** AUTOTECH 2AC3, AUTOTECH 2TS3, and registration in Level III of Automotive and Vehicle Engineering Technology

**Antirequisite(s):** ENGTECH 4FA3

### ENGTECH 3MA3 - MATHEMATICS V

Ordinary and partial differential equations; Laplace transforms; Fourier series; vector calculus; integral theorems, with engineering applications.

Three lectures; one term

**Prerequisite(s):** Registration in Civil Engineering Infrastructure Technology, Manufacturing Engineering Technology, Power and Energy Engineering Technology, or Software Engineering Technology

### ENGTECH 3ML3 - STRENGTH OF MATERIALS

Stresses under combined loads, generalized Hooke's Law; two and three dimensional stresses, stress transformation, principal stresses, Mohr's circle; deflections by integration; energy methods, Castagliano's theorem; columns; yield criteria.

Three lectures; one term

**Prerequisite(s):** ENGTECH 3MA3, 3SD3, and registration in Civil Engineering Infrastructure Technology or Manufacturing Engineering Technology

### ENGTECH 3MN3 - MODELLING AND NUMERICAL SOLUTIONS

Number systems and errors; solutions to nonlinear equations; interpolation by polynomials; matrices and systems of linear equations; differentiation and integration; differential equations; applications to mechanical systems.

Two lectures, one tutorial; first term

**Prerequisite(s):** ENGTECH 1CP3, ENGTECH 2MA3; and registration in Level IV or above of Automation Engineering Technology

**Antirequisite(s):** CIVTECH 3MN3, ENGTECH 2MS3

### ENGTECH 3SD3 - STATICS AND DYNAMICS

Two and three dimensional force vectors, equilibrium of a particle; moments and couples; equilibrium rigid bodies; centroids, second moment of area, moment of inertia; truss, and static analysis. Planar kinematics and planar kinetics of particles and rigid bodies; work and energy, impulse, and momentum.

Two lectures, one lab; one term

**Prerequisite(s):** Registration in Civil Engineering Infrastructure Technology or Manufacturing Engineering Technology

**Antirequisite(s):** MANTECH 3MD3

### ENGTECH 3SP3 - STRUCTURE AND PROPERTIES OF MATERIALS

Structure of crystalline solids; imperfections in solids; mechanical properties of metals, dislocations and strengthening mechanisms, failure, phase diagrams, phase transformation in metals, processing of metal alloys, composites, structures and properties of ceramics, processing of ceramics.

Three lectures; one term

**Prerequisite(s):** Registration in Civil Engineering Infrastructure Technology or Manufacturing Engineering Technology

**Antirequisite(s):** ENGTECH 3MN3

### ENGTECH 3ST3 - PROBABILITY AND STATISTICS

Probability and statistics for engineering and technology. Descriptive statistics, discrete and continuous random variables and probability distributions, confidence intervals, hypothesis testing, analysis of variance, correlation and regression.

Three lectures; one term

**Prerequisite(s):** ENGTECH 3MA3 and registration in Civil Engineering Infrastructure Technology or Software Engineering Technology

**Antirequisite(s):** ENGTECH 3ES3

### ENGTECH 3TD3 - THERMODYNAMICS

Introduction to thermodynamics, properties of pure substances, first and second laws of thermodynamics, entropy, vapor power cycles, refrigeration cycles, and combined power cycles.

Three lectures; one term

**Prerequisite(s):** ENGTECH 3MA3 and registration in Manufacturing Engineering Technology or Power and Energy Engineering Technology

**Antirequisite(s):** ENRTECH 3TD3, MANTECH 3TF3

### ENGTECH 4CT3 - SYSTEMS AND CONTROL

Mathematical models of physical systems; differential equations, Laplace transforms; block diagrams, transfer functions; system transient response; stability analysis in s-, frequency-, and time-domain; Routh-Hurwitz criteria, root-locus analysis, Bode plots, Nyquist criterion, state-space representation; simple PID control systems; lead-lag compensation; digital simulations of control systems.

Three lectures; one term

**Prerequisite(s):** ENGTECH 3MA3 and registration in Power and Energy Engineering Technology or Manufacturing Engineering Technology

**Antirequisite(s):** ENGTECH 3CT3, ENRTECH 3CT3, 4CT3

### ENGTECH 4ED3 - SENIOR ENGINEERING DESIGN PROJECT

A project involving design and synthesis that reinforces concepts gained from previous semesters. Such a project involves research, design, and assessment. Two lectures, one lab; one term

**Prerequisite(s):** CIVTECH 4SD3 or 4RC3; and registration in Level IV of Civil Engineering Infrastructure Technology

CIVTECH 4SD3 or 4RC3 may be taken concurrently with this course.

### ENGTECH 4EE0 - FOUR MONTH CO-OP EXPERIENCE III

Minimum of 15 weeks of full-time employment in a professional environment.

**Prerequisite(s):** ENGTECH 3EE0; registration in a Four-Year Technology Program; and permission of the Engineering Co-op and Career Services Office

### ENGTECH 4EP3 - SENIOR ENGINEERING PROJECT

A project that is based on the knowledge gained from previous semesters. Such a project involves research, design, development and implementation of a process.

Three lectures; one term

**Prerequisite(s):** ENRTECH 4CT3, 4PD3, 4PM3; or one of ENRTECH 4RE3, 4RT3 and registration in Power and Energy Engineering Technology

**Antirequisite(s):** ENRTECH 4EP3

### ENGTECH 4EX0 - FOUR MONTH CO-OP EXPERIENCE

Minimum of 15 weeks of full-time employment in a professional environment.

**Prerequisite(s):** ENGTECH 4EE0; registration in a Four-Year Technology program; and permission of the Engineering Co-op and Career Services Office

### ENGTECH 4FA3 - FINITE ELEMENT ANALYSIS

Formerly ENGTECH 3FA3.

Matrix techniques, eigenvalue problems, equation of elasticity, 3D problems, variational methods, element types, element stiffness, mass matrix and load vector, assemblage of elements, boundary conditions.

Two lectures, one lab; one term

**Prerequisite(s):** ENGTECH 3ML3 and ENGTECH 4MA3 or CIVTECH 3MN3, and registration in Civil Engineering Infrastructure Technology or Manufacturing Engineering Technology

**Antirequisite(s):** ENGTECH 3FE3

### ENGTECH 4FD3 - SENIOR ENGINEERING PROJECT

Project-based course using the agglomeration of previously acquired knowledge. Research, design, implement and document a software solution to a problem in a real-world application domain.

Three lectures, one term

**Prerequisite(s):** Registration in Level IV Software Engineering Technology

**Antirequisite(s):** SFWRTECH 4FD3

### ENGTECH 4MA3 - ADVANCED MATHEMATICS

Sequence and series, Fourier series, Matrix algebra, Formulating engineering process models, Numerical solutions techniques, Root findings, Curve fittings, Numerical integration, Numerical differentiation, Ordinary differential equations.

Three lectures; one term

**Prerequisite(s):** ENGTECH 3MA3 and registration in Civil Engineering Infrastructure Technology, Manufacturing Engineering Technology or Power and Energy Engineering Technology

**Antirequisite(s):** CIVTECH 3MN3

### ENGTECH 4TF3 - MECHANICS OF FLUIDS

Fluid statics, flow in closed conduits, dimensional analysis and similarity, energy and Bernoulli's equation, flow kinematics, hydraulic cross-sections, energy loss in piping system, fluid Machinery.

Three lectures, one lab; one term

**Prerequisite(s):** ENGTECH 3MA3 and registration in Civil Engineering Infrastructure Technology, Manufacturing Engineering Technology or Power and Energy Engineering Technology

**Antirequisite(s):** AUTOTECH 3T53

## English

Courses in English are administered by the Department of English and Cultural Studies.

Chester New Hall, Room 321, ext 24491

<http://english.humanities.mcmaster.ca/>

#### Department Notes

- All Level II and III ENGLISH courses are open as electives to students registered in Level II or above of any undergraduate program with the exception of the following:
  - ENGLISH 2D03 - Creative Writing Inquiry
  - ENGLISH 2RW6 A/B - Reading and Writing Criticism
  - ENGLISH 3A03 - Critical Race Studies
  - ENGLISH 3AA3 - Theories of Gender and Sexuality
  - ENGLISH 3CW3 - Creating Writing in/for/with Communities
  - ENGLISH 3RW3 - Experiential Practicum: Reading and Writing in the Community
- Courses restricted to students registered in programs in English may be available to qualified students in other programs if space permits. Students

interested in such courses should request permission from the department.

- Level IV seminars are open only to Honours students registered in Level IV of an English program. Enrolment will be limited to 18 students per seminar when possible. A list of seminars to be offered will be available prior to registration and balloting for seminars for the next academic year will take place in March.

#### Courses

*If no prerequisite is listed, the course is open.*

### ENGLISH 1CS3 - STUDYING CULTURE: A CRITICAL INTRODUCTION

The course will introduce fundamental concepts and questions in the field of cultural studies, and will prepare students to use those tools in analyzing culture as a site of meaning, identities, power, and pleasure. The course aims to develop your ability to think critically about your own engagements with a broad range of manifestations of culture (e.g. popular culture, social institutions, everyday practices, digital culture, consumer culture). Considerable emphasis will be placed on the development of critical skills in reading and writing.

Two lectures, one tutorial; one term

**Antirequisite(s):** CSCT 1CS3

### ENGLISH 1F03 - THE WRITTEN WORLD

What does the world look like when it takes a literary form? We will read and write about one or more literary genres or forms from various times and places, and reflect on the shape of literature, its place in the world, and the place of the world in it. The course functions as an introduction to the study of literature, equipping students with conceptual, analytical and writing tools that will help them become informed readers of the many modes and manners of imaginative expression. Considerable emphasis will be placed on the development of critical skills in reading and writing.

Two lectures, one tutorial; one term

### ENGLISH 1G03 - MAKING AND UNMAKING LITERARY TRADITIONS

This introductory course explores literatures written in English from the perspective of literary historical periods, genres, and critical approaches. We will trace how particular literary traditions emerge in relation to developments in the cultural narratives of, for example, gender and sexuality, selfhood, nation and empire, capitalism, and the environment. We will consider how a literary text is an expression of a particular cultural moment, with all its social and material preoccupations, and yet makes meaning through a complex dialogue with past traditions. The course functions as an introduction to the study of literature, equipping students with conceptual, analytical, and writing tools that will help them become an informed reader of the many modes and manners of imaginative expression. Considerable emphasis will be placed on the development of critical skills in reading and writing.

Two lectures, one tutorial; one term

**Antirequisite(s):** ENGLISH 1C06 A/B

### ENGLISH 1H03 - WORDS IN PLACE

Many public ceremonies in Canada now include acknowledgements of whose land we are meeting on. What does it mean to acknowledge the people and the place where we live and work? How do places come into focus when we write and speak about them? This introductory course examines oral narratives, art, poetry, film, documentary, fiction, and/or literary non-fiction that emphasize the dynamics of particular places in relation to Indigenous and colonial histories; diasporic histories of movement, displacement, emigration and immigration; natural, economic, and political geographies; as well as the

particular languages -- i.e. different Englishes, Indigenous languages -- that places give rise to. Considerable emphasis will be placed on the development of critical skills in reading and writing.

Two lectures, one tutorial; one term

### ENGLISH 2AA3 - AMERICAN LITERATURE BEFORE 1900

This course surveys American literary and cultural production up to 1900. Issues may include: settler and colonial culture, the foundations of African-American literature, Indigenous literatures, ante- and post-bellum literatures, dark romanticism, American Renaissance, spiritual narrative.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** ENGLISH 2H06 A/B

### ENGLISH 2BB3 - TOPICS IN 20TH AND 21ST-CENTURY AMERICAN LITERATURE AND CULTURE

A specialized approach to studies in 20th and 21st-century American literary and cultural production, focussing on selected movements, issues, genres or traditions. Eg. Native American Renaissance, Asian-American literature and cinema, the Beat Generation, the Harlem Renaissance, American underground commix.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** ENGLISH 2H06 A/B

*First offered in 2019-2020*

### ENGLISH 2BL3 - TWENTIETH- AND TWENTY-FIRST CENTURY BRITISH LITERATURE AND FILM

An introduction to the twentieth- and twenty-first-century literary texts and films from the British Isles, with attention to their historical, cultural, and socio-political contexts.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** ENGLISH 2I06 A/B

### ENGLISH 2C03 - CONTEMPORARY CANADIAN FICTION

A study of the themes and structure of the contemporary Canadian novel, usually with emphasis on the relationship between Canada's cultural patterns and its literature.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

*Not open to students with credit or registration in ENGLISH 2G06 A/B.*

### ENGLISH 2CC3 - SETTLER COLONIALISM AND WRITING IN CANADA

This course looks at ways literary writing has contributed to and contested the formation of Canada as a settler colony. Examining a selection of literary works from the stories of European explorers to the present, this course traces how many works have provided the rationale for colonial domination of land and people in Canada, while many others have voiced resistance and imagined alternatives.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** ENGLISH 2G06 A/B

### ENGLISH 2CL3 - CANADIAN LITERATURE OF DISSENT AND SOCIAL JUSTICE

This course critically examines the way social justice concerns in Canadian literature, film, and music have grown out of and critiqued dominant narratives about Canada's culture, makeup, and purpose.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** ENGLISH 2G06 A/B

### ENGLISH 2CR3 - SHAKESPEARE: COMEDIES, PROBLEM PLAYS, AND ROMANCES

A close study of selected plays in these genres, together with relevant literary, cultural, theatrical, and historical contexts. May include plays by other dramatists.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** ENGLISH 2L03, 3K06 A/B, THTRFLM 2CR3, 3KL6 A/B

### ENGLISH 2D03 - CREATIVE WRITING INQUIRY

A creative writing seminar and workshop based on the Inquiry model of self-directed research and collaboration. Students will exercise their creative talents in a variety of genres and work independently and in groups to develop critical skills and problem solving techniques.

Three hours; one term

**Prerequisite(s):** Registration in a program in English and Cultural Studies

### ENGLISH 2HT3 - SHAKESPEARE: HISTORIES AND TRAGEDIES

A close study of selected plays in these genres, together with relevant literary, cultural, theatrical, and historical contexts. May include plays by other dramatists.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** ENGLISH 2L03, 3K06 A/B, THTRFLM 2HT3, 3KL6 A/B

### ENGLISH 2KA3 - INDIGENOUS FUTURISMS AND WONDERWORKS

Through a focus on Indigenous articulated realities and futures, this course refuses colonial narratives of the 'disappearing Indian' and insists upon Indigenous presence in past, present, and future as essential for envisioning a human future. Genres of study will include fiction, graphic novels, film, non-fiction, performance, and wonderworks.

**Prerequisite(s):** INDIGST 1A03, 1AA3, RECONCIL 1A03, or 3 units of Level I English; or permission of the Instructor

**Cross-list:** INDIGST 2K03

*This course is administered by the Indigenous Studies program.*

### ENGLISH 2KK3 - STUDIES IN WOMEN WRITERS

A closely focused course on women's writing in English. The topic for the course varies, sometimes concentrating on specific issues, sometimes on an historical period or national literature. Relevant feminist theory will be a component of the course.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** CSCT 2K06 A/B, CSCT 2KK3, ENGLISH 2K06 A/B, WOMENST 2K06 A/B, 2KK3

### ENGLISH 2M03 - CONCEPTS OF CULTURE

An analysis of the concept of culture from the Enlightenment to the present. Theoretical readings combined with the analysis of specific cultural texts, objects, forms, and practices will allow students to trace historical and contemporary debates concerning culture.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** ARTHIST 2M03, CMST 2M03, CSCT 2M03, CSCT 2M06 A/B, ENGLISH 2M06 A/B

### ENGLISH 2NH3 - NARRATIVES OF HEALTH

This course inquires into representations of health with reference to a range of media. Critical frameworks may include critical disability studies, environmental humanities, feminist research, critical race studies, science and technology studies, narrative medicine, and Indigenous studies.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

### ENGLISH 2P03 - MODERNITY, POSTMODERNITY, VISUALITY

This course will examine modernity and postmodernity through an exploration of a variety of theoretical discourses and representational practices, with specific reference to visual culture.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** CSCT 2P03

### ENGLISH 2PC3 - POPULAR CULTURE

This course examines the study of everyday culture, its underlying assumptions, its locations, and the capacity of audiences to engage actively and critically with it. Possible areas of study may include: advertising, fandom, film, TV, social media, youth culture, celebrity, memes, comics, online apps, popular music, video.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

### ENGLISH 2RW6 A/B - READING AND WRITING CRITICISM

This course will offer a grounding in reading literary and cultural texts from a range of contemporary critical approaches. Special attention will be paid to writing skills and developing sustained analytical arguments about literature and culture.

Three hours; two terms

**Prerequisite(s):** Registration in a program in English and Cultural Studies

**Antirequisite(s):** ENGLISH 2A03

### ENGLISH 2S03 - SPECTACULAR BODIES

This course examines the representations and constructions of the racialized, gendered, ethnic, or othered human body in and through contemporary cultural texts.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** CSCT 2S03

### ENGLISH 2Z03 - NATURE, LITERATURE, CULTURE: INTRODUCTION TO THE ENVIRONMENTAL HUMANITIES

A study of representations of nature in a variety of written and visual texts. Topics may include food, environmental crisis, development, humans and other animals.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** CSCT 2Z03

### ENGLISH 3A03 - CRITICAL RACE STUDIES

This course examines contemporary debates in critical race theory in an attempt to critically decode the operations of race in literary and cultural texts.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above in a program in English and Cultural Studies, Justice, Political Philosophy and Law, or Peace Studies.

**Antirequisite(s):** CSCT 3A03, PEACEST 3A03, WOMENST 3H03

### ENGLISH 3AA3 - THEORIES OF GENDER AND SEXUALITY

This course explores a range of theories of gender and sexuality by working through readings from the intersecting fields of feminist, queer and masculinity studies.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above in a program in English and Cultural Studies, or Justice, Political Philosophy and Law.

**Antirequisite(s):** CSCT 3AA3, WOMENST 3HH3

### ENGLISH 3CC3 - READING FILM

A critical examination of selected films and film genres as cultural texts, using methods drawn from film theory and cultural studies.

Three hours, plus one weekly film screening; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** CSCT 3CC3, CMST 3CC3, THTRFLM 3R03

### ENGLISH 3CL3 - TOPICS IN TWENTIETH- AND TWENTY-FIRST-CENTURY BRITISH LITERATURE AND CULTURAL STUDIES

A foundational study of literary and cultural production from the UK, Scotland, and/or Ireland since 1900 through an important theme, cultural movement, era, or genre. Topics might include: migration, terrorism, postwar subcultures, the interwar period, the 1980s, dystopias, or espionage.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** English 2I06 A/B

### ENGLISH 3CW3 - CREATING WRITING IN/FOR/WITH COMMUNITIES

This creative writing inquiry class engages students in the staged development of a creative writing project in consultation with and on behalf of a community of their choice.

Three hours; one term

**Prerequisite(s):** Registration in a program in English and Cultural Studies

### ENGLISH 3D03 - SCIENCE FICTION

An examination of a number of standard science fiction tropes such as time travel, lost worlds, utopia/dystopia, totalitarian societies, alien races and post holocaust societies.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** CSCT 3D03

*Not open to students with credit in English 3I13 TOPICS IN PROSE, if the topic was Science Fiction.*



### ENGLISH 3EC3 - EIGHTEENTH-CENTURY LITERATURE AND CULTURE: ENLIGHTENMENT AND ITS SHADOWS

A study of British Literature and Culture of the long eighteenth-century (1660-1800), including plays, poetry, fiction, and essays. Themes include sexual politics, consumerism, globalization, the public sphere, and subjectivity.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** ENGLISH 3G06 A/B

### ENGLISH 3EE3 - AFRICAN AMERICAN LITERATURE

A study of selected texts by African American writers published since 1900, considered in the context of African American history and literary tradition.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** CSCT 3EE3

### ENGLISH 3F03 - THE FAIRY TALE

An examination of fairy tales from a variety of cultures and historical periods. Students will also explore theories of the folktale and their implications for our understanding of other literary genres.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

### ENGLISH 3GF3 - STUDIES IN POPULAR GENRES

This course will provide an in-depth exploration of the conventions and consumption of one or more popular genres, such as graphic narrative, science fiction, romance, horror, crime writing, fantasy, chicklit or memoir.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** CSCT 3GF3

*ENGLISH 3GF3 may be repeated, if on a different topic, to a total of six units.*

### ENGLISH 3GG3 - THEORIES OF DECOLONIZATION AND RESISTANCE

A study of theoretical and cultural works that examine the effects of empire and chart projects for decolonization. Introduces debates in Indigenous and postcolonial studies, including as they engage with theories of racial capitalism, gender and sexuality, globalization, war, environmental change.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** CSCT 3R06 A/B, ENGLISH 3R06 A/B, PEACEST 3E06 A/B

**Cross-list(s):** PEACEST 3GG3

### ENGLISH 3H03 - JANE AUSTEN

A critical evaluation of a selection of Jane Austen's work with a focus on exploring late 18th- and early 19th-century British culture.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

### ENGLISH 3L03 - OLD ENGLISH LITERATURE IN TRANSLATION

Old English language and literature will be studied in the context of Anglo-Saxon culture.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** ENGLISH 3L06 A/B

### ENGLISH 3NN3 - MEDIEVAL LITERATURE AND CULTURE: AN OVERVIEW

An introduction to the literature and culture of medieval England, with attention to their historical, cultural, and socio-political contexts.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** ENGLISH 3C06 A/B

### ENGLISH 3PT3 - PERSPECTIVE AND TIME IN FICTION

This course explores the art of perspective in fiction, and of how to use point of view to write fiction that is bold, challenging, and authentic.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

### ENGLISH 3Q03 - THE HISTORY OF CRITICAL THEORY

A survey of the main developments in critical theory from Plato to the end of the 19th century. Areas of investigation may include: art, aesthetics, civil society, representation, ethics and knowledge.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** CSCT 3Q03

### ENGLISH 3Q03 - CONTEMPORARY CRITICAL THEORY

This course examines selected issues in contemporary critical theory. Areas of investigation may include: representation, power/knowledge, discourse, subjectivity and the body.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** CSCT 3Q03

### ENGLISH 3RW3 - EXPERIENTIAL PRACTICUM: READING AND WRITING IN THE COMMUNITY

This course studies the theory and practice of community engagement in connection with literary and cultural studies. Students will integrate an experiential learning opportunity (normally requiring a four-hour a week volunteer placement with a departmental community partner) with academic research, discussion, and writing on relevant topics.

Seminar (two hours), and placement hours; one term

**Prerequisite(s):** Registration in Level III or IV of a program in English and Cultural Studies

*Departmental permission required.*

### ENGLISH 3SS3 - TOPICS IN MEDIEVAL LITERATURE AND CULTURE

A foundational study of literary and cultural production in medieval England, through an important theme, cultural movement, era, or genre. Topics might include self and community, religion and race, the natural and supernatural, body and soul, honour and revenge, or dream poems and visionary texts.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** ENGLISH 3C06 A/B

### ENGLISH 3TT3 - THE AGE OF ELIZABETH I

Galvanized by religious revolution, unprecedented geographic exploration, rapid urbanization, and rule by a female monarch, English literature and culture during the reign of Elizabeth I proved astonishingly vibrant. Focusing on selected topics and texts from the Elizabethan period, this course will explore

how poets, playwrights, and other writers from this age debated new ideas about the self, the sacred, and the nation, as well as the role of gender, race, and class in relation to individual and group identity.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** ENGLISH 3I06 A/B, ENGLISH 3RL6 A/B, ENGLISH 3V06 A/B

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### ENGLISH 3UU3 - RENAISSANCE AND REVOLUTION: STUDIES IN 17TH-CENTURY LITERATURE

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British literature and culture in this period of "Renaissance" and "Revolution" offers a rich and varied record of human imagination when confronted with enormous change in social and economic structures, literacy, science, and religion, not to mention the cataclysmic civil wars of the mid-century. In this course we'll study selected texts from the period to explore topics such as order and uncertainty; witchcraft, magic, and science; desire, devotion, and dissent; and the politics of race, gender, and early colonialism.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** ENGLISH 3I06 A/B, ENGLISH 3RL6 A/B, ENGLISH 3V06 A/B

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### ENGLISH 3V03 - GLOBAL ANGLOPHONE LITERATURE AND FILM

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A study of literature, film and other forms of popular culture by artists from South Asia, Africa, and the Caribbean, and their overseas diasporas. Introduces students to theories of race, gender, sexuality, indigeneity, citizenship, and the nation as these take up histories of colonialism, imperialism, and globalization.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** CSCT 3R06 A/B, ENGLISH 3R06 A/B, PEACEST 3E06 A/B

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### ENGLISH 3VC3 - 'WE OTHER VICTORIANS': VICTORIAN LITERATURE AND CULTURE AND ITS AFTERLIVES

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Drawing on a broad range of literary and cultural texts, this course explores the continuing legacy of Victorian Britain (1832-1901) in setting the agendas for Western modernity. Topics include the contested discourses on sexuality, poverty, evolution, technology, and imperialism.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** ENGLISH 3M06 A/B

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### ENGLISH 3W03 - CONTEMPORARY NATIVE LITERATURE IN CANADA

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A study of significant works by Native writers who give voice to their experience in Canada. Issues examined include appropriation of voice, native identity, women in indigenous societies and stereotyping.

Three hours (lectures and seminars); one term

**Prerequisite(s):** Six units of Level II Indigenous Studies or six units of Level II English and Cultural Studies or permission of the instructor

**Antirequisite(s):** CSCT 3W03

**Cross-list(s):** INDIGST 3D03, PEACEST 3W03

*This course is administered by Indigenous Studies.*

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### ENGLISH 3WE3 - BRITISH ROMANTIC LITERATURE AND CULTURE: REVOLUTION, WAR, EMPIRE

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The course explores British Literature and culture between the advent of the French Revolution (1789) and the turbulent decade following the world-shaking violence of the Revolutionary and Napoleonic Wars (1792-1815).

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** ENGLISH 3M06 A/B

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### ENGLISH 3WP3 - THE WRITER'S PROCESS: SHORT STORIES FROM BEGINNING TO END

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This class explores the elements of craft that shape a story, including character, story structure, and voice, and students will write pieces that will be workshopped in groups.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

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### ENGLISH 3X03 - CONTEMPORARY NATIVE LITERATURE IN THE UNITED STATES

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A study of contemporary works by Native writers in the United States within the context of American society and Post-Modern and Post-Colonial Literary Theory.

Three hours (lectures and seminars); one term

**Prerequisite(s):** Six units of Level II Indigenous Studies or six units of Level II English and Cultural Studies or permission of the instructor

**Antirequisite(s):** CSCT 3X03

**Cross-list(s):** INDIGST 3E03, PEACEST 3X03

*This course is administered by Indigenous Studies.*

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### ENGLISH 3Y03 - CHILDREN'S LITERATURE

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A critical evaluation of literary works from approximately 1700 to the present written primarily for children.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** CSCT 3Y03

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### ENGLISH 4AN3 - NINETEENTH-CENTURY ADAPTATIONS

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This course inquires into the ideological, political, and aesthetic motivations that inform recent adaptations in fiction and film of the British nineteenth century.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

**Antirequisite(s):** CSCT 4AN3

*Departmental permission required.*

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### ENGLISH 4AR3 - RHETORIC, CULTURE, CATASTROPHE: AIDS AND ITS REPRESENTATIONS

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An examination of selected novels, films, autobiographical writings and theoretical texts about AIDS, with an emphasis on the cultural discourses surrounding the AIDS crisis.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

**Antirequisite(s):** CSCT 4AR3

*Departmental permission required.*

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### ENGLISH 4AW3 - ASIAN AMERICAN WRITING

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A study of selected texts by Americans and/or Canadians of Asian origin with a focus on race, ethnicity, gender, sexuality, class, immigration, multiculturalism, transnationalism and diaspora.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

**Antirequisite(s):** CSCT 4AW3

*Departmental permission required.*

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### ENGLISH 4CB3 - READING THE BESTSELLER: CONTEMPORARY BRITISH FICTION

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An exploration of possible critical vocabularies for the analysis of recent British fiction in light of how bestseller lists, prizes, publicity and media adaptability now shape the writing, marketing and reading of fiction.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

**Antirequisite(s):** CSCT 4CB3

*Departmental permission required.*

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### ENGLISH 4CF3 - CONTEMPORARY FICTION

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A study of recent English and American fiction, with emphasis on metafiction as well as the relationship between contemporary literary theory and fiction.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

**Antirequisite(s):** CSCT 4CF3

*Departmental permission required.*

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### ENGLISH 4CS3 - CANADIAN SHORT STORIES

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Canadian short stories from the early 20th century to the present, including French-Canadian (in translation) and aboriginal. Gender, race, class and power issues will be discussed.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

*Departmental permission required.*

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### ENGLISH 4DD3 - CANADIAN DOCUMENTARY

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This course will examine a broad range of documentary texts - literary, cinematic, photographic, theatrical - to see how the documentary mode is variously performed in Canada.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

**Antirequisite(s):** CSCT 4DD3

*Departmental permission required.*

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### ENGLISH 4DL3 - DIGITAL LIVES

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A critical investigation of the burgeoning domain of online life writing, concentrating on 2-4 selected "automedial" modes, such as digital photography, ipholographies, public social media accounts, online diaries, vlogs, blogs, podcasts, multi-platform projects, and/or hashtag campaigns. A main concern will be the possibilities and the limitations of online life writing modalities for "self-authoring" and social justice activism.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

*Departmental permission required.*

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### ENGLISH 4E03 - LITERATURE, CULTURE AND THE ANTHROPOCENE

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Drawing on environmental humanities, anti-colonial, feminist, and critical race theories, this seminar will consider the capacity of different creative genres

(eg. fiction, poetry, film) to imagine forms of belonging in relation to the scales of place and space.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

*Departmental permission required.*

*First offered in 2019-2020.*

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### ENGLISH 4FW3 - FORMS OF CREATIVE WRITING

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This seminar will combine a hands-on study of form with an opportunity for students to exercise and focus their own creative energies. In any given year, the course will concentrate on either verse or fictional form.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

*Departmental permission required.*

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### ENGLISH 4GN3 - GRAPHIC NARRATIVE IN CANADA

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This seminar examines graphic narrative in Canada, focusing on: its divergent engagements with national narratives; Indigenous storytelling; national regimes of belonging/dispossession; and transnational relations.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

**Antirequisite(s):** CSCT 4GN3

*Departmental permission required.*

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### ENGLISH 4HL3 - CANADIAN HOLOCAUST NOVELS

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An examination of selected Canadian novels that respond to the Holocaust. Aesthetic and ethical issues involved in such responses will also be discussed.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

*Departmental permission required.*

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### ENGLISH 4IP3 - LONGING AND BELONGING: NARRATIVES OF ISRAEL/PALESTINE

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From pre-1948 narratives to contemporary Jewish and Arab fiction, poetry, memoir and film, this course critically examines representations of identity, longing, and belonging to the land of Israel and Palestine.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

*Departmental permission required.*

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### ENGLISH 4IW3 - TWENTY-FIRST CENTURY INDIGENOUS WRITING AND FILM

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A critical examination of recent works by Indigenous authors and filmmakers that give voice to contemporary social, cultural, and political realities in Canada.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

**Cross-list(s):** INDIGST 4IW3

*Departmental permission required.*

*This course is administered by the Department of English and Cultural Studies.*

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### ENGLISH 4KK3 - KAFKA AFTER KAFKA

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This course examines the influence of Franz Kafka's fiction on writers, critics and film makers of the 20th century.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

**Antirequisite(s):** CSCT 4KK3

*Departmental permission required.*

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### ENGLISH 4QA3 - QUEERNESS IN THE ARCHIVES: LESBIAN AND GAY WRITING, ART AND ACTIVISM IN CANADA, 1969-1989

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This course examines lesbian and gay writing, art and activism in Canada during the period of 1969 to 1989. The course will include a trip to the Canadian Lesbian and Gay Archives in Toronto, and students will be trained in archival research methods.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

*Departmental permission required.*

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### ENGLISH 4RD3 - RENAISSANCE DRAMA, EXCLUDING SHAKESPEARE

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An intensive study of transgression (economic, erotic, social and literary) in popular and elite drama by Shakespeare's contemporaries, including women writers.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

*Departmental permission required.*

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### ENGLISH 4RI3 - COLONIALISM AND RESISTANCE IN REPRESENTATIONS OF INDIGENOUS WOMANHOOD

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This course looks to representations of Indigenous womanhood in a range of contemporary and historical cultural productions for insights into how colonialism shapes all of our lives, in radically different ways.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

**Antirequisite(s):** CSCT 4RI3

**Cross-list(s):** INDIGST 4RI3

*Departmental permission required.*

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### ENGLISH 4RL3 - PLAYING, WINNING, LOSING: STRATEGIES OF POWER IN RENAISSANCE LITERATURE

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In this seminar we will examine the many textual faces of power, its creative and destructive force, in a wide variety of early modern works, ranging from Machiavelli's famous discourse on political power, *The Prince*, to the challenge to male authority in Rachel Speght's *A Mouzell for Melastomus*, the deployment of colonial power in Walter Raleigh's *The Discovery of Guiana*, and the class satire of Francis Beaumont's *The Knight of the Burning Pestle*.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

*Departmental permission required.*

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### ENGLISH 4RS3 - READING, SPIRITUALITY AND CULTURAL POLITICS

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Through a course of readings from a variety of historical and contemporary sources this class will investigate the relations between spirituality, reading and living in the public, social world.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

**Antirequisite(s):** CSCT 4RS3

*Departmental permission required.*

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### ENGLISH 4SD3 - SENTENCED TO DEATH

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This is a course about the grammar, syntax, rhetoric, and expressive potential of language's most familiar unit of meaning, the sentence.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

*Departmental permission required.*

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### ENGLISH 4SF3 - SCIENCE FICTION TOMORROW OR THE DAY AFTER

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This seminar will examine science fiction based in the present or near future in the context of artificial intelligence theory, economic possibilities and biology.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

**Antirequisite(s):** CSCT 4SF3

*Departmental permission required.*

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### ENGLISH 4ST3 - EVEN STRANGER THINGS: THE EARLY GOTHIC

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One of the more paradoxical legacies of the British Enlightenment is the Gothic, with its attraction to the ghastly and the supernatural. This seminar will chart the emergence of Gothic writing in the eighteenth century, with particular attention to how this literature responds to the social ills and anxieties that attend the emergence of modern life.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

*Departmental permission required.*

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### ENGLISH 4UT3 - UTOPIAN LITERATURE

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A study of the genre through English literature, from its roots in Plato's Republic, through the Middle Ages and the Renaissance to contemporary literature.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

**Antirequisite(s):** CSCT 4UT3

*Departmental permission required.*

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### ENGLISH 4VL3 - IMAGINING THE PAST: VIOLENCE, LITERATURE, AND THE ARCHIVE

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This seminar explores theories of memory, history, and the archive through discussion of contemporary literary and cinematic works that treat personal and collective histories of violent.



Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of a Combined Honours program in English and Cultural Studies

**Antirequisite(s):** CSCT 4VL3

*Departmental permission required.*

### ENGLISH 4WL3 - GLOBALIZATION AND POSTCOLONIAL FICTION

This course examines fictional representations of the ideology and processes of globalization, while also considering how globalization shapes the production and consumption of postcolonial culture.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

**Antirequisite(s):** CSCT 4WL3

*Departmental permission required.*

### ENGLISH 4X03 - HONOURS ESSAY

Under the supervision of a member of the Department of English and Cultural Studies, students will write an essay in second term of Level IV. Interested students should contact the faculty member chairing the ENGLISH 4X03 committee early in the first term.

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

*Departmental permission required.*

### ENGLISH 4Y03 - EXPERIENTIAL PRACTICUM I

This practicum provides students with experience in experiential education under the mentorship of a faculty member. Faculty members will advertise their available projects in the spring, or students may develop a proposal in consultation with a member of the department. Final proposals are due to the Department in May of the previous academic year.

**Prerequisite(s):** Registration in Level IV of an Honours program in English and Cultural Studies

**Antirequisite(s):** ENGLISH 4Y06 A/B

*Departmental permission required.*

### ENGLISH 4Y06 A/B S - RESEARCH PRACTICUM

This course provides students with direct experience of advanced research under the mentorship of a faculty member. Project descriptions will be posted and widely advertised in March of the previous academic year, and all level 3 Honours English and Cultural Studies students are encouraged to apply to the Department.

**Prerequisite(s):** Registration in Level IV of a program in English and Cultural Studies

**Antirequisite(s):** CSCT 4Y06 A/B, ENGLISH 4Y03, 4YY3

*Departmental permission required.*

### ENGLISH 4YY3 - EXPERIENTIAL PRACTICUM II

This practicum provides students with additional experience in experiential education under the mentorship of a faculty member. Faculty members will advertise their available projects in the spring, or students may develop a proposal in consultation with a member of the department. Final proposals are due to the Department in May of the previous academic year.

**Prerequisite(s):** ENGLISH 4Y03 and registration in Level IV of an Honours program in English and Cultural Studies

**Antirequisite(s):** ENGLISH 4Y06 A/B

*Departmental permission required.*

## Environmental Science

Courses in Environmental Science are administered by the School of Earth, Environment & Society.

General Science Building, Room 206, ext. 24535

<http://www.science.mcmaster.ca/~geo/>

### School Notes

1. Students aiming to fulfill the academic requirements for professional registration of Geoscientists in Ontario should seek academic advice from the School of Earth, Environment & Society during March counselling in Level II to ensure that their program and course choices are appropriate.
2. Students are advised that not all courses will be offered in every year.

### Courses

*If no prerequisite is listed, the course is open.*

See also courses in *Earth Sciences* and *Environment & Society*.

### ENVIRSC 1C03 - CLIMATE, WATER AND ENVIRONMENT

An introduction to the science of environmental issues and sustainability through the study of the soil, climate and water processes.

Lectures, web modules (three hours), one lab (two hours); one term

**Co-requisite(s):** WHMIS 1A00, if not already completed, must be completed prior to the first lab.

**Antirequisite(s):** ENVIRSC 1A03, 1B03

### ENVIRSC 2B03 - SOILS AND THE ENVIRONMENT

An introduction to the physical, chemical and biological properties of soil. Application to environmental and land-use impacts.

Two lectures, one lab (three hours); one term

**Prerequisite(s):** One of EARTHSC 1G03, ENVIRSC 1A03, 1B03, 1C03, 1G03, ISCI 1A24 A/B

**Antirequisite(s):** EARTHSC 2B03

### ENVIRSC 2C03 - SURFACE CLIMATE PROCESSES AND ENVIRONMENTAL INTERACTIONS

The surface heat and water balance of natural and human-modified landscapes. Emphasis on interactions of people and the biosphere with climate.

Two lectures, one lab (two hours); one term

**Prerequisite(s):** One of EARTHSC 1G03, ENVIRSC 1A03, 1B03, 1C03, 1G03, ISCI 1A24 A/B

**Antirequisite(s):** EARTHSC 2C03

### ENVIRSC 2Q03 - INTRODUCTION TO ENVIRONMENTAL GEOCHEMISTRY

Introductory study of the interactions of geochemistry (water-rock interaction) and biology in determining pH, oxygen status and ionic strength in water, and their implications will be explored through lecture and laboratory work.

Two lectures, one lab (three hours); one term

**Prerequisite(s):** ISCI 1A24; or CHEM 1A03 and one of EARTHSC 1G03, ENVIRSC 1C03, ENVIRSC 1G03 (or ENVIRSC 1A03 or 1B03); or registration in Level II or above of a program in the Faculty of Engineering. ENVIRSC 1C03 is recommended.

**Antirequisite(s):** EARTHSC 2L03, 2Q03, ENVIRSC 2L03

### ENVIRSC 2W03 - PHYSICAL HYDROLOGY

Hydrological processes including precipitation, snowmelt, hillslope runoff, streamflow and hydrological data analysis.

Two lectures, one lab (two hours); one term

**Prerequisite(s):** One of EARTHSC 1G03, ENVIRSC 1A03, 1B03, 1C03, 1G03 or ISCI 1A24 A/B. ENVIRSC 1A03, 1C03 or ISCI 1A24 A/B is strongly recommended.

**Antirequisite(s):** EARTHSC 2W03

### ENVIRSC 2WW3 - WATER AND THE ENVIRONMENT

An introduction to environmental issues related to water, including the impacts of climate change, effects of water management projects, pollution, the societal dimensions of these problems, and paths to sustainability.

Lectures, (three hours); one term

**Prerequisite(s):** Registration in Level II or above. One of BIOLOGY 1M03, EARTHSC 1G03, ENVIRSC 1A03, 1B03, 1C03, 1G03, ISCI 1A24 A/B is strongly recommended.

**Antirequisite(s):** EARTHSC 2WW3

### ENVIRSC 3B03 - ECOSYSTEMS AND GLOBAL CHANGE

An examination of how soil, water, vegetation, ecosystem and climate processes occur and interact at landscape, regional and global scales, and of the consequences of climate change on terrestrial ecosystem form and function. Feedbacks between ecological systems and climate change will be examined with an emphasis on carbon cycling.

One lecture (two hours), one lab (two hours); one term

**Prerequisite(s):** One of EARTHSC 2B03, 2C03, ENVIRSC 2B03, 2C03

**Antirequisite(s):** EARTHSC 3B03

### ENVIRSC 3IN3 - INTERNSHIP IN EARTH AND ENVIRONMENTAL SCIENCES

The integration of academic learning with an employment or a volunteer experience, providing students the opportunity to explore careers and develop linkages between classroom knowledge and professional practice. Students are responsible to arrange a suitable internship and agreement of the supervisor.

Normally, students complete 130 hours of academic work through the duration of the employment or volunteer experience.

One meeting (one hour); one term

**Prerequisite(s):** SCIENCE 2C00; and registration in Level III or above of an Honours B.Sc. program in the School of Earth, Environment & Society (Faculty of Science); and permission of the internship coordinator

**Antirequisite(s):** EARTHSC 3IN3

*Note: Students participating in this course must be authorized to work in Canada (International students must provide proof of work authorization permit). Students intending to enrol in this course should submit an application to the internship coordinator two months prior to registration. Application forms are available on the School of Earth, Environment & Society (Faculty of Science) website.*

*ENVIRSC 3IN3 may be repeated with permission of the School of Earth, Environment & Society (Faculty of Science) if based on a different employment or volunteer experience.*

### ENVIRSC 3ME3 - ENVIRONMENTAL FIELD CAMP

Within the context of a field project, this course introduces students to field techniques in environmental science and to the potential effects of environmental issues on human health and well-being.

The field camp component occurs outside of the regular academic term,

usually two weeks preceding the start of term in September. Details and applications are available in March through the School of Earth, Environment & Society. Students enrolling in this course must pay both the incidental fees as prescribed by the School of Earth, Environment & Society and the regular tuition fees. Students intending to enrol in this course must submit an application by April 1 of the academic year prior to registration. Application forms are available from the School of Earth, Environment & Society main office after March 1. Students will be informed of acceptance of their application by April 15 subject to fulfillment of the requirements.

One term

**Prerequisite(s):** One of EARTHSC 2B03, EARTHSC 2E03, EARTHSC 2E13, 2G03, EARTHSC 2Q03, ENVIRSC 2B03, ENVIRSC 2E03, 2G03, ENVIRSC 2Q03, ENVSOCTY 2E13, GEOG 2E13, ISCI 2A18 A/B; and registration in Level III or above of Honours Biology and Environmental Sciences, Honours Geography and Environmental Sciences, Honours Environmental Sciences, Honours Geography and Environmental Studies; and permission of the instructor. One of EARTHSC 2Q03, ENVIRSC 2Q03 is recommended.

**Antirequisite(s):** GEOG 3ME3

**Co-requisite(s):** WHMIS 1A00 if not already completed. Must be completed prior to the first lab.

### ENVIRSC 3003 - CONTAMINANT FATE AND TRANSPORT

Focuses on the primary mechanisms controlling the distribution, transport and fate of contaminants, particularly organic contaminants, throughout the environment with an emphasis aquatic pollution and atmosphere-aquatic interactions. Topics include partitioning processes (dissolution, volatilization, sorption), degradation and contaminant remediation processes (abiotic, biotic) and analytical techniques used to measure concentrations in environmental samples.

Two lectures, one lab (three hours); one term

**Prerequisite(s):** One of CHEM 20A3, 2PD3, CHEMBIO 20A3, 2OG3, 2P03, EARTHSC 2L03, 2Q03, ENVIRSC 2L03, 2Q03, ISCI 2A18 A/B, or registration in an Honours Biology or Honours Chemistry program, or a program in the Faculty of Engineering

**Prerequisite(s) (EFFECTIVE 2021-2022):** One of CHEM 20A3, 2P03, CHEMBIO 20A3, 2OG3, 2P03, EARTHSC 2L03, 2Q03, ENVIRSC 2L03, 2Q03, ISCI 2A18 A/B, or registration in an Honours Biology or Honours Chemistry program, or a program in the Faculty of Engineering

**Antirequisite(s):** EARTHSC 3003

### ENVIRSC 3U03 - ENVIRONMENTAL SYSTEMS MODELLING

Use of simple numerical models applied to solving environmental problems related to anthropogenic perturbations. Introduction to STELLA numerical simulator, statement of the problem and 'what if' scenarios.

One lecture (three hours); one term

**Prerequisite(s):** One of ISCI 1A24 A/B, MATH 1A03, 1LS3; and registration in Level II or above of an Environmental and Earth Sciences program, Level III or above of an Honours program in the Faculty of Science or Level III or above of an Engineering program

**Antirequisite(s):** CIVENG 2J04, EARTHSC 3U03

### ENVIRSC 4BB3 - FIELD TECHNIQUES IN HYDROLOGY

A primarily field-based course that examines the field methods, techniques and equipment used to study watershed hydrology and ecohydrological function in natural, human-impacted and restored ecosystems.

One lecture (two hours), one lab (four hours); one term

**Prerequisite(s):** One of EARTHSC 3B03, 3W03, ENVIRSC 3B03, 3W03 with a minimum grade of C+. Completion of ENVIRSC 3ME3 is strongly recommended.

**Antirequisite(s):** EARTHSC 4BB3

### ENVIRSC 4C03 - ADVANCED PHYSICAL CLIMATOLOGY

This course develops energy and mass exchange processes in the near surface layer, the lower atmosphere and at the earth-atmosphere interface. Sensitivities of these processes to environmental change and feedback mechanisms are examined. Seminars and individual presentations are emphasized.

One lecture (two hours), one lab (two hours); one term

**Prerequisite(s):** One of EARTHSC 2B03, 2C03, 2W03, ENVIRSC 2B03, 2C03, 2W03

**Antirequisite(s):** EARTHSC 4C03

### ENVIRSC 4EA3 - ENVIRONMENTAL ASSESSMENT

Technical and policy issues involved in the production and the appraisal of environmental impact assessments.

Two lectures, one lab (two hours); one term

**Prerequisite(s):** One of EARTHSC 2EI3, ENVIRSC 2EI3, ENVSOCTY 2EI3, GEOG 2EI3; or registration in Honours Biology, a Civil Engineering program, an Engineering and Society program, an Honours Integrated Science program or an Honours program in the School of Earth, Environment & Society

**Antirequisite(s):** EARTHSC 4EA3

**Cross-list(s):** ENVSOCTY 4EA3

### ENVIRSC 4MI3 - INDEPENDENT STUDY IN EARTH AND ENVIRONMENTAL SCIENCES

An independent study under the supervision of a faculty member. Students will typically complete a major review paper or research paper on a topic of their choice, in the field of Earth and Environmental Sciences.

One meeting (one hour); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in the School of Earth, Environment & Society (Faculty of Science); and permission of the supervising faculty member

**Antirequisite(s):** EARTHSC 4MI3

*Not open to students with credit or registration in ISCI 4A12 A/B*

### ENVIRSC 4MT6 A/B - SENIOR THESIS

Students will select research topics and prepare a thesis either individually or in teams.

Students intending to enroll in this course must submit an application to the course coordinator by April 1 of the academic year prior to registration.

Application forms are available from the School of Earth, Environment & Society (Faculty of Science) main office after March 1. Students will be informed of acceptance of their application on April 15 subject to fulfillment of the GPA requirement.

Two terms

**Prerequisite(s):** One of EARTHSC 3RD3, ENVSOCTY 3MA3, GEOG 3MA3; and registration in Level IV of an Honours program in the School of Earth, Environment & Society (Faculty of Science); and a GPA of at least 7.5; and permission of the course coordinator

**Cross-list(s):** EARTHSC 4MT6 A/B, ENVSOCTY 4MT6 A/B

*Not open to students with credit or registration in ISCI 4A12 A/B.*

### ENVIRSC 4N03 - GLOBAL BIOGEOCHEMICAL CYCLES

This course focusses on global cycles of elements and energy, the role of biological processes in these cycles, and the concurrent influence of these cycles on biology and its environment. Topics will include the use of isotopic analysis to understand modern and past cycles, the interaction between global and local processes, and natural and anthropogenic effects on biogeochemical cycles.

Two lectures, one lab (three hours); one term

**Prerequisite(s):** One of BIOLOGY 2F03, CHEM 2P03, CHEMBIO 2P03, EARTHSC 2L03, 2Q03, ENVIRSC 2L03, 2Q03, ISCI 2A18 A/B. One of EARTHSC 3CC3, 3O03, ENVIRSC 3CC3, 3O03 is strongly recommended.

**Antirequisite(s):** EARTHSC 4N03, 4O03, ENVIRSC 4O03

### ENVIRSC 4W03 - HYDROLOGIC MODELLING

Principles of numerical modelling and examination of selected hydrologic models including deterministic, conceptual and statistical models.

One lecture (two hours), one lab (two hours); one term

**Prerequisite(s):** One of EARTHSC 2W03, 3W03, ENVIRSC 2W03, 3W03; and one of EARTHSC 3MB3, ENVSOCTY 3MB3, GEOG 3MB3, ENVIRSC 3MB3, STATS 2B03, 3J04

**Antirequisite(s):** EARTHSC 4W03

## Environment & Society

Courses in Environment & Society are administered by the School of Earth, Environment & Society.

General Science Building, Room 206, ext. 24535

<http://www.science.mcmaster.ca/~geo/>

#### School Notes

1. Students aiming to fulfill the academic requirements for professional registration of Geoscientists in Ontario should seek academic advice from the School of Earth, Environment & Society during March counselling in Level II to ensure that their program and course choices are appropriate.
2. Students are advised that not all courses will be offered in every year.

#### Courses

*If no prerequisite is listed, the course is open.*

See also courses in *Earth Sciences* and *Environmental Science*.

### ENVSOCTY 1HA3 - SOCIETY, CULTURE AND ENVIRONMENT

Formerly GEOG 1HA3

An introduction to human (societal) - environment interactions, mostly through a human geographic perspective. Topics include: the spatial significance of culture and cultural difference; cities as forms of cultural settlements; the rise of urban societies; the meanings of cultural landscapes; geographical perspectives on local and global politics; humans' changing relationship with the environment; and contemporary environmental issues.

Two lectures, one tutorial (one hour); one term

**Antirequisite(s):** GEOG 1HA3

### ENVSOCTY 1HB3 - POPULATION, CITIES AND DEVELOPMENT

Formerly GEOG 1HB3

An introduction to the study of relationships between people and their environments. The natural, built, social and economic environments are examined through human geography, urban studies, population and development studies, and environmental studies. Topics include: the meaning, and changing significance, of globalization; the causes and consequences of uneven economic and social development; the nature of changes in world population via demographic change and migration; the nature and consequences of global urbanization; and urban planning.

Two lectures, one tutorial (one hour); one term

**Antirequisite(s):** GEOG 1HB3

### ENVSOCTY 2EI3 - ENVIRONMENT & SOCIETY: CHALLENGES AND SOLUTIONS

Formerly GEOG 2EI3

A discussion of perspectives and approaches to local, regional, national, and global environmental problems.

Lectures (two hours), one tutorial (one hour); one term

**Prerequisite(s):** Registration in Level II or above. One of BIOLOGY 1M03, EARTHSC 1G03, ENVIRSC 1A03, 1B03, 1C03, 1G03, ENVSOCTY 1HA3, 1HB3, GEOG 1HA3, 1HB3, ISCI 1A24 A/B is recommended.

**Antirequisite(s):** EARTHSC 2EI3, ENVIRSC 2EI3, GEOG 2EI3

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### ENVSOCTY 2EK3 - TRADITIONAL INDIGENOUS ECOLOGICAL KNOWLEDGE

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Formerly GEOG 2EK3

This course is a study of the ecological teachings of Indigenous peoples and of their relationships with the natural environment in historical and contemporary times.

Three hours (lectures and seminars); one term

**Prerequisite(s):** INDIGST 1A03, 1AA3 or RECONCIL 1A03; or permission of the instructor

**Antirequisite(s):** GEOG 2EK3

**Cross-list(s):** ANTHROP 2DA3, INDIGST 2D03

*This course is administered by the Indigenous Studies Program.*

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### ENVSOCTY 2GI3 - GEOGRAPHIC INFORMATION SYSTEMS

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Formerly GEOG 2GI3

Introduction to the principles and techniques underlying the use of geographic information systems (GIS) for capturing and visualizing spatially referenced information. Databases, models and cartographic principles are also introduced emphasizing the production of effective thematic maps using GIS software.

Two lectures, one lab (two hours); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** EARTHSC 2GI3, ENVIRSC 2GI3, GEOG 2GI3

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### ENVSOCTY 2HI3 - HEALTH AND PLACE

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Formerly GEOG 2HI3

Introduction to health geography. Contemporary trends and patterns of global mortality and morbidity are explored using examples from different parts of the world. A range of perspectives are used to compliment a geographical viewpoint, including: medical, cultural, ecological, social and demographic.

Two lectures, one tutorial (one hour); one term

**Prerequisite(s):** One of ENVSOCTY 1HA3, 1HB3, GEOG 1HA3, 1HB3

**Antirequisite(s):** GEOG 2HI3, HEALTHST 2HI3

**Cross-list(s):** HLTHAGE 2HI3

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### ENVSOCTY 2LE3 - ECONOMIC GEOGRAPHY: INNOVATION, INEQUALITY AND IDENTITY

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Formerly GEOG 2LE3

An introduction to the spatial organization of the capitalist economy. Students will critically examine economic activities at different scales using case studies such as global commodity chains, urban and regional economies, and the home as a site of economic power. Emphasis is placed on understanding the fundamentals of capitalism, its production of uneven development, and post-capitalist visions for our economies.

Two lectures; one term

**Prerequisite(s):** One of ENVSOCTY 1HA3, 1HB3, GEOG 1HA3, 1HB3

**Antirequisite(s):** GEOG 2LE3

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### ENVSOCTY 2OC3 - REGIONAL GEOGRAPHY OF CANADA

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Formerly GEOG 2OC3

An introduction to the human and physical geography of Canada from a

regional perspective. Emphasis is placed on the similarities and differences among Canada's regions. Topics include historical and contemporary perspectives on economic, social, and cultural geographies as well as environmental issues.

On-line web modules, discussions and testing; one term

**Prerequisite(s):** Registration in Level II or above. Completion of ENVSOCTY 1HA3 or 1HB3, GEOG 1HA3 or 1HB3 is recommended.

**Antirequisite(s):** GEOG 2RC3, 2OC3

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### ENVSOCTY 2RC3 - REGIONAL GEOGRAPHY OF CANADA

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Formerly GEOG 2RC3

An introduction to the human and physical geography of Canada from a regional perspective. Emphasis is placed on the similarities and differences between Canada's regions. Topics include historical and contemporary perspectives on economic, social, and cultural geographies as well as environmental issues.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above. Completion of ENVSOCTY 1HA3 or 1HB3, GEOG 1HA3 or 1HB3 is recommended.

**Antirequisite(s):** ENVSOCTY 2OC3, GEOG 2OC3, 2RC3

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### ENVSOCTY 2RU3 - REGIONAL GEOGRAPHY OF THE UNITED STATES

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Formerly GEOG 2RU3

An introduction to the human and physical geography of the United States of America from a regional perspective. Emphasis is placed on the human and physical elements that make each region unique. Topics include economic, social, political and cultural geographies, as well as environmental issues and problems.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above. Completion of ENVSOCTY 1HA3 or 1HB3, GEOG 1HA3 or 1HB3 is recommended.

**Antirequisite(s):** GEOG 2RU3

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### ENVSOCTY 2RW3 - WORLD REGIONAL GEOGRAPHY

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Formerly GEOG 2RW3

An introduction to regional geography and global issues. The study of the human and physical geographic patterns of the world. Emphasis is placed equally on what makes places and regions different or unique, and the key global issues that relate to one or more regions. Topics include urbanization, economic change, cultural difference, geopolitics, and environmental issues.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above. Completion of ENVSOCTY 1HA3 or 1HB3, GEOG 1HA3 or 1HB3 is recommended

**Antirequisite(s):** GEOG 2RW3

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### ENVSOCTY 2TF3 - FOOD, POWER AND PLACE

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Who really controls the food system? Are food banks helping or hurting the fight against hunger? Why are grocery stores organized the way they are? How do families negotiate gender roles in the kitchen? This course takes a critical approach to these and other questions about our food system. We consider how our relationship to food is mediated by the state, private business, and charity. We explore global strategies to create more just, equitable and sustainable food systems.

Two lectures (two hours and one hour); one term

**Prerequisite(s):** Registration in Level II or above



### ENVSOCY 2TS3 - SOCIETY AND SPACE

Formerly GEOG 2TS3

This course introduces key concepts and perspectives in social geography. Emphasis is placed on the importance of key binaries that structure the spatial organization of social life (e.g., urban/rural, public/private, and space/place.)

Three lectures; one term

**Prerequisite(s):** One of ENVSOCY 1HA3, 1HB3, GEOG 1HA3, 1HB3; and registration in Level II or above

**Antirequisite(s):** GEOG 2TS3

### ENVSOCY 2UI3 - THE URBAN EXPERIENCE

Formerly GEOG 2UI3

Key concepts and perspectives in the study of urbanization, urban systems and city life. Emphasis is placed on North American urban experience.

Two lectures, one tutorial (one hour); one term

**Prerequisite(s):** One of ENVSOCY 1HA3, 1HB3, GEOG 1HA3, 1HB3

**Antirequisite(s):** GEOG 2UI3

### ENVSOCY 3EC3 - ENVIRONMENTAL CATASTROPHES

Formerly GEOG 3EC3

A discussion of environmental catastrophes such as large-scale releases of environmental contaminants, their context and their effects on human populations. Examples include the BP oil spill in the Gulf of Mexico and the Chernobyl nuclear catastrophe. Human and systemic errors will be explored historically, politically and economically.

Two lectures, one tutorial (one hour); one term

**Prerequisite(s):** One of EARTHSC 2EI3, ENVIRSC 2EI3, ENVSOCY 2EI3, GEOG 2EI3

**Antirequisite(s):** GEOG 3EC3

### ENVSOCY 3EE3 - ENERGY AND SOCIETY

Formerly GEOG 3EE3

An introduction to conventional and alternative sources of energy as they are used in Canadian and global contexts. The social, political and economic costs and benefits of different sources of energy will be highlighted.

Two lectures, one tutorial (one hour); one term

**Prerequisite(s):** One of EARTHSC 2EI3, ENVIRSC 2EI3, ENVSOCY 2EI3, GEOG 2EI3, ISCI 2A18 A/B

**Antirequisite(s):** ENVIRSC 3EE3, GEOG 3EE3

### ENVSOCY 3EG3 - GLOBAL CLIMATE CHANGE

Formerly GEOG 3EG3

This course provides students with an introduction to the domestic and international politics of climate change.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level III or above

**Antirequisite(s):** GEOG 3EG3

**Cross-list(s):** POLSCI 3GC3

*Not open to students with credit in POLSCI 3B03 if the topic was Global Climate Change.*

*This course is administered by the Department of Political Science.*

### ENVSOCY 3EN3 - NORTHERN ENVIRONMENTS AND SOCIETIES

Exploration of the environmental, social, cultural, economic, and political opportunities and challenges that shape the Canadian North. Particular emphasis is placed on diversity and change.

Two lectures (two hours and one hour); one term

**Prerequisite(s):** One of ENVSOCY 2EI3, 2EK3, INDIGST 2D03

### ENVSOCY 3ER3 - SUSTAINABILITY AND THE ECONOMY

Formerly GEOG 3ER3

This course explores the triple bottom line: the intersection of economic, ecological and social costs and benefits. Examples are drawn from sectors such as climate change, fisheries, forestry and water.

Two lectures, one tutorial (one hour); one term

**Prerequisite(s):** One of EARTHSC 2EI3, ENVIRSC 2EI3, ENVSOCY 2EI3, GEOG 2EI3

**Antirequisite(s):** GEOG 3ER3

### ENVSOCY 3GI3 - ADVANCED RASTER GIS

Formerly GEOG 3GI3

Advanced treatment of geographic information systems (GIS) focusing on raster data models and techniques. Real-world problem solving emphasizes site selection and environmental applications. Topics include multicriteria evaluation, terrain mapping and analysis, 3D visualization, spatial interpolation and watershed analysis.

Two lectures, one lab (two hours); one term

**Prerequisite(s):** A minimum grade of C- in one of EARTHSC 2GI3, ENVIRSC 2GI3, ENVSOCY 2GI3, GEOG 2GI3

**Antirequisite(s):** EARTHSC 3GI3, ENVIRSC 3GI3, GEOG 3GI3

### ENVSOCY 3GV3 - ADVANCED VECTOR GIS

Formerly GEOG 3GV3

Advanced treatment of GIS focusing on vector data models and techniques. Real-world problem solving emphasizes health, business, public sector and transportation applications. Topics include geodatabase design, geocoding, networks and network applications, location-allocation modeling and GIS tool development using ModelBuilder.

Two lectures, one lab (two hours); one term

**Prerequisite(s):** A minimum grade of C- in one of EARTHSC 2GI3, ENVIRSC 2GI3, ENVSOCY 2GI3, GEOG 2GI3

**Antirequisite(s):** EARTHSC 3GV3, ENVIRSC 3GV3, GEOG 3GV3

### ENVSOCY 3HP3 - POPULATION, HEALTH AND AGING

Formerly GEOG 3HP3

Differential growth of human populations and their changing age and sex structures with an emphasis on birth, death, and immigration processes. The connections between population structures and processes and various aspects of environments and societies, including aging and health, are emphasized.

Three lectures; one term

**Prerequisite(s):** One of ENVSOCY 1HA3, 1HB3, GEOG 1HA3, 1HB3

**Antirequisite(s):** GEOG 3HP3

**Cross-list(s):** HLTHAGE 3HP3

### ENVSOCY 3LT3 - TRANSPORTATION GEOGRAPHY

Formerly GEOG 3LT3

Transportation is studied as a geographical phenomenon, including important conceptual, analytical, and practical issues. From the conceptual foundations of transportation, through methods to describe, predict, and manage transportation systems, this course covers movement at various geographical scales. Labs complement lectures with data analysis problems in transportation applications. Math equivalent to high school algebra is used in parts of the course.

Two lectures, one tutorial (two hours); one term

**Prerequisite(s):** One of ECON 1B03, 1BB3, ENVSOCY 1HA3, 1HB3, GEOG

1HA3, 1HB3; and registration in Level III or above

**Antirequisite(s):** GEOG 3LT3

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### ENVSOCY 3MA3 - RESEARCH METHODS

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Formerly GEOG 3MA3

An introduction to research methods in human geography. Emphasis is placed on the application of various methods to understanding human spatial behaviour.

Two lectures, one tutorial (two hours); one term

**Prerequisite(s):** One of ENVSOCY 1HA3, 1HB3, GEOG 1HA3, 1HB3; and registration in Level II or above of a program in the School of Earth, Environment & Society (Faculty of Science)

**Antirequisite(s):** CMST 2B03, GEOG 2MA3, 3MA3, GERONTOL 2C03, HEALTHST 2B03, HLTHAGE 2A06, 3Z06, SOCIOL 2Z03

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### ENVSOCY 3MB3 - DATA ANALYSIS

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Formerly GEOG 3MB3

An introduction to the nature of geographic data and organization, descriptive spatial statistics and inferential statistics.

Two lectures, one lab (two hours); one term

**Prerequisite(s):** One of EARTHSC 1G03, ENVIRSC 1A03, 1B03, 1C03, 1G03, ENVSOCY 1HA3, 1HB3, GEOG 1HA3, 1HB3, ISCI 1A24 A/B

**Antirequisite(s):** EARTHSC 3MB3, ENVIRSC 3MB3, GEOG 3MB3, STATS 2B03

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### ENVSOCY 3MF3 - URBAN FIELD CAMP

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Formerly GEOG 3MF3

An experiential and problem-based introduction to field techniques used in human geography, urban studies and planning, with a focus on how people experience and transform the built, social and natural environments of cities. Most of this course occurs outside the regular academic term, usually in one of the two weeks prior to the start of term in September. Details and applications are available in March.

Students enrolling in this course must pay both the incidental fees as prescribed by the School of Earth, Environment & Society as well as the regular tuition fees. Students intending to enrol in this course must submit an application by April 1 of the academic year prior to registration. Application forms are available from the School of Earth, Environment & Society main office after March 1. Students will be informed of acceptance of their application by April 15 subject to fulfillment of the requirements.

One term

**Prerequisite(s):** Registration in Level III or above of an Honours program in the School of Earth, Environment & Society; and permission of the instructor

**Antirequisite(s):** GEOG 3MF3

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### ENVSOCY 3MI3 - INTERNSHIP IN ENVIRONMENT AND SOCIETY

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Formerly GEOG 3MI3

The integration of academic learning with an employment experience, providing students the opportunity to explore careers and develop linkages between classroom knowledge and professional practice. Students are responsible to arrange a suitable internship and agreement of the supervisor.

*This course is evaluated on a Pass/Fail basis.*

Normally, students complete 130 hours of academic work through the duration of the employment or volunteer experience.

**Prerequisite(s):** SOCSCI 2EL0; and registration in Level III or above of an Honours B.A. program in the School of Earth, Environment & Society; and permission of the internship coordinator

**Antirequisite(s):** GEOG 3MI3

Note: Students participating in this course must be authorized to work in

Canada (International students must provide proof of work authorization permit). Students intending to enrol in this course should submit an application to the internship coordinator two months prior to registration. Application forms are available from the School of Earth, Environment & Society main office.

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### ENVSOCY 3RW3 - REGIONAL GEOGRAPHY OF A SELECTED WORLD REGION

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Formerly GEOG 3RW3

The study of the human and physical geography of a selected region of the world. Topics typically include economic, social, cultural, demographic, and political geographies, as well as physical geographic and environmental issues. Three lectures; one term

**Prerequisite(s):** Registration in Level II or above. One of ENVSOCY 20C3, 2RC3, 2RU3, 2RW3, GEOG 20C3, 2RC3, 2RU3, 2RW3 is recommended.

**Antirequisite(s):** GEOG 3RW3

ENVSOCY 3RW3 may be repeated, if on a different topic, with permission of the School of Earth, Environment & Society.

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### ENVSOCY 3SR3 - REMOTE SENSING

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Formerly GEOG 3SR3

An introduction to images, sensors and techniques used to gather and process data on the Earth and other planets. Students will also learn about the principles of interaction of energy with the atmosphere and Earth materials such as vegetation, soil, water, rock, and urban structures.

Two lectures, one lab (two hours); one term

**Prerequisite(s):** A minimum grade of C- in one of EARTHSC 2GI3, ENVIRSC 2GI3, ENVSOCY 2GI3, GEOG 2GI3

**Antirequisite(s):** EARTHSC 3SR3, ENVIRSC 3SR3, GEOG 3SR3

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### ENVSOCY 3TG3 - GEOGRAPHIES OF GLOBALIZATION

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Formerly GEOG 3TG3

An introduction to a geographical understanding of globalization. This understanding is illustrated through an examination of the social, cultural, political, and economic aspects of globalization. Case studies such as women's labour, global care chains, and the ready-made garment industry are used to illustrate the significance and deeply political nature of globalization.

Three lectures; one term

**Prerequisite(s):** One of ENVSOCY 1HA3, 1HB3, GEOG 1HA3, 1HB3; and registration in Level II or above

**Antirequisite(s):** GEOG 3TG3

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### ENVSOCY 3UP3 - URBAN PLANNING

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Formerly GEOG 3UP3

An introduction to urban planning, including the theory and practice of community plan-making in Canada.

One lecture (three hours); one term

**Prerequisite(s):** One of ENVSOCY 2UI3, GEOG 2UI3

**Antirequisite(s):** GEOG 3UP3

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### ENVSOCY 3UR3 - URBAN SOCIAL GEOGRAPHY

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Formerly GEOG 3UR3

The social geography of North American cities. Where different types of people live in cities, why, and why location matters. Topics include residential segregation, neighbourhood change, gentrification, and suburban development. One lecture (two hours), one tutorial (one hour); one term

**Prerequisite(s):** One of ENVSOCY 2UI3, GEOG 2UI3

**Antirequisite(s):** GEOG 3UR3

### ENVSOCY 3UW3 - CITIES OF THE DEVELOPING WORLD

Formerly GEOG 3UW3

The nature and consequences of urbanization in the developing world, and the character of cities therein. Emphasis is placed on identifying similarities and differences between cities of the developing and the more developed worlds.

One lecture (two hours), one tutorial (one hour); one term

**Prerequisite(s):** One of ENVSOCY 2UI3, GEOG 2UI3

**Antirequisite(s):** GEOG 3UW3

### ENVSOCY 4EA3 - ENVIRONMENTAL ASSESSMENT

Formerly GEOG 4EA3

Technical and policy issues involved in the production and the appraisal of environmental impact assessments.

One lecture (two hours), one tutorial (two hours); one term

**Prerequisite(s):** One of EARTHSC 2EI3, ENVIRSC 2EI3, ENVSOCY 2EI3, GEOG 2EI3; or registration in Honours Biology, a Civil Engineering program, an Engineering and Society program, an Honours Integrated Science program or an Honours program in the School of Earth, Environment & Society (Faculty of Science)

**Antirequisite(s):** EARTHSC 4EA3, GEOG 4EA3

**Cross-list(s):** ENVIRSC 4EA3

### ENVSOCY 4ET3 - ENVIRONMENTAL POLICY, ETHICS AND RISK

Formerly GEOG 4ET3

An exploration of current issues in environmental ethics, economics and law, with a focus on conflicts between science and policy making.

One seminar (three hours); one term

**Prerequisite(s):** One of EARTHSC 2EI3, ENVIRSC 2EI3, ENVSOCY 2EI3, GEOG 2EI3; and registration in Level III or above of Honours Geography and Environmental Studies, or Honours Geography and Environmental Sciences

**Antirequisite(s):** GEOG 4ET3

### ENVSOCY 4GA3 - APPLIED SPATIAL STATISTICS

Formerly GEOG 4GA3

Spatial data analysis and statistics, including descriptive and inferential spatial statistics. Class is offered in a flipped classroom format to support experiential learning that draws on examples from geography, earth sciences, and the environment. Emphasis on the use of R open-source software. Labs complement classes with extensive use of statistical and GIS software.

One lecture (two hours), one lab (two hours); one term

**Prerequisite(s):** One of EARTHSC 3MB3, ENVIRSC 3MB3, ENVSOCY 3MB3, GEOG 3MB3, STATS 2B03; and one of EARTHSC 2GI3, ENVIRSC 2GI3, ENVSOCY 2GI3, GEOG 2GI3

**Antirequisite(s):** EARTHSC 4GA3, ENVIRSC 4GA3, GEOG 4GA3

### ENVSOCY 4GS3 - GIS PROGRAMMING

Formerly GEOG 4GS3

Advanced treatment of GIS focusing on the creation of scripts to enhance productivity by automating time-consuming and repetitive tasks. Through in-class discussions, demonstrations, and regular hands-on exercises, students are introduced to Python scripting in ArcGIS.

One lab (three hours); one term

**Prerequisite(s):** A minimum grade of B in one of EARTHSC 3GI3, 3GV3, ENVIRSC 3GI3, 3GV3, ENVSOCY 3GI3, 3GV3, GEOG 3GI3, 3GV3

**Antirequisite(s):** GEOG 4GS3

### ENVSOCY 4GT3 - SPECIAL TOPICS IN GIS

Formerly GEOG 4GT3

Advanced treatment of selected topics in GIS and Spatial Analysis; specific topics will vary from year to year, with potential topics including, but not limited to 3D GIS, Internet GIS and geomatics of health and urban social problems.

One lab (three hours); one term

**Prerequisite(s):** A minimum grade of B in one of EARTHSC 3GI3, 3GV3, ENVIRSC 3GI3, 3GV3, ENVSOCY 3GI3, 3GV3, GEOG 3GI3, 3GV3

**Antirequisite(s):** GEOG 4GT3

ENVSOCY 4GT3 may be repeated, if on a different topic, with permission of the School of Earth, Environment & Society (Faculty of Science).

### ENVSOCY 4HC3 - PUBLIC AND COMMUNITY HEALTH

Formerly GEOG 4HC3

An examination of how geography informs the practice of public and community health, from GIS applications through to changes in home-based care for elderly dependents.

One lecture (three hours); one term

**Prerequisite(s):** One of ENVSOCY 2HI3, 3HP3, GEOG 2HI3, 3HP3

**Antirequisite(s):** GEOG 4HC3

### ENVSOCY 4HD3 - DISABILITY, SOCIETY AND ENVIRONMENT

Formerly GEOG 4HD3

Competing theories on the social and spatial marginalization of persons with disabilities; contemporary and historical case studies are used to illustrate the social, political and cultural determinants of disability.

One seminar (three hours); one term

**Prerequisite(s):** One of ENVSOCY 2HI3, 2TS3, GEOG 2HI3, 2TS3

**Antirequisite(s):** GEOG 4HD3

### ENVSOCY 4HH3 - ENVIRONMENT AND HEALTH

Formerly GEOG 4HH3

An exploration of environmental health research. Emphasis is placed on the distribution and effects of environmental toxins and disease-causing microorganisms. Topics include cancer clusters, food safety, and water-borne diseases.

Two lectures, one tutorial (one hour); one term

**Prerequisite(s):** One of EARTHSC 2EI3, ENVIRSC 2EI3, ENVSOCY 2EI3, 2HI3, GEOG 2EI3, 2HI3; and registration in Level IV or above

**Antirequisite(s):** ENVIRSC 4HH3, GEOG 4HH3

**Cross-list(s):** HLTHAGE 4M03

### ENVSOCY 4LE3 - GEOGRAPHIES OF THE NORTH AMERICAN POLITICAL ECONOMY

Formerly GEOG 4LE3

A critical analysis of North America's economic geography with an emphasis on uneven development, growth regions, and the social and cultural embeddedness of economic activity.

One seminar (three hours); one term

**Prerequisite(s):** One of GEOG 2LE3, ENVSOCY 2LE3 or LABRST 2G03; and registration in Level III or above

**Antirequisite(s):** GEOG 4LE3

### ENVSOCY 4LP3 - TRANSPORT POLICY

Formerly GEOG 4LP3

An introduction to policy analysis and issues from the perspective of

transportation. Conceptual and methodological foundations are enhanced with local, regional, national, and global case studies in transportation. Course is offered in seminar format and requires students to work in small groups.

One seminar (three hours); one term

**Prerequisite(s):** One of ENVSOCTY 3LT3, GEOG 3LT3; or permission of the instructor

**Antirequisite(s):** GEOG 4LP3

### ENVSOCTY 4LW3 - WORK AND THE ENVIRONMENT

Formerly GEOG 4LW3

An analysis of how human interactions with nature create patterns of work and inequality. Topics may include resource industries, labour-environment coalitions, and varieties of environmentalism.

One seminar (three hours); one term

**Prerequisite(s):** One of ENVSOCTY 2EI3, 2LE3, GEOG 2EI3, 2LE3; or registration in Level III or IV of a Labour Studies program; or permission of the Director of the School of Labour Studies

**Antirequisite(s):** GEOG 4LW3

**Cross-list(s):** LABRST 4F03

*Not open to students with credit in LABRST 3F03 if the topic was Labour and the Environment (per the 2009-2010 session).*

*This course is administered by the School of Labour Studies.*

### ENVSOCTY 4MF3 - SENIOR URBAN FIELD CAMP

Formerly GEOG 4MF3

Field study of a North American city focusing on social and/or environmental issues. Topics may vary from year to year, and the timing of the course will depend on the offerings.

Students enrolling in this course must pay the incidental fees, as prescribed by the School of Earth, Environment & Society, and the regular tuition fees.

Students intending to enrol in this course must submit an application by April 1 of the academic year prior to registration. Application forms are available from the School of Earth, Environment & Society main office after March 1. Students will be informed of acceptance of their application by April 15 subject to fulfillment of the requirements.

**Prerequisite(s):** One of ENVSOCTY 2UI3, GEOG 2UI3; and one of ENVSOCTY 3MF3, GEOG 3MF3; and registration in Level III or above of an Honours program in the School of Earth, Environment & Society; and permission of the instructor

**Antirequisite(s):** GEOG 4MF3

### ENVSOCTY 4MS3 - INDEPENDENT STUDY

Formerly GEOG 4MS3

An independent study under the supervision of a faculty member. Students will typically complete one or more major review or research papers on a topic of their choice.

One meeting (one hour); one term

**Prerequisite(s):** Registration in Level IV of an Honours program in the School of Earth, Environment & Society; and permission of the supervising faculty member

**Antirequisite(s):** GEOG 4MS3

*Not open to students with credit or registration in ISCI 4A12 A/B.*

ENVSOCTY 4MS3 may be repeated, if on a different topic, with permission of the School of Earth, Environment & Society (Faculty of Science).

### ENVSOCTY 4MT6 A/B - SENIOR THESIS

Formerly GEOG 4MT6 A/B

Students will select research topics and prepare a thesis either individually or in teams.

Students intending to enrol in this course must submit an application to the course coordinator by April 1 of the academic year prior to registration.

Application forms are available from the School of Earth, Environment & Society main office after March 1. Students will be informed of acceptance of their application on April 15 subject to fulfillment of the GPA requirement.

Two terms

**Prerequisite(s):** One of EARTHSC 3RD3, ENVSOCTY 3MA3, GEOG 3MA3; and registration in Level IV of an Honours program in the School of Earth, Environment & Society; and a GPA of at least 7.5; and permission of the course coordinator

**Antirequisite(s):** GEOG 4MT6 A/B

**Cross-list(s):** EARTHSC 4MT6 A/B, ENVIRSC 4MT6 A/B

*Not open to students with credit or registration in ISCI 4A12 A/B.*

### ENVSOCTY 4SR3 - ADVANCED REMOTE SENSING

This course focuses on computer-based methods for extraction of information from remotely sensed data using digital image processing techniques.

Techniques addressed include image pre-processing and calibration, image enhancement, spectral data transformation, thematic information extraction, classification, digital change detection, LiDAR, RADAR and hyperspectral remote sensing.

One lecture (two hours), one lab (two hours); one term

**Prerequisite(s):** GEOG 3SR3, ENVSOCTY 3SR3

### ENVSOCTY 4UD3 - SPECIAL TOPICS IN URBAN PLANNING

Formerly GEOG 4UD3

An advanced examination of key challenges in contemporary urban planning. The course emphasizes how planners work to resolve complex and difficult urban issues, while balancing competing social, environmental, political and economic interests.

One seminar (three hours); one term

**Prerequisite(s):** One of ENVSOCTY 3UP3, GEOG 3UP3

**Antirequisite(s):** GEOG 4UD3

### ENVSOCTY 4UF3 - THE GEOGRAPHY OF GENDER

Formerly GEOG 4UF3

An advanced treatment of key themes and issues in the geography of gender. Emphasis is placed on the ways in which society and space are 'gendered' and on critical assessment of the geography of gender literature and reflection on pressing issues facing women and men today. Topics include gender and global change, the global sex trade, gender and the city, gender and sexuality, domestic violence and violence in conflict zones.

One seminar (three hours); one term

**Prerequisite(s):** ENVSOCTY 2UI3 or GEOG 2UI3 and registration in Level III or above of an Honours program in the School of Earth, Environment & Society (Faculty of Science)

**Antirequisite(s):** GEOG 4UF3

### ENVSOCTY 4US3 - SUSTAINABLE CITIES

Formerly GEOG 4US3

An exploration of social, environmental, and economic dimensions of urban sustainability agendas in the Global North. Emphasis is placed on key debates and controversies surrounding sustainable urbanism, and the role that planners, politicians, municipal actors and citizens play in enacting or resisting visions of sustainable cities.

Lectures and discussion (three hours); one term

**Prerequisite(s):** One of ENVSOCTY 2EI3, 2UI3, GEOG 2EI3, 2UI3

**Antirequisite(s):** GEOG 4US3



## EXPLORE (Interdisciplinary Experiences)

EXPLORE (Interdisciplinary Experiences) courses are administered by the School of Interdisciplinary Science (SIS).

General Sciences Building, Room 105, ext. 21181

<https://science.mcmaster.ca/sis/>

### EXPLORE 3IE1 - INTERDISCIPLINARY EXPERIENCES

Interdisciplinary experiential learning opportunities selected from an assortment of modules. Content and schedules vary annually. Details may be found on the School of Interdisciplinary Science website (<https://www.science.mcmaster.ca/sis/>) or by contacting the School of Interdisciplinary Science (SIS). Some EXPLORE courses may require an application prior to enrollment. Refer to the SIS website for more details. One term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** ISCI 3IE1, ARTSSCI 3IE1

*This course is evaluated on a Pass/Fail basis.*

EXPLORE 3IE1 may be repeated, if on a different topic.

Some modules may require a fee to cover costs of travel and accommodation.

*This course is administered by the School of Interdisciplinary Science.*

### EXPLORE 3IE2 - INTERDISCIPLINARY EXPERIENCES

Interdisciplinary experiential learning opportunities selected from an assortment of modules. Content and schedules vary annually. Details may be found on the School of Interdisciplinary Science website (<https://www.science.mcmaster.ca/sis/>) or by contacting the School of Interdisciplinary Science. Some EXPLORE courses may require an application prior to enrollment. Refer to the SIS website for more details. One term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** ISCI 3IE2, ARTSSCI 3IE2

*This course is evaluated on a Pass/Fail basis.*

EXPLORE 3IE2 may be repeated, if on a different topic.

Some modules may require a fee to cover costs of travel and accommodation.

*This course is administered by the School of Interdisciplinary Science.*

### EXPLORE 3IE3 - INTERDISCIPLINARY EXPERIENCES

Interdisciplinary experiential learning opportunities selected from an assortment of modules. Content and schedules vary annually. Details may be found on the School of Interdisciplinary Science (SIS) website (<https://www.science.mcmaster.ca/sis/>) or by contacting the School of Interdisciplinary Science. Some EXPLORE courses may require an application prior to enrollment. Refer to the SIS website for more details. One term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** ISCI 3IE3, ARTSSCI 3IE3

EXPLORE 3IE3 may be repeated, if on a different topic.

*This course is evaluated on a Pass/Fail basis.*

Some modules may require a fee to cover costs of travel and accommodation.

*This course is administered by the School of Interdisciplinary Science.*

### EXPLORE 3IS0 - INTERDISCIPLINARY SCIENCE FIELD WORK

Administrative requirement for field work corresponding with EXPLORE 3IS3.

**Prerequisite(s):** Registration in Level II or above of an Honours Program in the Faculty of Science or Arts & Science program; and permission of the instructor

**Antirequisite(s):** ISCI 3IS0, SCIENCE 3IS0

*This course is evaluated on a Complete/Not Complete basis.*

Students must register in EXPLORE 3IS3 in the same or subsequent session as EXPLORE 3IS0.

EXPLORE 3IS0 may be repeated, if on a different topic.

*This course is administered by the School of Interdisciplinary Science.*

### EXPLORE 3IS3 - INTERDISCIPLINARY SCIENCE FIELD CAMP

An interdisciplinary field camp experience to introduce students to field investigations, equipment and methodologies used by a range of professionals including ecologists, earth and environmental scientists. Most of this course occurs outside the regular academic term, usually within the two weeks following the end of term in April or within the two weeks preceding the start of term in September; details and applications are available on the School of Interdisciplinary Science website.

Students enrolling in this course must pay both the incidental fees as prescribed by the School of Interdisciplinary Science and the regular tuition fees. Students intending to enrol in this course must submit an application by November 15 of the academic year prior to registration. Application forms are available on the School of Interdisciplinary Sciences website.

**Prerequisite(s):** Registration in Level II or above of an Honours Program in the Faculty of Science or Arts & Science program; and permission of the instructor

**Co-requisite(s):** Credit or registration in EXPLORE 3IS0

**Antirequisite(s):** ISCI 3IS3, SCIENCE 3IS3

EXPLORE 3IS3 may be repeated, if on a different topic.

Enrolment is limited.

*This course is administered by the School of Interdisciplinary Science.*

## Farsi

Courses in Farsi are administered by the Department of Linguistics and Languages.

Togo Salmon Hall, Room 629, ext. 24388

<http://linguistics.humanities.mcmaster.ca/>

### FARSI 1Z03 - INTRODUCTORY FARSI I

Students will become familiar with Farsi alphabet and will start learning to read and write using Farsi characters and to communicate about everyday topics through dialogues, pronunciation and vocabulary exercises, grammar quizzes and role-plays.

Three hours; one term

*Not open to students who are literate in Farsi.*

### FARSI 1ZZ3 - INTRODUCTORY FARSI II

Students will expand their ability to communicate through dialogues, pronunciation and vocabulary exercises, grammar quizzes and role-plays, becoming proficient with Farsi alphabet, will communicate in Farsi using a growing set of expressions, and gain elementary understanding of Persian history and culture.

Three hours; one term

**Prerequisite(s):** FARSI 1Z03

*Not open to students who are literate in Farsi.*

## French

Courses in French are administered by the Department of French.

Togo Salmon Hall, Room 532, ext. 24470

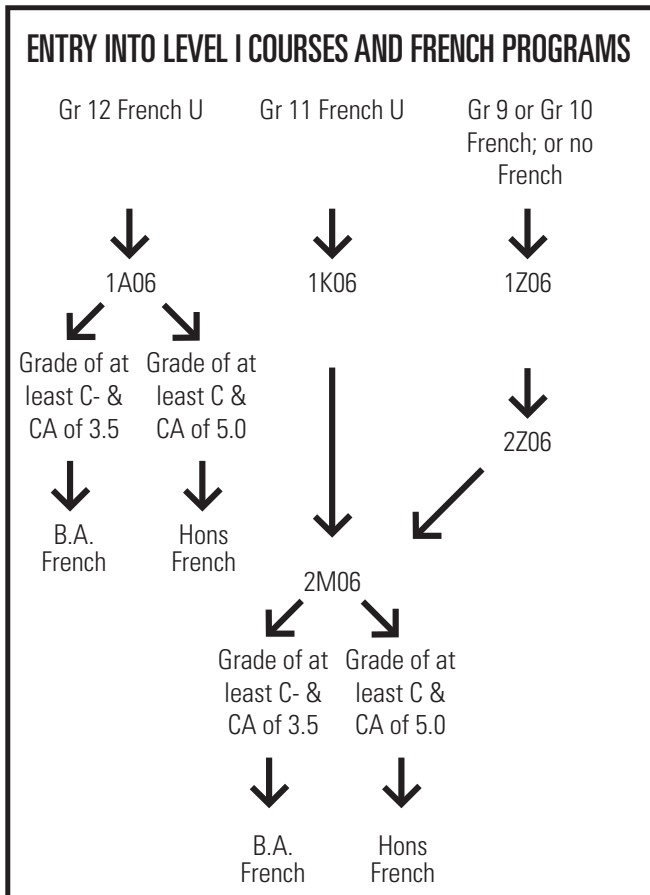
<http://french.humanities.mcmaster.ca/>

### Department Notes

1. Students who have taken Grade 12 French U or the equivalent within the

last three years must register in FRENCH 1A06 A/B. Those who took Grade 12 French U or the equivalent more than 3 years ago should speak to a departmental counsellor if they feel their French skills may be below the level required for entry into FRENCH 1A06 A/B.

- FRENCH 2Z06 A/B is intended for students who have completed Grade 11 French U. By taking this course, students may enter FRENCH 2M06 A/B which is the prerequisite for upper-level French courses. A placement test online may assist students who feel their level of proficiency in French is at a higher level than assigned.



### Courses

If no prerequisite is listed, the course is open.

### FRENCH 1A06 A/B - INTRODUCTION TO FRENCH STUDIES: ADVANCED LEVEL

Equivalent to FRENCH 2M06. Review of grammar, oral and written practice, and introduction to literary analysis.

Four hours (including one oral French tutorial); two terms

**Prerequisite(s):** Grade 12 French U (core, immersion or français). (See Note 1 above.) *The Department reserves the right to place students in the course most appropriate to their abilities.* Immersion students should register in this course.

**Antirequisite(s):** FRENCH 1K06 A/B, FRENCH 1Z06 A/B, FRENCH 2M06 A/B

### FRENCH 1Z06 A/B - BEGINNER'S INTENSIVE FRENCH I

An intensive course for developing basic skills in both written and spoken French. The normal sequel to this course is FRENCH 2Z06 A/B.

Three hours; two terms

**Prerequisite(s):** This course is designed for students with no background in French or with Grade 9 or 10 French.

**Antirequisite(s):** Grade 11 or 12 French U, FRENCH 1A06 A/B, FRENCH 1K06

A/B, FRENCH 2Z06 A/B

*Not open to Immersion students or Francophones.*

*The Department reserves the right to place students in the course most appropriate to their abilities.*

### FRENCH 2AC3 - INTRODUCTION TO FRANCOPHONE LITERATURES AND CULTURES

An overview of the francophone literatures and cultures outside of Europe and Canada (Africa, Caribbean and Asia) in both their specificity and their interconnectedness.

Three hours; one term

**Prerequisite(s):** One of FRENCH 1A06 A/B or FRENCH 2M06 A/B

### FRENCH 2B03 - FRENCH LANGUAGE PRACTICE I

A course designed to improve competence in oral and written expression.

Written proficiency includes the study of vocabulary, grammar and composition. The oral component will stress listening, comprehension and conversational proficiency.

Four hours (including three hours of lecture and one hour of tutorial); one term

**Prerequisite(s):** One of FRENCH 1A06 A/B or FRENCH 2M06 A/B

**Antirequisite(s):** FRENCH 4R06

### FRENCH 2BB3 - FRENCH LANGUAGE PRACTICE II

Continuation of FRENCH 2B03.

Four hours (including three hours of lecture and one hour of tutorial); one term.

**Prerequisite(s):** FRENCH 2B03

**Antirequisite(s):** FRENCH 4R06

### FRENCH 2CC3 - WOMEN'S WRITING

Examination of key themes of French and francophone women's writing.

Three hours; one term

**Prerequisite(s):** One of FRENCH 1A06 A/B or 2M06 A/B

### FRENCH 2E03 - SURVEY OF QUEBEC LITERATURE AND CULTURE

Selected novels, plays and poems representative of the main currents of Quebec literature and culture.

Three hours; one term

**Prerequisite(s):** One of FRENCH 1A06 A/B or 2M06 A/B

### FRENCH 2F03 - SURVEY OF FRENCH AND FRANCOPHONE LITERATURE

Examination of a representative sampling of texts from various periods and genres.

Three hours; one term

**Prerequisite(s):** One of FRENCH 1A06 A/B or 2M06 A/B

### FRENCH 2G03 - FRENCH LANGUAGE PRACTICE: ELEMENTARY TRANSLATION FROM ENGLISH TO FRENCH

An introduction to translation and comparative stylistics. The translation of texts from English to French will also serve as an exercise in applied grammar.

Three hours; one term

**Prerequisite(s):** FRENCH 2B03

### FRENCH 2I03 - PROFESSIONAL FRENCH I

An introduction to Professional French through study of terminology from several fields, placed in context. Will focus on case studies and current media.

May include medical, legal or journalistic French, among other areas.

Three hours; one term

**Prerequisite(s):** One of French 1A06 A/B or French 2M06 A/B or permission of the Department

*This course cannot be used to satisfy any of the French course requirements in fulfilment of a French degree, however it can be applied to elective requirements.*

### FRENCH 2JJ3 - NINETEENTH-CENTURY FRENCH LITERATURE

Aspects of the development of 19th-century French literature.

Three hours; one term

**Prerequisite(s):** One of FRENCH 1A06 A/B or FRENCH 2M06 A/B

### FRENCH 2L03 - INTRODUCTION TO LITERARY ANALYSIS

Introduction to various techniques and approaches in literary analysis, with practical application to Francophone texts from different eras and literary genres.

Three hours; one term

**Prerequisite(s):** FRENCH 1A06 A/B or 2M06 A/B

### FRENCH 2M06 A/B - INTRODUCTION TO FRENCH STUDIES: ADVANCED LEVEL

Equivalent to FRENCH 1A06 A/B. Review of grammar, oral and written practice and introduction to literary analysis.

Four hours (including one oral French tutorial); two terms

**Prerequisite(s):** One of FRENCH 1K06 A/B or 2Z06 A/B

**Antirequisite(s):** FRENCH 1A06 A/B

*Not open to students with credit or registration in FRENCH 2B03.*

### FRENCH 2Z06 A/B - BEGINNER'S INTENSIVE FRENCH II

A sequel to FRENCH 1Z06 A/B. Review of grammatical structures. Expansion of vocabulary. Conversation practice. Study of texts with class discussions. The normal sequel to this course is FRENCH 2M06 A/B. This course cannot be applied toward a Minor in French.

Three hours; two terms

**Prerequisite(s):** FRENCH 1Z06 A/B or Grade 11 French

**Antirequisite(s):** FRENCH 1K06 A/B

*Not open to students with credit or registration in FRENCH 1A06 A/B, 1B06, FRENCH 2B03, FRENCH 2M06 A/B.*

The Department reserves the right to place students in the course most appropriate to their abilities.

### FRENCH 3AA3 - THE MODERN FRENCH-CANADIAN NOVEL

A study of representative novels by contemporary authors with emphasis upon the relationship between representation and meaning. A discussion of how the novel breaks away from the past, to focus on a present and future of self-affirmation open to individual freedom, diversity and difference.

Three hours; one term

**Prerequisite(s):** Six units of French above Level I, excluding FRENCH 2M06 A/B and 2Z06 A/B

### FRENCH 3AC3 - FRANCOPHONE WRITERS

A choice of important figures of the Francophone world outside of Europe and Canada. The course examines questions raised by Francophone writers. It will emphasize the application of conceptual methodologies drawn from textual and discourse analysis, cultural and postcolonial studies.

Three hours; one term

**Prerequisite(s):** Six units of French above Level I, excluding FRENCH 2M06 A/B and 2Z06 A/B

### FRENCH 3C03 - FRENCH LANGUAGE PRACTICE: WRITTEN

Advanced grammar and composition; introduction to stylistics.

Four hours (including three hours of lecture and one hour of tutorial); one term

**Prerequisite(s):** FRENCH 2BB3

**Antirequisite(s):** FRENCH 4R06

### FRENCH 3CC3 - FRENCH LANGUAGE PRACTICE: INTERMEDIATE TRANSLATION FROM ENGLISH INTO FRENCH

A follow-up to French 2G03, elementary translation and comparative stylistics. The emphasis will be on the translation into French of complex sentence structures, as well as texts of general interest.

Three hours; one term

**Prerequisite(s):** FRENCH 2G03

### FRENCH 3EE3 - RECENT FRENCH LITERATURE

Major trends and texts of French literature from the 1970s to the present.

Three hours; one term

**Prerequisite(s):** Six units of French above Level I, excluding FRENCH 2M06 A/B and 2Z06 A/B

### FRENCH 3FF3 - FRANCOPHONE CINEMAS

In this course students will view and analyze Francophone films from around the world. Connections will also be drawn with corresponding literary works.

Two hours (plus one film screening every other week); one term

**Prerequisite(s):** FRENCH 2BB3

### FRENCH 3GG3 - FRENCH LANGUAGE PRACTICE: ELEMENTARY TRANSLATION FROM FRENCH TO ENGLISH

An introduction to translation and comparative stylistics. The translation of texts from French to English will also serve as an exercise in applied grammar.

Three hours; one term

**Prerequisite(s):** FRENCH 2B03

### FRENCH 3HH3 - FRANCOPHONE VOICES IN CANADA

A survey of Francophone Canadian literature produced outside of Quebec (most notably in Ontario and the Maritimes) as well as North American Indigenous literature written in French.

Three hours; one term

**Prerequisite(s):** Six units of French above Level I, excluding FRENCH 2M06 A/B and 2Z06 A/B

### FRENCH 3II3 - PROFESSIONAL FRENCH II

Follow-up to FRENCH 2I03. Will include study of terminology from different fields, placed in context.

Three hours; one term

**Prerequisite(s):** FRENCH 2I03

*This course cannot be used to satisfy any of the French course requirements in fulfilment of a French degree, however it can be applied to elective requirements.*

### FRENCH 3KK3 - REVOLUTIONARY LITERATURE BEFORE THE REVOLUTION: VOLTAIRE, ROUSSEAU AND BEAUMARCHAIS

Texts representing the main aspects of Enlightenment thought and literature from *Candide* to the Revolution.

Three hours; one term

**Prerequisite(s):** Six units of French above Level I, excluding FRENCH 2M06 A/B and Z206 A/B

### FRENCH 3LT3 - INTRODUCTION TO MODERN LITERARY THEORY

Builds on literary analysis skills acquired in FRENCH 2L03.

Three hours; one term.

**Prerequisite(s):** FRENCH 2L03 or permission of the instructor

### FRENCH 3P03 - HISTORY AND PHILOSOPHY OF EDUCATION

An overview of education from ancient Greece to modernity: philosophical grounds, institutions, knowledge dissemination methods, and role of language teaching.

Three hours; one term

**Prerequisite(s):** Six units of French above Level I, excluding FRENCH 2M06 A/B and FRENCH Z206 A/B

### FRENCH 3Q03 - SEVENTEENTH-CENTURY FRENCH LITERATURE

A consideration of selected themes as they appear in the works of major French writers of the 17th century.

Three hours; one term

**Prerequisite(s):** Six units of French above Level I, excluding FRENCH 2M06 A/B and Z206 A/B

**Antirequisite(s):** FRENCH 3Q03

### FRENCH 3SS3 - MEDIEVAL CIVILIZATION AND THE IMAGINAIRE

An exploration of Medieval texts representative of the civilization of the period (chivalry, courtly love, feasts and rituals), and of its *imaginaire* (fairies, monsters, witches and the devil).

Three hours; one term

**Prerequisite(s):** Six units of French above Level I, excluding FRENCH 2M06 A/B and Z206 A/B

### FRENCH 3V03 - IMAGE AND KNOWLEDGE REPRESENTATION

A study of communicating knowledge through images in French culture, from the Middle Ages to the present.

Three hours; one term

**Prerequisite(s):** Six units of French above Level I, excluding FRENCH 2M06 A/B or Z206 A/B

### FRENCH 3W03 - TWENTIETH-CENTURY FRENCH LITERATURE

Key movements and texts of 20th century literature, to the 1960s.

Three hours; one term

**Prerequisite(s):** Six units of French above Level I, excluding FRENCH 2M06 A/B and FRENCH Z206 A/B

### FRENCH 4A03 - FRENCH LANGUAGE PRACTICE

Oral and written production and comprehension.

Four hours (including three hours of lecture and one hour of tutorial); one term

**Prerequisite(s):** FRENCH 3C03 and registration in an Honours program in French

### FRENCH 4CC3 - THEORETICAL REFLECTIONS ON INTERDISCIPLINARITY

This course explores the formation of academic disciplines and the emergence of interdisciplinary thought in Western science and humanities. Aspects of theoretical reflection on interdisciplinarity by post-structuralist thinkers will also be discussed.

Seminar (two hours); one term

**Prerequisite(s):** 12 units of French beyond Level I, excluding FRENCH 2M06 A/B and FRENCH Z206 A/B

### FRENCH 4DD3 - ANIMALS IN FRENCH AND FRANCOPHONE LITERATURES

Thematic study of the various roles animals play in French and francophone texts.

Seminar (two hours); one term

**Prerequisite(s):** 12 units of French above Level I, excluding FRENCH 2M06 A/B or Z206 A/B

### FRENCH 4I03 - FRENCH POETRY FROM THE RENAISSANCE TO THE PRESENT

An introduction to major thematic, historical and linguistic concerns of French poetry from the Renaissance to the present (e.g. Poets and Humour, Love Poetry, Women Poets, Poètes maudits.)

Seminar (two hours); one term

**Prerequisite(s):** 12 units of French above Level I, excluding FRENCH 2M06 A/B and Z206 A/B

### FRENCH 4LL3 - TOPICS IN FRANCOPHONE LITERATURES

Topics may include: important issues in Francophone literatures outside of Europe and Canada, such as women and literature, margins in literature, representation of the self and the other; questions of genres in Francophone literatures; Francophone cinema; literature and history, culture, etc.

Seminar (two hours); one term

**Prerequisite(s):** 12 units of French above Level I, excluding FRENCH 2M06 A/B and Z206 A/B

*FRENCH 4LL3 may be repeated, if on a different topic, to a total of six units.*

### FRENCH 4MM3 - SEX, VIOLENCE AND ELEGANCE: THE 18TH-CENTURY NOVEL

A study of the genesis and themes of representative 18th-century novels.

Seminar (two hours); one term

**Prerequisite(s):** 12 units of French above Level I, excluding FRENCH 2M06 A/B and FRENCH Z206 A/B

### FRENCH 4P06 A/B - FRENCH AS A SECOND LANGUAGE: FROM THEORY TO PRACTICE

An experiential learning course for students who are interested in pursuing a teaching career. It will combine observation, reflection, theory and practical experimentation on teaching French as a second language, with placements organized through the Hamilton-Wentworth School Boards.

Approximately 60 hours on site at a school and 50 hours of presentation-based seminars; two terms

**Prerequisite(s):** Registration in Level III or above of a French program  
Students intending to enroll in this limited enrolment course must submit



an application to the Department of French by April of the preceding year. Application forms are available from the departmental office.

### FRENCH 4T03 - INDEPENDENT STUDY

The student will prepare under the supervision of a faculty member a research paper involving independent research in an area of study in which the student has already demonstrated a high level of basic knowledge. It is the student's responsibility to complete a proposal and secure the agreement of an instructor prior to registration.

**Prerequisite(s):** Registration in Level IV of an Honours program in French and permission of the Department

### FRENCH 4U03 - TOPICS IN LITERATURE AND CULTURE OF QUEBEC AND FRANCOPHONE CANADA

Topics may include: Paraliteratures: from nineteenth century tales and legends to contemporary science-fiction; Quebec women authors; Quebec cinema; the representation of France and America; the representation of otherness; Montreal in Quebec literature and culture.

Seminar (two hours); one term

**Prerequisite(s):** 12 units of French above Level I, excluding FRENCH 2M06 A/B and 2Z06 A/B

*FRENCH 4U03 may be repeated, if on a different topic, to a total of six units.*

### FRENCH 4Y03 - TOPICS IN 20TH-CENTURY FRENCH LITERATURE

Previous topics include: Women's Writing, The Essay, Gay and Lesbian Novel in France. Consult the Department concerning topic to be offered.

Seminar (two hours); one term

**Prerequisite(s):** 12 units of French above Level I, excluding FRENCH 2M06 A/B and 2Z06 A/B

*FRENCH 4Y03 may be repeated, if on a different topic, to a total of six units.*

## General Technology

Courses in General Technology are administered by the Bachelor of Technology Program.

Engineering Technology Building (ETB), Room 121, ext. 20195

<http://mybtechdegree.ca>

### GENTECH 1BZ3 - FOUNDATIONS OF BUSINESS

Students are given an introduction to the functional areas within businesses and an overview of the local and global business environments. The fundamentals of micro-economics and macro-economics are introduced, as well as sustainability in the environment of business.

Three lectures: second term

**Prerequisite(s):** Registration in Automation Engineering Technology, Automotive and Vehicle Engineering Technology, or Biotechnology

### GENTECH 1PC3 - PROFESSIONAL COMMUNICATIONS

Students will develop their written and oral communications skills with an emphasis on styles appropriate for a technology-based workplace including technical report writing. They will also develop their teamwork, problem solving, and research skills.

Two lectures; one tutorial (two hours): first term

**Prerequisite(s):** Registration in Automation Engineering Technology, Automotive and Vehicle Engineering Technology, or Biotechnology

**Antirequisite(s):** GENTECH 1CS3, 1CZ3, 3TC3

### GENTECH 2EE3 - ENGINEERING ECONOMICS

Costing methods of engineering designs and processes; minimum attractive rate of return, return sensitivities, time value of money, internal rates of return, pay-back period, amortization of equipment and capital cost allowance structures.

Three lectures; second term

**Prerequisite(s):** Registration in Level II of Automation Engineering Technology, Automotive and Vehicle Engineering Technology, or Biotechnology

**Antirequisite(s):** GENTECH 3EE3

### GENTECH 2HR3 - HUMAN RESOURCE FUNDAMENTALS

This course provides an overview and introduction to the human resource functions that support an organization's goals and objectives. Topics include: Designing and analyzing jobs; recruitment and selection; onboarding and training; career development; and performance management.

Three lectures: first term

**Prerequisite(s):** Registration in Level II Automation Engineering Technology, Automotive and Vehicle Engineering Technology, or Biotechnology

**Antirequisite(s):** GENTECH 1HR3

### GENTECH 2MP3 - MANAGEMENT PRINCIPLES

The course examines fundamental management principles of planning, organizing, leading, and controlling in technology organizations. Emphasis is placed on understanding and application of human resource management practices to engage people in attaining organizational goals.

Three lectures: second term

**Prerequisite(s):** GENTECH 2HR3 and registration in Level II Automation Engineering Technology, Automotive and Vehicle Engineering Technology, or Biotechnology

**Antirequisite(s):** GENTECH 1HR3, 10B3, 3MP3, 30B3, 4T03

### GENTECH 3DM3 - CREATIVITY, INNOVATION AND TECHNOLOGY

This course is a blend of hands-on and theoretical treatment on the subject of creating new technological product and service value in our society.

Three lectures; one term; may be offered online or in-person

**Prerequisite(s):** Registration in Civil Engineering Infrastructure Technology, Manufacturing Engineering Technology, Power and Energy Engineering Technology or Software Engineering Technology

**Antirequisite(s):** GENTECH 1DM3

### GENTECH 3EE3 - ENGINEERING ECONOMICS

Costing methods for engineering designs and processes; minimum attractive rate of return, return sensitivities, time value of money, internal rates of return, payback period, amortization of equipment and capital cost allowance structures.

Three lectures; one term; may be offered online or in-person

**Prerequisite(s):** Registration in Civil Engineering Infrastructure Technology, Manufacturing Engineering Technology, Power and Energy Engineering Technology or Software Engineering Technology

**Antirequisite(s):** GENTECH 1EE3, 2EE3

### GENTECH 3EN3 - ENTREPRENEURIAL THINKING AND INNOVATION

This course introduces students to the interrelationship of entrepreneurial thinking and innovation at both the industry and firm level.

Three lectures; one term; may be offered online or in-person

**Prerequisite(s):** Registration in Civil Engineering Infrastructure Technology,

Manufacturing Engineering Technology, Power and Energy Engineering Technology or Software Engineering Technology

**Antirequisite(s):** GENTECH 2EN3, 2ET3, 3ET3, 4ET3

### GENTECH 3ET3 - ENTREPRENEURIAL THINKING AND INNOVATION

This course introduces students to the interrelationship of entrepreneurial thinking and innovation at both the industry and firm level.

Three lectures; first term

**Prerequisite(s):** GENTECH 2MP3, 3FF3 and registration in Level II or above of Automation Engineering Technology, Automotive and Vehicle Engineering Technology, or Biotechnology

**Antirequisite(s):** GENTECH 2EN3, 2ET3, 3EN3, 4ET3

### GENTECH 3FF3 - FINANCIAL SYSTEMS

The course focuses on departmental budget methodologies, understanding and interpretation of various financial statement components in terms of their relevance to managerial decision making.

Three lectures; first term

**Prerequisite(s):** Registration in Level II or above of Automation Engineering Technology, Automotive and Vehicle Engineering Technology, or Biotechnology

**Antirequisite(s):** GENTECH 1FS3, 1FT3, 3FS3

### GENTECH 3FS3 - FINANCIAL SYSTEMS

The course focuses on departmental budget methodologies, understanding and interpretation of various financial statement components in terms of their relevance to managerial decision making.

Three lectures; one term; may be offered online or in-person

**Prerequisite(s):** Registration in Civil Engineering Infrastructure Technology, Manufacturing Engineering Technology, Power and Energy Engineering Technology or Software Engineering Technology

**Antirequisite(s):** GENTECH 1FS3, 1FT3, 3FF3

### GENTECH 3LS3 - QUALITY CONTROL AND ASSURANCE METHODS

Statistical tools, tests, design and analysis of planned experiments, Taguchi methods, control charts for variables and attributes, capability analysis, acceptance sampling, elements of reliability, quality assurance, and ISO 9000 certification.

Three lectures; first term.

**Prerequisite(s):** ENGTECH 2ES3 or 3ES3; and registration in Level II or above of Automation Engineering Technology, Automotive and Vehicle Engineering Technology, or Biotechnology

**Antirequisite(s):** GENTECH 3T03, 4SS3

### GENTECH 3MP3 - MANAGEMENT PRINCIPLES

The course examines fundamental management principles of planning, organizing, leading and controlling in technology organizations. Emphasis is placed on understanding and application of human resource management practices to engage people in attaining organizational goals.

Three lectures; one term; may be offered online or in-person

**Prerequisite(s):** Registration in Civil Engineering Infrastructure Technology, Manufacturing Engineering Technology, Power and Energy Engineering Technology or Software Engineering Technology

**Antirequisite(s):** GENTECH 2MP3, 3OB3

### GENTECH 3MT3 - PROJECT MANAGEMENT

Introduction to best practice in the management of technical projects including the use of planning, software and the management of people.

Three lectures; first term

**Prerequisite(s):** GENTECH 2MP3 and registration in Level II or above of Automation Engineering Technology, Automotive and Vehicle Engineering Technology, or Biotechnology Co-op

**Antirequisite(s):** GENTECH 3PM3, 4PM3

### GENTECH 4EM3 - LEGAL AND REGULATORY ISSUES

This course is an introduction to the legal, ethical, and regulatory frameworks that professional engineers and related professions must observe in the Province of Ontario.

Three lectures; one term, may be offered online or in-person

**Prerequisite(s):** Registration in one of Civil Engineering Infrastructure Technology, Manufacturing Engineering Technology, Power and Energy Engineering Technology or Software Engineering Technology

### GENTECH 4FT3 - STRATEGIC MANAGEMENT

*Formerly GENTECH 3FT3*

This capstone course examines the 'total' view of the organization and how it relates and interacts with various factors in its environment to gain long-term sustainable advantage.

Three lectures; first term

**Prerequisite(s):** GENTECH 1FT3 or 3FF3, 3ET3 or 4ET3, ENGTECH 4EE0 and registration in Level III or above of Automation Engineering Technology, Automotive and Vehicle Engineering Technology, or Biotechnology

**Antirequisite(s):** GENTECH 3FT3, 3SF3, 4SF3

### GENTECH 4LM3 - LEAN THINKING AND PRACTICES

The course focuses on lean thinking and approaches to enable the deployment and adaption of tools aimed at minimizing waste, removing non-value added activities, and pursuing incremental improvements across organizations.

Three lectures; one term, may be offered online or in-person

**Prerequisite(s):** Registration in Civil Engineering Infrastructure Technology, Manufacturing Engineering Technology, Power and Energy Engineering Technology or Software Engineering Technology

**Antirequisite(s):** GENTECH 4LT3

### GENTECH 4MB3 - FUNDAMENTALS OF MARKETING

This course introduces the 4Ps of marketing: product, price, promotion, and place with a Business-to-Business focus. Global and high technology markets and their unique challenges will be presented. Students will learn to make marketing decisions within a strategic framework.

Three lectures; one term

**Prerequisite(s):** Registration in Level IV or above of Automation Engineering Technology, Automotive and Vehicle Engineering Technology, or Biotechnology

**Antirequisite(s):** GENTECH 4MK3

### GENTECH 4MK3 - FUNDAMENTALS OF MARKETING

This course introduces the 4Ps of marketing: product, price, promotion, and place with a Business-to-Business focus. Global and high technology markets and their unique challenges will be presented. Students will learn to make marketing decisions within a strategic framework.

Three lectures; one term; may be offered online or in-person

**Prerequisite(s):** Registration in Civil Engineering Infrastructure Technology, Manufacturing Engineering Technology, Power and Energy Engineering Technology or Software Engineering Technology

**Antirequisite(s):** GENTECH 4MB3

### GENTECH 40M3 - OPERATIONS MANAGEMENT

*Formerly GENTECH 4SC3*

This course addresses the management of operations at the strategic, tactical and operations levels. Emphasizing decisions required to successfully design, create and deliver goods and services in a globalized marketplace.

Three lectures; second term

**Prerequisite(s):** GENTECH 3LS3 and registration in Level III or above of Automation Engineering Technology, Automotive and Vehicle Engineering Technology, or Biotechnology

### GENTECH 4PM3 - PROJECT MANAGEMENT

Introduction to best practice in the management of technical projects including the use of planning, software and the management of people.

Three lectures; one term; may be offered online or in-person

**Prerequisite(s):** Registration in Civil Engineering Infrastructure Technology, Manufacturing Engineering Technology, Power and Energy Engineering Technology or Software Engineering Technology

**Antirequisite(s):** GENTECH 3MT3, 3PM3

### GENTECH 4SE3 - TECHNOLOGY ETHICS AND SUSTAINABILITY

The course explores the social implications and environmental impacts of technologies and the ethical challenges they impose on technology professionals. Critical thinking skills and professional responsibility are examined using real-ethical dilemmas to help students develop a professional ethical identity that can be carried forward into their career.

Three lectures; one term; may be offered online or in-person

**Prerequisite(s):** Registration in Civil Engineering Infrastructure Technology, Manufacturing Engineering Technology, Power and Energy Engineering Technology or Software Engineering Technology

**Antirequisite(s):** CIVTECH 4E13

### GENTECH 4SF3 - STRATEGIC MANAGEMENT

This course examines the 'total' view of the organization and how it relates and interacts with various factors in its environment to game long-term sustainable advantage.

Three lectures; one term; may be offered online or in-person

**Prerequisite(s):** GENTECH 3FS3 and registration in Civil Engineering Infrastructure Technology, Manufacturing Engineering Technology, Power and Energy Engineering Technology or Software Engineering Technology

**Antirequisite(s):** GENTECH 3FT3, 3SF3, 4FT3

### GENTECH 4ST3 - CONTEMPORARY ISSUES IN MANAGEMENT

Students are offered a selection of three to four emerging issues of the day as those issues relate to current and emerging technology and management technology practices. These topics could include supply chain management, ERP, knowledge management, 6 sigma methods, etc.

Three lectures; one term; may be offered online or in-person

**Prerequisite(s):** Registration in Civil Engineering Infrastructure Technology, Manufacturing Engineering Technology, Power and Energy Engineering Technology or Software Engineering Technology

### GENTECH 4TC3 - TECHNICAL COMMUNICATIONS

This course introduces students to the best practices for essential written, spoken, and graphic communications used in technology workplaces. Emphasis

is placed on how to conduct research, analyze information, and design communication materials that are succinct and customized to the readers' needs.

Three lectures; one term, may be offered online or in-person

**Prerequisite(s):** Registration in one of Civil Engineering Infrastructure Technology, Manufacturing Engineering Technology, Power and Energy Engineering Technology or Software Engineering Technology

**Antirequisite(s):** GENTECH 3TC3

### GENTECH 4TE3 - TECHNOLOGY ETHICS AND SUSTAINABILITY

The course explores the social implications and environmental impacts of technologies and the ethical challenges they impose on technology professionals. Critical thinking skills and professional responsibility are examined using real-ethical dilemmas to help students develop a professional ethical identity that can be carried forward into their career.

Three lectures; first term

**Prerequisite(s):** ENGTECH 4EE0, and registration in Level III or above of Automation Engineering Technology, Automotive and Vehicle Engineering Technology, or Biotechnology

### GENTECH 4TS3 - TECHNOLOGY AND SOCIETY

*Formerly GENTECH 3TS3*

A study of the diverse and often contradictory impact of technology on society. The consequences of current technological changes and those of the recent past are explored to illustrate the complexities of technological-societal interrelationships.

Three lectures; second term

**Prerequisite(s):** Registration in Level III or above of Automation Engineering Technology, Automotive and Vehicle Engineering Technology, or Biotechnology

**Antirequisite(s):** GENTECH 2TC3, 3L03, 4TP3

## Geography (See Environment & Society)

### Note

Former Geography (GEOG) courses are now listed as Environment & Society (ENVSOCY) courses. Students having credit in GEOG courses may not take the corresponding course under the ENVSOCY designation.

## German

Courses in German are administered by the Department of Linguistics and Languages.

Togo Salmon Hall, Room 629, ext. 24388

<http://linguistics.humanities.mcmaster.ca/>

### Notes

- Students should note that the Department has classified its German language courses under the following categories:
  - Introductory Level Language Course:** GERMAN 1Z06 A/B S
  - Intermediate Level Language Courses:** GERMAN 1B03, 1BB3, 2Z03, 2ZZ3
  - Advanced Level Language Courses:** GERMAN 3Z03, 3ZZ3, 4CC3
- Not all courses are offered on an annual basis. Students should consult the timetable for available courses.
- Students may be required to take a placement test in the Department of Linguistics and Languages to assess their proficiency in the language.
- The following are courses open as electives to students registered in Level II or above of any undergraduate program.

- GERMAN 2CC3 - Germany Through the Ages: Culture and Society (Taught in English)
- GERMAN 2FT3 - The Fairy Tale (Taught in English)
- GERMAN 2N03 - The Holocaust in Film and Fiction (Taught in English)
- GERMAN 3H03 - The New Europe: A New Germany (Taught in English)

#### Courses

If no prerequisite is listed, the course is open.

### GERMAN 1B03 - INTERMEDIATE GERMAN I

A course designed to expand German linguistic skills through practice in reading, writing, listening and speaking, promoting intercultural learning and international awareness.

Three hours; one term

**Prerequisite(s):** Grade 12 U or M equivalent

**Antirequisite(s):** GERMAN 2Z03, 2ZZ3

*Not open to students with credit or registration in GERMAN 1BB3. The Department reserves the right to place students in the course most appropriate to their abilities.*

### GERMAN 1BB3 - INTERMEDIATE GERMAN II

Through integrated and interactive practice in reading, writing, listening and speaking, this course is intended to serve as a foundation for the advanced study of German language and culture. The sequels to this course are GERMAN 3Z03 and 3ZZ3.

Three hours; one term

**Prerequisite(s):** GERMAN 1B03

**Antirequisite(s):** GERMAN 2ZZ3

### GERMAN 1Z06 A/B S - BEGINNER'S INTENSIVE GERMAN

This course enables students to communicate effectively and accurately in German. Using multimedia resources, students acquire the basics of German grammar and develop language skills in order to master everyday situations. The sequel to this course is GERMAN 2Z03.

Three hours; two terms

**Antirequisite(s):** Grade 12 U or M equivalent, GERMAN 1ZZ3

*The Department reserves the right to place students in the course most appropriate to their abilities.*

### GERMAN 2CC3 - GERMANY THROUGH THE AGES: CULTURE AND SOCIETY (TAUGHT IN ENGLISH)

An interdisciplinary look at the historical events, cultural phenomena, and personalities which have shaped German culture and society until World War II. Topics include: Medieval and Romantic Heritage, the Golden Twenties, Nationalism and National Socialism, the Holocaust.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above

### GERMAN 2FT3 - THE FAIRY TALE (TAUGHT IN ENGLISH)

An examination of fairy tales from a variety of cultures and historical periods with particular emphasis on German tradition and the work of the Grimm Brothers. Students will also explore theories of the folktale and their implications for our understanding of other literary genres.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** ENGLISH 3F03

### GERMAN 2N03 - THE HOLOCAUST IN FILM AND FICTION (TAUGHT IN ENGLISH)

Focusing on the moral, philosophical, and cultural legacy of the Holocaust through the artistic imagination, we will explore the roots of European antisemitism, the Final Solution, politicization, universalization, trivialization, aestheticization, commercialization, Holokitsch.

Two hour lecture, two hour tutorial; one term

**Prerequisite(s):** Registration in Level II or above

*Offered on rotation.*

### GERMAN 2P03 - MODERN GERMANY THROUGH FILM: SYMPHONIES OF MAGIC & HORROR (TAUGHT IN ENGLISH)

Beginning with *film noir* in the early twentieth century, we will move from expressionist horror films (*Caligari*, *Mabuse*, *Nosferatu*) to the Golden Twenties in Berlin, and through the WWII period into contemporary popular culture.

Two hour lecture, two hour tutorial; one term

**Prerequisite(s):** Registration in Level II or above

*Offered on rotation.*

### GERMAN 2Z03 - INTERMEDIATE GERMAN I

The course is designed to further expand German linguistic skills through integrated and interactive practice in reading, writing, listening and speaking. The sequel to this course is GERMAN 2ZZ3.

Three hours; one term

**Prerequisite(s):** GERMAN 1Z06 A/B S

**Antirequisite(s):** GERMAN 1B03

*Not open to students with credit or registration in GERMAN 2ZZ3. The Department reserves the right to place students in the course most appropriate to their abilities.*

### GERMAN 2ZZ3 - INTERMEDIATE GERMAN II

Through integrated and interactive practice in reading, writing, listening and speaking, this course is intended to serve as a foundation for the advanced study of German language, literature and culture. The course is enhanced by the use of WebCT and multimedia technology. The sequels to this course are GERMAN 3Z03 and GERMAN 3ZZ3.

Three hours; one term

**Prerequisite(s):** GERMAN 2Z03

**Antirequisite(s):** GERMAN 1BB3

*The Department reserves the right to place students in the course most appropriate to their abilities.*

### GERMAN 3H03 - THE NEW EUROPE: A NEW GERMANY (TAUGHT IN ENGLISH)

In the heart of the 'New Europe' lies a 'New Germany,' united after almost a half-century of division. German literature and film provide an insight into this fascinating multicultural world.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above

### GERMAN 3Z03 - ADVANCED GERMAN I

The course is suitable for intermediate-advanced learners of German and helps develop receptive and productive skills. Students will acquire and use more complex vocabulary and grammatical structures, and will become more familiar with cultural, historical, and linguistic aspects of the German-speaking countries. The sequel to this course is GERMAN 3ZZ3.

Three hours; one term

**Prerequisite(s):** GERMAN 1BB3 or 2ZZ3



**Antirequisite(s):** GERMAN 3E03

*The Department reserves the right to place students in the course most appropriate to their abilities.*

### GERMAN 3Z33 - ADVANCED GERMAN II

This course offers a communicative approach to language, culture and literature through integrated and interactive practice in reading, writing, listening and speaking.

Three hours; one term

**Prerequisite(s):** GERMAN 3Z03

**Antirequisite(s):** GERMAN 3G03

*The Department reserves the right to place students in the course most appropriate to their abilities.*

### GERMAN 4CC3 - TRANSLATION: TECHNIQUES AND PRACTICE

This course offers practice in the translation of literary and non-literary texts. (English to German and German to English.) The practical component will be complemented by an overview of electronic and on-line translation aids, as well as different theories and techniques of translation in Western Culture.

Three hours; one term

**Prerequisite(s):** One of GERMAN 3E03, 3Z03, 4B03 or 4Z03

### GERMAN 4II3 A/B S - INDEPENDENT STUDY

The student will prepare, under the supervision of a faculty member, a research paper involving independent study in an area where the student has already demonstrated competence.

**Prerequisite(s):** 12 units of German above Level I and permission of the Department

### GERMAN 4RC6 - ADVANCED GERMAN READING COURSE (TAUGHT IN ENGLISH)

This course is designed for graduate students or students intending to enter graduate programs. The course pays specific attention to developing students' reading comprehension skills and techniques. Reading materials will be selected to reflect students' specialized interests and will be used to practice textual analysis, study relevant grammar points and aid in vocabulary development. Successful completion of the course may be accepted in fulfillment of the second language reading requirement for graduate programs.

**Prerequisite(s):** Permission of the Department of Linguistics and Languages  
*Offered in alternate years during the Spring session only.*

## Globalization Studies

### GLOBALZN 1A03 - GLOBAL CITIZENSHIP

An interdisciplinary introduction to globalization through a critical engagement with the idea of "global citizenship" in the contemporary context. The political, economic, and cultural dimensions of globalization will be examined.

Three hours (lectures and tutorials); one term

### GLOBALZN 3A03 - GLOBALIZATION, SOCIAL JUSTICE, AND HUMAN RIGHTS

This course examines competing theories, issues, and debates relating to the promotion of social justice and human rights in a globalizing world. Students use course-integrated social networking to interact and collaborate with peers from partner universities across the globe where versions of this course are simultaneously taught.

Three hours (lectures); one term

**Prerequisite(s):** GLOBALZN 1A03

**Cross-list(s):** ANTHROP 3HH3

## Greek

Courses in Greek are administered by the Department of Classics.

Togo Salmon Hall, Room 706, ext. 24311

<http://classics.humanities.mcmaster.ca/>

No language other than English is required for Greek courses.

### Notes

1. Students should note that the Department has classified its Greek language courses under the following categories:

**Introductory Level Language Courses:** GREEK 1Z03, 1ZZ3

**Intermediate Level Language Courses:** GREEK 2A03, 2AA3

2. The following courses are available as electives to qualified students in any program: Greek Language and Literature: GREEK 1Z03, 1ZZ3, 2A03, 2AA3, 3AA3, 3B03, 3BB3, 3C03

3. Students with Grade 12 Greek U should normally register in GREEK 2A03, but with special permission, may register in either GREEK 1Z03 or 1ZZ3.

### Courses

*If no prerequisite is listed, the course is open.*

### GREEK 1Z03 - BEGINNER'S INTENSIVE ANCIENT GREEK I

A rapid introduction to the basic grammar of Ancient Greek.

Four hours (lectures and tutorials); one term

*Not open to graduates of Grade 12 Greek U, who must have special permission to register in the course*

### GREEK 1ZZ3 - BEGINNER'S INTENSIVE ANCIENT GREEK II

This course continues the study of the grammar of Ancient Greek begun in GREEK 1Z03.

Four hours (lectures and tutorials); one term

**Prerequisite(s):** GREEK 1Z03. Students with Grade 12 Greek U must obtain special permission to register in the course.

*This course, with a grade of at least C is accepted as a prerequisite for admission to any Honours program in Classics, or, with a grade of at least C-, for admission to the B.A. program in Classics.*

### GREEK 2A03 - INTERMEDIATE GREEK I

This course continues the study of Greek grammar begun in GREEK 1Z03 and 1ZZ3 and introduces students to the reading of simple passages from Greek authors.

Three lectures; one term

**Prerequisite(s):** One of Grade 12 Greek U; or GREEK 1ZZ3 with a grade of at least C-. Students using this course as a Humanities I requirement will register for GREEK 2A03 and 2AA3

### GREEK 2AA3 - INTERMEDIATE GREEK II

A study of selected passages from Greek authors designed to develop further the student's proficiency in reading Greek. The course may also include grammatical exercises.

Three lectures; one term

**Prerequisite(s):** GREEK 2A03

### GREEK 3AA3 - GREEK PROSE

Selected readings in one or more Greek prose authors.

Three lectures; one term

**Prerequisite(s):** GREEK 2A03, 2AA3

*GREEK 3AA3 may be repeated, if on a different author/work, to a total of six units.*

**GREEK 3BB3 - TOPICS IN GREEK LITERATURE**

Consult the Department for the topic to be offered.

Three lectures; one term

**Prerequisite(s):** GREEK 2A03, 2AA3

*GREEK 3BB3 may be repeated, if on a different topic, to a total of six units.*

**GREEK 3E03 - TOPICS IN GREEK POETRY**

Consult the department for the topic to be offered.

Three lectures; one term

**Prerequisite(s):** Six units of Level II Greek

*GREEK 3E03 may be repeated, if on a different topic, to a total of six units.*

**GREEK 4T03 - INDEPENDENT STUDY IN GREEK**

Selected readings from Greek authors supervised by a member of the Department.

Tutorials; one term

**Prerequisite(s):** Six units of Level III Greek and registration in Level III or IV of any Honours program in Classics, and permission of the Department

*GREEK 4T03 may be repeated, if on a different topic, to a total of six units.*

## Health, Aging and Society

Courses in Health, Aging and Society are administered by the Department of Health, Aging and Society.

Kenneth Taylor Hall, Room 226, ext. 27227

<http://www.healthagingandsociety.mcmaster.ca>

**Notes**

1. Not all Health, Aging and Society courses may be offered every year. Students are advised to consult the Master Timetable published by the Office of the Registrar or contact the Department of Health, Aging and Society after May 1 to determine which courses will be offered in the following academic year.
2. Former Gerontology (GERONTOL) and Health Studies (HEALTHST) courses are now listed as Health, Aging and Society (HLTH AGE) courses. Students having credit in these courses may not take the corresponding Health, Aging and Society (HLTH AGE) course.

**HLTHAGE 1AA3 - INTRODUCTION TO HEALTH AND SOCIETY**

An introduction to the key themes and questions concerning health and health care from within social sciences perspectives.

Three hours (lectures and tutorials); one term

**Antirequisite(s):** HLTHAGE 1ZZ3, HEALTHST 1A03, HTHSCI 2RR3

*Not open to students in a Nursing or Midwifery program.*

**HLTHAGE 1BB3 - INTRODUCTION TO AGING AND SOCIETY**

Examines issues in aging from a multidisciplinary perspective including such topics as: myths and stereotypes of aging, social ties in later life and the aging of the Canadian population. Provides a deeper understanding of aging and the changing body, mind and self, as well as the meaning and experiences, challenges and opportunities of aging and later life.

Three hours (lectures, tutorials and experiential components); one term

**Antirequisite(s):** GERONTOL 1A03**HLTHAGE 1CC3 - INTRODUCTION TO MENTAL HEALTH AND ILLNESS**

An introduction to well-being and the basic types of mental disorders from social, psychological, behavioral, and medical perspectives.

Lectures (three hours); one term

**HLTHAGE 1ZZ3 - INQUIRY: INTRODUCTION TO HEALTH AND SOCIETY**

This inquiry course is designed to develop skills basic to an introduction to the key themes and questions concerning health and health care from within social sciences perspectives.

Three hours (lectures and tutorials); one term

**Prerequisite(s):** Registration in Level I of Honours Health and Society**Antirequisite(s):** HLTHAGE 1AA3**HLTHAGE 2A03 - RESEARCH METHODS IN HEALTH AND IN AGING I**

This course introduces students to the qualitative and quantitative research methods used in the social sciences. Students will develop skills to read, understand and evaluate the quality of research papers employing both methods.

Lectures and discussion/tutorials (three hours); one term

**Prerequisite(s):** Registration in any Health, Aging and Society program**Antirequisite(s):** CMST 2A03; GEOG 3MA3; GERONTOL 2C03; HLTHAGE 2A06, 3Z06; HEALTHST 2B03, SOCSCI 2K03, SOCIOL 2Z03, SOCPYSY 2K03, SOCSCI 2T03**HLTHAGE 2AN3 - THE ANTHROPOLOGY OF FOOD AND NUTRITION**

*Formerly HEALTHST 2AN3*

An anthropological perspective on nutrition at the population level. Prehistoric, historic, and contemporary human nutrition, emphasizing links with the environment.

Lecture (two hours), tutorial (one hour); one term

**Prerequisite(s):** Three units of Level I Anthropology or HLTHAGE

1AA3 (HEALTHST 1A03); and registration in Level II or above in any program

**Antirequisite(s):** HEALTHST 2AN3**Cross-list(s):** ANTHROP 2AN3

*This course is administered by the Department of Anthropology.*

**HLTHAGE 2B03 - SOCIAL IDENTITY, HEALTH AND ILLNESS**

*Formerly HEALTHST 2AA3*

A critical exploration of the role of class, race, gender, ability and age in patterns of health and illness.

Lectures and discussion/tutorials (three hours); one term

**Prerequisite(s):** Registration in any Health, Aging and Society program**Antirequisite(s):** HEALTHST 2A03, 2AA3**HLTHAGE 2BB3 - PERSPECTIVES IN HEALTH, AGING AND SOCIETY**

Explores social aspects of health and aging at both the individual and societal levels using a variety of approaches such as life course perspective, political economy, social constructionism, self identity, and a feminist perspective of aging.

Three hours (lectures and discussions/tutorials); one term

**Prerequisite(s):** HLTHAGE 1AA3 or 1ZZ3 and 1BB3 and registration in any Health, Aging and Society program**Antirequisite(s):** GERONTOL 2A03, 2AA3, 2D03

### HLTHAGE 2C03 - HEALTH ECONOMICS AND ITS APPLICATION TO HEALTH POLICY

Formerly HEALTHST 2C03

Economic analyses of health and health care, with a special emphasis on policy issues in the Canadian health care system.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** HEALTHST 2C03

**Cross-list(s):** ECON 2CC3

*Not open to students registered in an Economics program or with credit or registration in ECON 2G03, 2X03 or 3Z03. This course is administered by the Department of Economics.*

### HLTHAGE 2D03 - CONTINUUM OF CARE

The course will critically examine the continuum of care options for older adults needing support and services in later life. Some of the topics addressed include quality of life and quality of care issues, challenges involved in care integration across the continuum, environmental design, human diversity and long term care needs, formal and informal support, as well as policy and funding issues.

Lectures, discussion/tutorials (three hours); one term

**Prerequisite(s):** Registration in any Health, Aging and Society program

**Antirequisite(s):** GERONTOL 3L03, HLTHAGE 4E03

### HLTHAGE 2F03 - AGING AND HEALTH CARE SYSTEMS

Formerly GERONTOL 2F03

This course examines the available international evidence on the impact of aging on health and long-term care expenditures and organization, as well as the choices various societies are making around issues of aging, health, and long-term care, and the equity issues such choices raise.

On-line with synchronized sessions (three hours); one term

**Prerequisite(s):** Registration in any Health, Aging and Society Program

**Antirequisite(s):** GERONTOL 2F03

*Not open to students with credit in GERONTOL 3I03, if the topic was Aging and Health Care Systems.*

### HLTHAGE 2GG3 - MENTAL HEALTH AND SOCIETY

An examination of mental health and illness from different social, cultural and historical perspectives, including consideration of changing notions of diagnosis, treatment and prevention.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in level II or above

### HLTHAGE 2HI3 - GEOGRAPHIES OF DEATH & DISEASE

Formerly HEALTHST 2HI3

Introduction to population geography and medical geography. Historical and contemporary trends and patterns of mortality and morbidity will be examined using ideas from demography, medicine, ecology and cultural studies, with examples from different parts of the world.

Two lectures, one tutorial (one hour); one term

**Prerequisite(s):** One of GEOG 1HA3, 1HB3

**Antirequisite(s):** HEALTHST 2HI3

**Cross-list(s):** GEOG 2HI3

*This course is administered by the School of Earth, Environment & Society (Faculty of Science).*

### HLTHAGE 2J03 - SELECTED TOPICS IN AGING AND SOCIETY

This course will provide an exploration of selected topics in aging. Topics may vary from year to year.

Three hours (lectures, discussion); one term

**Prerequisite(s):** Registration in Level II or above

### HLTHAGE 2K03 - SELECTED TOPICS IN HEALTH AND SOCIETY

This course will provide an exploration of selected topics in Health Studies. Topics may vary from year to year.

3 hours; one term

**Prerequisite(s):** Registration in Level II or above.

### HLTHAGE 2L03 - DRUGS, SEX AND ALCOHOL: SOCIETY AND ITS ADDICTIONS

This course analyzes the place of addictions in modern society. Taking an interdisciplinary perspective, it examines both the social factors that help shape addictive behaviours, as well as those that construct our notions of addiction and dependency.

Lectures and discussion/tutorials (three hours); one term

**Prerequisite(s):** Registration in Level II or above

### HLTHAGE 2M03 - AGING IN MODERN (AND POST-MODERN) FAMILIES

This course examines how aging and gender combine to affect a range of relationships across different types of family. The relationships considered include relations with one's partner, marital transitions, the relationship between adult children and their parents, sibling ties, grandparent/grandchild relationships, and fictive kin.

Three hours (lecture, discussion); one term

**Prerequisite(s):** Registration in Level II or above

### HLTHAGE 3AA3 - STATE, CIVIL SOCIETY AND HEALTH

Formerly HEALTHST 3AA3

This course explores how states, citizens, and civil society act and interact in the definition and pursuit of health.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level III or above of a Health, Aging and Society program

**Antirequisite(s):** HEALTHST 3A03, 3AA3

### HLTHAGE 3B03 - ADVANCED RESEARCH METHODS

This course provides hands-on learning where students develop skills in planning and conducting research: research question identification, tool development and pilot testing, data analysis, and reporting for both quantitative and qualitative approaches.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of GERONTOL 2C03, HEALTHST 2B03 or HLTHAGE 2A03, and registration in Level III or above of a Health, Aging and Society program

**Antirequisite(s):** HLTHAGE 2A06, 3A03, 3G03, 3Z06, SOCIOL 3003

**Cross-list(s):** SOCPSY 3L03

### HLTHAGE 3BB3 - FIELD EXPERIENCE

Directed observation of 40 hours in an approved field setting and a weekly seminar focusing on integration of theoretical knowledge and field experience. Approximately four hours field observation per week, and two hours weekly seminar; one term

**Prerequisite(s):** Registration in Level III or above of any Health, Aging and Society program

**Antirequisite(s):** GERONTOL 3B03, HLTHAGE 3EE3

### HLTHAGE 3CC3 - HEALTH AND ENVIRONMENT: ANTHROPOLOGICAL APPROACHES

*Formerly HEALTHST 3CC3*

Examination of the ways in which humans alter and cope with their environment. Topics include: health inequalities, nutrition, population, urbanization, resource utilization, and industrial pollution.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Three units of Level I Anthropology or HLTHAGE 1AA3 or 1ZZ3 (HEALTHST 1A03), and registration in Level III or IV of any program. ANTHROP 2E03 is strongly recommended.

**Antirequisite(s):** HEALTHST 3CC3

**Cross-list(s):** ANTHROP 3C03

*This course is administered by the Department of Anthropology.*

### HLTHAGE 3D03 - PERSPECTIVES ON DISABILITY, CHRONIC ILLNESS AND AGING

*Formerly HEALTHST 3D03*

Designed to provide a critical examination of the interdisciplinary aspects of disability, chronic illness and aging and to gain deeper insights into the complex nature of living with a disability and/or chronic illness. Issues and challenges related to definitions, concepts, models, research, policy, program and practice implications will be discussed.

Lectures and discussion (three hours); one term

**Prerequisite(s):** One of HLTHAGE 1AA3 or 1ZZ3 (HEALTHST 1A03) or HLTHAGE 1BB3 (GERONTOL 1A03) and Registration in Level III or above

**Antirequisite(s):** GERONTOL 4J03, HEALTHST 3D03

### HLTHAGE 3DD3 - WORK: DANGEROUS TO YOUR HEALTH?

An analysis of issues and problems associated with occupational health and safety in Canada and other industrialized countries. Topics will be examined from social, political, economic, legal and medical perspectives.

Lectures and discussion; one term

**Prerequisite(s):** Registration in Level III or above of a Health, Aging and Society or Labour Studies program.

**Antirequisite(s):** HEALTHST 3C03

**Cross-list(s):** LABRST 3D03

*This course is administered by School of Labour Studies. Generally offered in alternate years.*

### HLTHAGE 3E03 - ETHICAL ISSUES IN HEALTH AND AGING

*Formerly HEALTHST 3E03*

Ethical issues of current relevance to debates in aging, health and health care. Topics will vary from year to year.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level III or above of any program

**Antirequisite(s):** HTHSCI 3L03, HEALTHST 3E03

### HLTHAGE 3EE3 - THE PRACTICE OF EVERYDAY LIFE: OBSERVATIONS AND INQUIRY

This course explores how health and wellbeing are practiced by people 'out there' in their everyday lives across public spaces. Based on a range of theoretical and methodological approaches, students will undertake naturalistic field observations and reflections in the community which form the basis of the course assignments.

Approximately four hours field observation per week and two hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level III or above of a program in Health, Aging and Society

**Antirequisite(s):** HLTHAGE 3BB3

### HLTHAGE 3G03 - COMMUNITY BASED RESEARCH

This course will introduce students to the theories and practice of community based research. Community based research is committed to social change and strives to enhance the synergy between researchers and the community. Students will have the opportunity to apply their theoretical learning by actual engagement with community based organizations in research.

Three hours (lectures and discussion); one term

**Prerequisite(s):** HLTHAGE 2A03 and registration in Level III or above of a program in Health, Aging and Society

**Antirequisite(s):** HLTHAGE 2A06, 3A03, 3B03, 3Z06, SOCIOL 3003

### HLTHAGE 3HP3 - POPULATION GROWTH AND AGING

Differential growth of human populations and their changing age and sex structures with an emphasis on birth and death processes. The connections between population structures and processes and various aspects of environments and societies including aging, are emphasized.

Three lectures; one term

**Prerequisite(s):** One of GEOG 2HI3, HEALTHST 2HI3, HLTHAGE 2HI3

**Antirequisite(s):** GEO 2HG3, GERONTOL 2HG3, HEALTHST 2HG3

**Cross-list(s):** GEOG 3HP3

*This course is administered by the School of Earth, Environment & Society.*

### HLTHAGE 3I03 - INDEPENDENT STUDY IN HEALTH, AGING AND SOCIETY

The student will select a topic relevant to Health, Aging and Society for an in-depth investigation under the supervision of a faculty member and write an independent research paper.

One term

**Prerequisite(s):** HLTHAGE 2A03, registration in Level III or above of any Health, Aging and Society program and permission of the Department Chair

**Antirequisite(s):** GERONTOL 3E03, HEALTHST 3I03

### HLTHAGE 3K03 - SOCIAL DETERMINANTS OF POPULATION HEALTH IN CANADA

*Formerly HEALTHST 3K03*

This course introduces students to the social determinants of population health framework. It is used to analyse a number of social and economic determinants of health, including housing, neighbourhoods and early child development within the Canadian context.

Lectures and discussion (three hours); one term

**Prerequisite(s):** HLTHAGE 1AA3 or 1ZZ3 (HEALTHST 1A03) and registration in Level III or above of any program

**Antirequisite(s):** HEALTHST 3K03

*This course may be taken as elective credit by undergraduate students registered in a non-Health, Aging and Society program, however, enrolment for such students is limited.*

### HLTHAGE 3L03 - EMBODIED AGING

*Formerly GERONTOL 3N03*

This course explores the centrality of the body in social gerontological knowledge, policies and practices related to aging, and the experiences of late life. Examples of the topics addressed include the classification of the old



body, bodily change and impairment, technological advancements for the body/prosthetic devices, and the relationship between the body/identity/self over the life course.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level III or above of a program in Health, Aging and Society

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### HLTHAGE 3M03 - APPROACHES TO MENTAL HEALTH AND RESILIENCE

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Resiliency is a key concept in the field of social sciences and mental health.

This course explores approaches to resilience among a range of populations and social contexts. Students will examine topics such as academic resilience, community resilience, and resilience in cultural context as they related to the broad determinants of mental health.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of HLTHAGE 1CC3 or HLTHAGE 2GG3 or HLTHAGE 2L03; and registration in Level III or above

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### HLTHAGE 3N03 - AGING AND MENTAL HEALTH

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This course will examine the mental health of older adults from a variety of perspectives. Key topics include changes in cognitive functioning, dementia, assessment protocols, treatment methods, and older adults' sources of resilience.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of HLTHAGE 1AA3 or 1ZZ3 (HEALTHST 1A03); HLTHAGE 1BB3 (GERONTOL 1A03); and registration in Level III or above of any program

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### HLTHAGE 3Q03 - SELECTED TOPICS IN HEALTH AND AGING

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Topics may vary from year to year.

Lectures and discussion (three hours); one term

**Prerequisite(s):** One of HLTHAGE 1AA3 or 1ZZ3 (HEALTHST 1A03), HLTHAGE 1BB3 (GERONTOL 1A03) and registration in Level III or above

*HLTHAGE 3Q03 may be repeated, if on a different topic, to a total of six units. Priority will be given to students registered in a Health and Aging program.*

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### HLTHAGE 3R03 - HEALTH INEQUALITIES

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This course will introduce students to the key concepts, theories and measures of health inequalities. Using common examples of health inequalities within Canada and internationally such as gender, race, social class, we will critically analyse mechanisms through which health inequalities arise, are sustained and can be addressed within societies.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level III or above

**Antirequisite(s):** HLTHAGE 4F03 if topic was Health Inequalities

*Priority will be given to students registered in a Health and Aging program.*

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### HLTHAGE 3S03 - GLOBAL HEALTH AND ENVIRONMENT POLICY

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This course explores the challenges in tackling the health impacts from environmental pollution (chemicals, waste, climate change), and will address the issues on how scientific knowledge about adverse health effects from exposure to environmental factors are converted into policies.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level III or above of any program

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### HLTHAGE 3T03 - HEALTH AND INCARCERATION

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This course examines the health and well-being of incarcerated individuals, including youth in conflict with the law and the incarcerated elderly. Topics

include health, safety and security; access to and quality of health care, palliative and end-of-life care; stigma and incarceration; the health and safety of correctional services human resource staff; media portrayals of the incarcerated; and, health impacts of incarceration on families of the incarcerated.

Three hours (lecture, discussion); one term

**Prerequisite(s):** Registration in Level III or above

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### HLTHAGE 3Y03 - INDIGENOUS COMMUNITY HEALTH AND WELLBEING

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A critical examination of the determinants of health in Aboriginal communities, processes of community revitalization, and recent government policy initiatives.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration on Level II or above

**Antirequisite(s):** HEALTHST 3Y03

**Cross-list(s):** ANTHROP 3Y03

*This course is administered by the Department of Anthropology.*

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### HLTHAGE 4B03 - DEATH AND DYING IN LATER LIFE

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This course addresses quality of life at the end of life. Examines issues related to death, dying and bereavement from interdisciplinary perspectives by highlighting cultural, ethical, and spiritual aspects, as well as end of life care.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of any Honours Health, Aging and Society or Honours Social Psychology program

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### HLTHAGE 4C03 - REPRESENTATIONS OF HEALTH AND ILLNESS ACROSS THE LIFECOURSE

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An exploration of representations of health and illness across the life course and aging in the humanities. The focus may vary from year to year, but will examine how health and illness and aging have been represented in literature, poetry, visual arts, drama or music. Consideration is also given to how art can inform social science research.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of any Honours Health, Aging and Society program

**Antirequisite(s):** HEALTHST 4C03

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### HLTHAGE 4D03 - HEALTH, CULTURE AND DIVERSITY

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Examination of contemporary issues in health and illness from cross cultural and international perspectives.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of an Honours Health and Society program

**Antirequisite(s):** HEALTHST 4D03

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### HLTHAGE 4F03 - SELECTED ISSUES IN HEALTH AND SOCIETY

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An advanced exploration of the social aspects of health. Topics may vary from year to year.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of an Honours Health and Society program

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### HLTHAGE 4G03 - GLOBAL HEALTH

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This course introduces students to priority problems in health in a global context. Examines health problems faced by people globally but especially in low income countries and the determinants and strategies to address these

problems.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of an Honours Health and Society program

**Antirequisite(s):** HLTHAGE 3C03, 3F03 if topic was Global Health

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### HLTHAGE 4H03 - HISTORY AND CULTURE OF AGING

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This course explores the diverse trends in aging, leading to a greater understanding of aging in past and present societies. We will explore how aging has been regarded, dealt with and represented throughout history and between cultures, including the recent developments in the 'cultures of aging' that surround the lifestyle choices and consumption habits of older people.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of an Honours Aging and Society or Honours Social Psychology program

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### HLTHAGE 4I03 - AGING AND HEALTH

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Addresses the biological, psychological and socio-political factors influencing the health of elderly persons from a broad national and international perspective.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of any Honours Health, Aging and Society or Honours Social Psychology program

**Antirequisite(s):** GERONTOL 4I03

*Not open to students with credit in GERONTOL 4D03, if the topic was Aging and Health.*

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### HLTHAGE 4J03 - NARRATIVES OF ILLNESS

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This seminar explores the role that narratives of illness play in describing, shaping and interrogating the experiences of those who are 'unwell'.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of an Honours Health and Society program

**Antirequisite(s):** HEALTHST 4J03

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### HLTHAGE 4L03 - SOCIAL POLICY AND AGING

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An advanced exploration of social aspects of aging including gender and health, family relationships and retirement.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of an Honours Aging and Society or Honours Social Psychology program

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### HLTHAGE 4M03 - ENVIRONMENT AND HEALTH

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An exploration of environmental health issues research. Emphasis is placed on the distribution and effects of environmental toxins and disease-causing micro-organisms. Topics include cancer clusters, food safety, and water-borne diseases.

Two lectures, one seminar (one hour); one term

**Prerequisite(s):** One of EARTHSC 2E13, ENVIRSC 2E13, GEOG 2E13, 2H13; and registration in Level IV or above. GEOG 3HH3 is strongly recommended.

**Cross-list(s):** ENVIRSC 4HH3, GEOG 4HH3

*This course is administered by the School of Earth, Environment & Society.*

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### HLTHAGE 4N03 - AGING AND WELLBEING

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This course explores the diverse meanings of health and wellness to older adults and analyzes the different mechanisms through which health and well-being can be maximized such as providing for physical, emotional, economic and political needs of older people.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of any Honours Health, Aging and Society program

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### HLTHAGE 4O03 - SOUNDSCAPES OF WELLBEING IN POPULAR MUSIC

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This course examines the dynamics between music, health and wellbeing, considering the use of music by health sectors, and the places of music in cultural life.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of any Honours Health, Aging and Society or Honours Social Psychology program

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### HLTHAGE 4P03 - LEISURE AND RECREATION IN LATER LIFE

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This course focuses upon characteristics of the aging population and the theoretical aspects of aging as related to recreation, leisure and lifestyle explores the diverse meanings of health and wellness to older adults and analyzes the different mechanisms through which health and well-being can be maximized such as providing for physical, emotional, economic and political needs of older people.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of an Honours Aging and Society or Honours Social Psychology program

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### HLTHAGE 4Q03 - REPRESENTATIONS OF MENTAL ILLNESS

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An examination of first-hand accounts and self-representations of mental illness through literature, film, music and art.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of any Honours Health, Aging and Society or Honours Social Psychology program

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### HLTHAGE 4R03 - BEYOND THE SOCIAL: DETERMINANTS OF INDIGENOUS PEOPLES HEALTH

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This course examines the different ways in which health determinants coincide to impact the health status of Indigenous Peoples.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of an Honours Health and Society or Honours Social Psychology program

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### HLTHAGE 4S03 - HEALTH AND THE UNFAIRLY STRUCTURED CITY

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Examines patterns, process and policies related to how the structure of cities produce health inequalities and what has been done to address them, with a focus on the northern hemisphere.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of an Honours Health and Society program

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### HLTHAGE 4T03 - GENDER, SEX AND HEALTH

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This course will focus on how gender contributes to the differential structuring of the health and health care experiences of men, women and gender minorities.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of an Honours Health and Society or Honours Social Psychology program

### HLTHAGE 4U03 - PROFESSIONS AND OCCUPATIONS IN HEALTH AND AGING

This course introduces students to critical theories and empirical studies on health and aging professions and occupations. Such groups include physicians, nurses, social workers and other occupational alliances whose career focus is on health and/or aging.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of any Honours Health, Aging and Society program

### HLTHAGE 4V03 - AGING AND HUMOUR: THE GOOD, THE BAD AND THE FUNNY

This course examines the role of humour in the lives of older people and how humour affects the aging experience. Topics include gender and ageist humour, laughter as medicine, humour as a coping strategy, and the role and value of humour and laughter for happiness and wellbeing in later life.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of an Honours Aging and Society program

### HLTHAGE 4W03 - SELECTED ISSUES IN AGING AND SOCIETY

An advanced exploration of the social aspects of Aging. Topics may vary from year to year.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV of an Honours Aging and Society program

### HLTHAGE 4Z06 A/B - HEALTH, AGING AND SOCIETY THESIS

This course provides an opportunity for students to integrate knowledge, practice, and research in a project related to their area of interest. Students may work with individual faculty members or community-based supervisors.

Two terms

**Prerequisite(s):** Registration in Level IV of any Honours Health, Aging and Society program; and six units of research methods (GERONTOL 2C03 and either GERONTOL 3R03 or HLTHAGE 3A03; or HEALTHST 2B03 and either HEALTHST 3G03 or HLTHAGE 3A03) or HLTHAGE 2A03 and HLTHAGE 3B03 or 3G03; (or 2A06, 3Z06); and SOCSCI 2J03 or another approved statistics course and permission of the Department. Enrolment in this course is limited (please consult departmental notes).

**Antirequisite(s):** GERONTOL 4A06

## Health Sciences

### Faculty Note

This course listing is divided into two parts:

1. Bachelor of Health Sciences (Honours) program, Biomedical Sciences Specialization, Child Health Specialization and Global Health Specialization.
2. Health Sciences courses normally available only to students registered in Engineering (Chemical Engineering and Bioengineering or Electrical and Biomedical Engineering), Midwifery, or Nursing (A), (B), (E) or (F) Streams, as applicable.

### Bachelor of Health Sciences (Honours)

Courses in Health Sciences are administered by the Bachelor of Health Sciences (Honours) Program.

Michael G. DeGroot Centre for Learning and Discovery, Room 3308, ext. 22815  
bhsc.mcmaster.ca

### HTHSCI 1A00 - COMPETENCIES IN ANIMAL CARE AND RESEARCH: ORIENTATION

This course outlines the Regulations and Guidelines for the use of animals in biomedical research, the McMaster University process for conducting animal research, as well as personnel, basic animal care, (including containment techniques), services offered, and training. There is an on-line lecture and quiz, as well as a site-specific tour and in-class lecture. A pass/fail will be assigned based on completion of an on-line quiz, with a minimum grade of 70%, and completion of the site specific tour and in-class lecture.

On-line lecture, quiz and in-class tour/lecture (three and a half hours); one tour/lecture

**Antirequisite(s):** HTHSCI 700

### HTHSCI 1B00 - COMPETENCIES IN ANIMAL CARE AND RESEARCH: METHODOLOGIES

This course provides housing options and the importance of using proper research techniques for biocontainment/bioexclusion. It offers basic animal handling skills, as well as injection techniques. It allows students the opportunity to gain confidence handling animals. There is an on-line lecture and quiz, as well as an in-class wet-lab. A pass/fail is assigned based on completion of the quiz, with a minimum grade of 70%, and demonstration of competency in the in-class wet-lab by accurate completion of assigned tasks.

On-line lecture, quiz and in-class wet-lab (three and a half hours); one wetlab

**Antirequisite(s):** HTHSCI 701

*May be repeated to a maximum of two times if on a different topic. Topic: Mouse or Rat*

### HTHSCI 1C00 - COMPETENCIES IN ANIMAL CARE AND RESEARCH: COMPLETION OF ETHICAL RESEARCH

This course outlines the McMaster University process for conducting animal research, and the process for understanding both the humane and experimental endpoints of a research study. Emphasis is placed on the 3 R's: replace, reduce and refine. There is an on-line lecture and quiz, as well as a physical lecture. A pass/fail is assigned based on completion of the quiz, with a minimum grade of 70%, and attendance to the formal in-class lecture.

On-line and in-class lecture (three hours); on lecture

**Prerequisite(s):** HTHSCI 1A00, 1B00; or HEALTHSCI 700, 701

**Antirequisite(s):** HTHSCI 702

### HTHSCI 1DT3 - DISCOVER IMMUNOLOGY TODAY

This course is intended to inspire curiosity in questions generated by concepts in immunology that drive current research directions. Students will explore a spectrum of topics in immunology with research faculty.

Two hours; one term

**Prerequisite(s):** Registration in Level 1 B.H.Sc. (Honours) or Level 1 Science or Level 1 Arts & Science

### HTHSCI 1E06 A/B - INQUIRY I: INTRODUCTION

This course will initiate the development of a skill set required for life-long learning, in the context of the study of one or two health care issues. A problem based course applying principles of scientific inquiry to selected health issues.

Three hours; two terms

**Prerequisite(s):** Registration in the B.H.Sc. (Honours) program

**Antirequisite(s):** HTHSCI 1E03, 1EE3, HTHSCI 2D06 A/B, INQUIRY 1SC3

*Note: Students entering the B.H.Sc. (Honours) program after completion of Level I in another program may be required to complete HTHSCI 2D06 A/B at the discretion of the Assistant Dean of the program.*

### HTHSCI 1G02 - INTERDISCIPLINARY PROBLEM-SOLVING IN HEALTH

Recognizing that health is not simply a biological phenomenon, this course examines health issues from multiple perspectives, emphasizes the links between them, and builds a conceptual tool-box for problem solving across the domains of population and public health, biomedical and clinical issues, social and cultural aspects of health, and health systems and policy.

Two lectures, one tutorial

**Prerequisite(s):** Registration in Level I of the B.H.Sc. (Honours) Program or Level II as a B.H.Sc. (Honours) Program transfer student

### HTHSCI 1H06 A/B - HUMAN ANATOMY AND PHYSIOLOGY I

An examination of structure-function relationships in the human body systems including the integument, nervous, musculoskeletal, endocrine, cardiovascular, immune, respiratory, gastrointestinal, urinary and reproductive systems with an emphasis on the role of each system in maintaining homeostasis.

Lecture (two hours), lab (two hours); two terms

**Prerequisite(s):** Registration in the B.Sc.N. Basic (A) Stream

**Antirequisite(s):** BIOLOGY 2A03, HTHSCI 2L03, HTHSCI 2LL3, KINESIOL 1A03, KINESIOL 1AA3, KINESIOL 1Y03, KINESIOL 1YY3, MEDPHYS 4XX3

**Co-requisite(s):** WHMIS 1A00

### HTHSCI 1I06 A/B - CELLULAR AND MOLECULAR BIOLOGY

Students will explore the molecular basis of cellular communication (gene expression, cellular signaling) underlying disease processes. A hybrid approach blending didactic and inquiry-based approaches will be used.

Two sessions per week (three hours each); two terms

**Prerequisite(s):** Grade 12 U Biology and registration in Health Sciences I, or Grade 12 U Biology and registration in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program.

**Co-requisite(s):** WHMIS 1A00 . Students registering in HTHSCI 1I06 A/B must also register in WHMIS 1A00 when completing their registration.

**Antirequisite(s):** BIOLOGY 1A03

### HTHSCI 1K03 - HEALTH SCIENCES IN THE MEDIA

An inquiry-based model will be used to allow students of all backgrounds to explore the relationship between popular media representations of discoveries in the health sciences and the original research behind them. Students will acquire transferrable information literacy skills to find, critically evaluate, and summarize evidence and will gain an understanding of the context for communication of modern scientific discoveries.

Three hours; one term

**Prerequisite(s):** Registration in any Level 1 Program

### HTHSCI 1M03 - FOUNDATIONS OF DATA SCIENCE

This courses focuses on promotion of data literacy skills and the introduction of fundamental data science concepts, practices, and tools. These include computation, data analytics, data ethics, data visualization, machine learning, and statistics.

Two lectures, one computer lab (1 hours); one term

### HTHSCI 1X01 A/B - PRAXIS PATHWAYS 1

This is part 1 of the longitudinal Praxis Pathways Curriculum, in which students begin to actively develop capacities for: collaboration in community; group process; leadership; lifelong learning; perspective-taking; reflection and reflexivity; and self-care and wellness. The development of information literacy and critical analysis skills supports and informs these goals.

Two hours; two terms

**Prerequisite(s):** Registration in Level I of the B.H.Sc. (Honours) Program or Level II as a B.H.Sc. (Honours) Program transfer student.

### HTHSCI 2AE3 - ARTISTIC EXPLORATIONS OF COMMUNITY ISSUES

Students will research and explore topics relevant to the B.H.Sc. and Arts & Science communities through engaging with and investigating arts-based research methodologies.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above in the B.H.Sc. (Honours) or Arts & Science Program, or permission of instructor

### HTHSCI 2CH3 A/B - CHS LEARNING MODULES

Modules will provide a foundation of knowledge in multiple areas of child health and development. Topics will include the physical, cognitive, social, emotional and behavioural perspectives of child development.

Two hours; two terms

**Prerequisite(s):** Registration in Level II of the B.H.Sc. (Honours) Child Health Specialization

### HTHSCI 2CH6 A/B - CHS INQUIRY FUNDAMENTALS

The inquiry-based model will be used to facilitate student's learning within the dynamic context of child health and development. The integration of knowledge, research and experiential opportunities will be discussed during weekly classes. The learning environment will also include dialogues with experts, tutorials and field placements. Four hours; two terms

**Prerequisite(s):** Registration in Level II of the B.H.Sc. (Honours) Child Health Specialization

### HTHSCI 2D06 A/B - INQUIRY II: INTRODUCTION AND BIOCHEMISTRY

This course will use an inquiry-based approach. First semester will initiate the development of a skill set required for life-long learning by studying healthcare issues. Second semester will introduce key concepts in Biochemistry and Molecular Biology to understand genetic, infectious and metabolic diseases.

Three hours; two terms

**Prerequisite(s):** Permission of the Assistant Dean, B.H.Sc. (Honours) program

**Antirequisite(s):** HTHSCI 1E06 A/B, HTHSCI 2E03

*Note: This course is restricted to Level II B.H.Sc. (Honours) transfer students only.*

### HTHSCI 2DS3 - GLOBAL HEALTH AND THE COMPLEXITIES OF DISEASE

This course will introduce students to the disease states that define the burden of morbidity and mortality in a global setting. Students will examine the relationships that define the static and dynamic patterns of health and illness by drawing on diverse fields of academic thought and research, including the biological, geographical, anthropological and political sciences.

Three hour lecture, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above of the B.H.Sc. (Honours) Program or registration in Level II or above in any Honours program

### HTHSCI 2E03 - INQUIRY II: BIOCHEMISTRY

This course will use an inquiry based format to introduce key concepts in biochemistry, molecular biology and biomedical sciences to understand illnesses such as infectious diseases, metabolic disorders, genetic diseases and cancer.

One term



**Prerequisite(s):** HTHSCI 1106 A/B

### HTHSCI 2F03 - HUMAN PHYSIOLOGY AND ANATOMY I

An introduction to the principal organ systems including the endocrine, skin, CNS and locomotion.

Two lectures, one lab; one term

**Prerequisite(s):** Registration in Level II of the B.H.Sc. (Honours) Program or registration in Level II of the Integrated Biomedical Engineering and Health Sciences (IBEHS) Program.

**Antirequisite(s):** HTHSCI 1D06 A/B, 1H03, HTHSCI 1H06 A/B, HTHSCI 2L03, KINESIOL 1A03, KINESIOL 1AA3, 1X06, KINESIOL 1Y03, KINESIOL 1YY3, KINESIOL 2Y03, KINESIOL 2YY3, MED PHYS 4XX3, SCIENCE 4XX3

### HTHSCI 2FF3 - HUMAN PHYSIOLOGY AND ANATOMY II

A continuation of HTH SCI 2F03 with an examination of the Immune, Cardiovascular, Respiratory, Gastrointestinal and Uro-Genital Systems.

Two lectures, one lab; one term

**Prerequisite(s):** HTHSCI 2F03

**Antirequisite(s):** HTHSCI 1D06 A/B, HTHSCI 1H06 A/B, 1HH3, HTHSCI 2LL3, KINESIOL 1A03, KINESIOL 1AA3, 1X06, KINESIOL 1Y03, KINESIOL 1YY3, KINESIOL 2Y03, KINESIOL 2YY3, MED PHYS 4XX3, SCIENCE 4XX3

### HTHSCI 2G03 - STATISTICS & EPIDEMIOLOGY 1

An introduction to measure of health, the design and analysis of epidemiological studies, the statistical approaches used to analyze data and interpret measures of association, and understanding confounding and bias.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II of the B.H.Sc. (Honours) Program, or registration in Level II of the B.H.Sc. (Honours) Child Health Specialization; or registration in Level III of the Integrated Biomedical Engineering and Health Sciences Program

**Antirequisite(s):** LIFESCI 3G03

### HTHSCI 2GG3 - STATISTICS & EPIDEMIOLOGY 2

Building on HTHSCI 2G03, this course will introduce more advanced concepts and methods in biostatistics, while examining crucial issues in the design and analysis of epidemiologic studies, and exploring specialized topics.

Two lectures, one tutorial; one term

**Prerequisite(s):** HTHSCI 2G03

**Antirequisite(s):** COMMERCE 2QA3, HTHSCI 2A03, NURSING 2R03, STATS 1CC3, 2B03

### HTHSCI 2K03 - CELL BIOLOGY

An inquiry based examination of the relationship between cell structure and function. Students will be required to apply key concepts of cell biology to facilitate their understanding of timely problems in biomedicine.

Tutorials (three hours); one term

**Prerequisite(s):** HTHSCI 1106 A/B or HTHSCI 2D06 A/B; or registration in Level II or above of the Chemical Engineering and Bioengineering Program or Electrical and Biomedical Engineering; or registration in Level III of the Integrated Biomedical Engineering and Health Sciences (IBEHS) Program (HESE stream)

**Antirequisite(s):** BIOLOGY 2B03, ISCI 2A18 A/B

### HTHSCI 2L03 - ANATOMY AND PHYSIOLOGY I: COMMUNICATION

An examination of structure-function relationships in the human body systems that communicate with each other or the environment. The systems covered

include: endocrine, central nervous system, hearing, taste, smell, vision, autonomic nervous system, skin, peripheral nervous system, and locomotion (musculo-skeletal).

Two lectures (one hour), clinical problem presentation (one hour), one lab (two hours); one term

**Prerequisite(s):** Registration in Chemical Engineering and Bioengineering or Electrical and Biomedical Engineering (B.Eng.)

**Antirequisite(s):** BIOLOGY 1J03, HTHSCI 1D06 A/B, 1H03, 1H06 A/B, 2F03, KINESIOL 1A03, 1A06, 1AA3, 1X06, 1Y03, 1YY3, MEDPHYS 4XX3

### HTHSCI 2LL3 - ANATOMY AND PHYSIOLOGY II: HOMEOSTASIS

An examination of structure-function relationships in the human body systems that are responsible for maintaining normal internal physiological conditions despite a changing environment. The systems covered include: cardiovascular, respiratory, immunology, gastrointestinal, nutrition, uro-genital, and renal.

Two lectures (one hour), clinical problem presentation (one hour), one lab (two hours); one term

**Prerequisite(s):** Registration in Chemical Engineering and Bioengineering or Electrical and Biomedical Engineering (B.Eng.)

**Antirequisite(s):** BIOLOGY 1J03, HTHSCI 1D06 A/B, HTHSCI 1H06 A/B, 1HH3, HTHSCI 2FF3, KINESIOL 1A03, 1A06, KINESIOL 1AA3, 1X06, KINESIOL 1Y03, KINESIOL 1YY3, MED PHYS 4XX3

### HTHSCI 2T03 - SEX, GENDER, & HEALTH

This course will explore the concepts of sex and gender, and take a critical perspective on how sex, gender, and social norms of masculinity and femininity affect health, healthcare, and health research.

Three hours; one term

**Prerequisite(s):** Registration in any Level II or above program.

### HTHSCI 2X03 A/B - PRAXIS PATHWAYS 2

This is part two of the longitudinal Praxis Pathways Curriculum, in which students further develop and refine capacities for: collaboration in community; group process; leadership; lifelong learning; perspective-taking; reflection and reflexivity; and self-care and wellness. The development of information literacy and critical analysis skills supports and informs these goals.

Six hours per month; two terms

**Prerequisite(s):** HTHSCI 1X01 A/B

### HTHSCI 3AH3 - INDIGENOUS HEALTH

The goal of this course is to provide students with knowledge and skills related to health care practice and policy from within Indigenous contexts. Enabling students to acquire and put into practice concepts and information required to understand and manage health for Indigenous peoples; to engage in culturally competent and safe practice through knowledge development; and the ability to identify areas of need specific to Indigenous health.

Two lectures; one term

**Prerequisite(s):** Registration in Level III or above in any program

### HTHSCI 3BA3 - SYMPTOMATOLOGY

This unique course will examine the science of the symptoms of various diseases. Both the physiological and molecular mechanism(s) of various symptoms will be explored pertaining to a disease state. Signals to various organs will be explored in the context of symptoms. The molecular basis of symptoms such as pain induced by cancer or cardiovascular disease will be elucidated. The course is an inquiry-based examination of symptoms. The course will be organized into small groups.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the B.H.Sc. (Honours) Program, or B.H.Sc. (Honours) specializations, or registration in Level III or above of the Bachelor of Health Sciences (Honours) - Biomedical Discovery and Commercialization (B.H.Sc.)

### HTHSCI 3BE4 A/B S - NURSING CONCEPTS IN CONTINENCE CARE

This course provides students with the opportunity to integrate existing scientific knowledge (e.g. Anatomy, physiology) with emerging empiric knowledge to develop an understanding of the factors that contribute to bladder and bowel incontinence. Selected problem based cases will be explored through online, interactive learning modules, while integrative tutorial sessions will provide students with opportunities to discuss their assessments, identify contributing factors and consider treatment recommendations for continence care.

8 online multimedia modules, 12 one-hour tutorials, two terms

**Prerequisite(s):** Registration in the BScN Basic (A) Stream, Accelerated (F) Stream or Post Diploma R.P.N.(E) Stream; or department consent.

### HTHSCI 3BM3 - INQUIRY PROJECT IN BIOMEDICAL SCIENCES

An opportunity to explore a specialized area of biomedical sciences in preparation for Level IV Thesis in Biomedical Sciences.

One term

**Prerequisite(s):** Registration in Level III of the BSc (Honours) Biomedical Sciences Specialization.

**Antirequisite(s):** IBEHS 3106 A/B

### HTHSCI 3BM6 A/B S - RESEARCH PROJECT IN BIOMEDICAL SCIENCES

A research project exploring a specialized area of biomedical sciences under the supervision of a faculty member.

Two terms

**Prerequisite(s):** Registration in Level III of the B.H.Sc. (Honours) Biomedical Sciences Specialization or permission of BSc (Honours) Program.

**Antirequisite(s):** BIOCHEM 3R06 A/B, IBEHS 3106 A/B

### HTHSCI 3C04 - RESEARCH APPRAISAL AND UTILIZATION IN EVIDENCE INFORMED DECISION MAKING

Introduction to quantitative and qualitative designs with a focus on critical appraisal of evidence and application to nursing practice and healthcare.

Lecture/tutorial (three hours); one term

**Prerequisite(s):** Minimum grade of C- in HTHSCI 2S03 and registration in the B.Sc.N. Accelerated (F) Stream; or registration in the B.Sc.N. Post Diploma R.P.N. (E) Stream; or permission of the instructor

### HTHSCI 3CC3 - THEATRE FOR DEVELOPMENT

This course, rooted in Applied Drama, will enable students to actively participate and explore their creativity, enhancing transferable skills like communication and active listening through drama games and exercises.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the B.H.Sc. (Honours) program or registration in Level III of the B.H.Sc. (Honours) Specializations

### HTHSCI 3CH3 - CHS INQUIRY INTERMEDIATE

Building upon Level II, students will continue to learn in an Inquiry based environment and be expected to deepen their knowledge, integrate new

material and experiences in order to understand and explore the complexities of child health and development within the community.

Four hours; one term

**Prerequisite(s):** Permission of Department. This course is available only to Bachelor of Health Sciences (Honours) - Child Health Specialization (B.H.Sc.) students studying in the MacAbroad Exchange Program.

### HTHSCI 3CH6 A/B S - CHS RESEARCH PRACTICUM

Students will continue to develop and apply their statistical knowledge, information literacy and research skills by developing and implementing an independent project in collaboration with a community partner and Child Health Specialization facilitators. Emphasis will be placed on communication and collaboration, skill development and the complexities, potential, and limitations of applied research.

Sessions arranged individually or in small groups; two terms.

**Prerequisite(s):** HTHSCI 2CH3 A/B and HTHSCI 2CH6 A/B

### HTHSCI 3CH9 A/B - CHS INQUIRY INTERMEDIATE

Building upon Level II, students will continue to learn in an Inquiry based environment and be expected to deepen their knowledge, integrate new material and experiences in order to understand and explore the complexities of child health and development within the community.

Four hours; two terms.

**Prerequisite(s):** HTHSCI 2CH3 A/B and HTHSCI 2CH6 A/B

### HTHSCI 3DD6 A/B - ENGAGING THE CITY: AN INTRODUCTION TO COMMUNITY-BASED RESEARCH IN HAMILTON

An introduction to the city of Hamilton and community-based research. This course will place experiential emphasis on citizenship, community health, economics, geography, environment, and education.

Three hours; two terms

**Prerequisite(s):** Registration in Level III or above and permission of instructor

### HTHSCI 3E03 - INQUIRY III: ADVANCED INQUIRY IN HEALTH SCIENCES

In this inquiry course, students will undertake an in-depth exploration of a specific health-related topic.

One term

**Prerequisite(s):** HTHSCI 2D06 A/B or HTHSCI 2E03 and registration in Level III of the B.H.Sc. (Honours) Program; or registration in Level III of the B.H.Sc. (Honours) Specializations, or registration in Level IV of the Integrated Biomedical Engineering and Health Sciences (IBEHS) program (HESE stream).

### HTHSCI 3EE3 - BIOMEDICAL GRAPHICS

An art course for science students, participants will learn the basics of visual literacy, design and the software used to create effective illustrations or figures in support of scientific communication.

One lecture; one lab; one term

**Prerequisite(s):** Registration in Level III or above of the B.H.Sc. (Honours), or Honours Studio Art programs

*Students must be artistically inclined.*

### HTHSCI 3FC3 - SCIENCE OF FICTIONAL CHARACTERS

In this interdisciplinary inquiry course, students will use fictional characters as a model to apply and understand key concepts in various scientific disciplines (e.g. biology, psychology). Additional emphasis will be placed on science communication and the development of scientific inquiry skills.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above in any Honours program.

### HTHSCI 3G03 - CRITICAL APPRAISAL OF THE MEDICAL LITERATURE

Students will learn quantitative research design and how to evaluate the internal validity of published research to determine the effectiveness of an intervention, diagnostic test, screening program, prognostic or risk factor and systemic review.

Two lectures, one tutorial; one term

**Prerequisite(s):** HTHSCI 2G03

### HTHSCI 3GG3 - HEALTH SYSTEMS AND HEALTH POLICY

This course reviews how health care is different from other goods and services, how governments have responded to these differences, and how governments make decisions about health care.

Two lectures, one tutorial; one term

**Prerequisite(s):** HTHSCI 2G03

### HTHSCI 3H03 A/B S - INQUIRY PROJECT

An opportunity to explore one or more specialized areas of Health Sciences in preparation for Level IV Senior Project/Thesis.

One term

**Prerequisite(s):** Registration in Level III B.H.Sc. (Honours) Program or registration in Level III of the B.H. Sc. (Honours) Specializations.

**Antirequisite(s):** HTHSCI 3H06 A/B, IBEHS 3I06 A/B

### HTHSCI 3H06 A/B S - INQUIRY PROJECT

An opportunity to explore one or more specialized areas of Health Sciences in preparation for Level IV Senior Project/Thesis.

One term or two terms

**Prerequisite(s):** Registration in Level III B.H.Sc. (Honours) Program or registration in Level III of the B.H. Sc. (Honours) Specializations and permission of B.H.Sc. (Honours) Program.

**Antirequisite(s):** HTHSCI 3H03, IBEHS 3I06 A/B

### HTHSCI 3HH3 - DECEPTIONS IN DECISION MAKING

Students will explore and examine how hidden strategies/factors are deployed to create popular mindsets, beliefs, propagandas and perceptions. By using examples from education, health care, psychology & behavior economics, students will have an exciting platform to deconstruct some of the popular mindsets/stereotypes/beliefs and then use that knowledge to become an effective advocate.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the B.H.Sc. (Honours) program

### HTHSCI 3HL3 - HEALTH LAW: CURRENT AND EMERGING ISSUES

In this course students will explore the use of legal instruments to understand their capacity to achieve health policy goals, as well as their limits as tools for health justice reform. Students will learn about Canadian jurisprudence, including legislation and case law, to critically apply them to emerging issues including the regulation of reproduction, access and rationing of care, and medical assistance in dying.

Three hours; one term.

**Prerequisite(s):** Registration in Level III or above of any Honours program

### HTHSCI 3I03 - INTRODUCTORY IMMUNOLOGY

An introduction to humoral and cellular immunity. The molecular and cellular basis of immunity, and an introduction to immunological techniques.

Two lectures, one tutorial; one term

**Prerequisite(s):** One of BIOLOGY 1A03, HTHSCI 1I06, or ISCI 1A24 A/B, and registration in Level II or above

### HTHSCI 3K03 - INTRODUCTORY VIROLOGY

An introduction to the basics of virology. Topics include the structure and composition of viruses, virus replication strategies, virus-host interactions and uses of viruses for medical research.

Two lectures, one tutorial; one term

**Prerequisite(s):** One of BIOLOGY 2B03, HTHSCI 2K03, or ISCI 2A18 A/B ; and registration in Level III or above

### HTHSCI 3L03 - INTRODUCTION TO BIOETHICS

This course will cover ethical issues that are relevant to biological sciences.

Topics will include genetic engineering and cloning, genetic screening, reproductive technology and the use of behavioural strategies to alter societal behaviours.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level III or above

**Antirequisite(s):** HEALTHST 3E03, PHILOS 2D03

### HTHSCI 3MH3 - CRITICAL EXAMINATION OF MENTAL HEALTH

An examination of mental health and illness from different social, cultural and historical perspectives. In this course, students will consider a range of mental health issues and compare how these issues are commonly understood in a critical examination of mental health research and theory.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the B.H.Sc (Honours) Program, or registration in Level III or above of the B.H.Sc (Honours) Specializations, or permission of instructor.

### HTHSCI 3MU3 - MUSIC, HEALTH, & THE COMMUNITY

This experiential interdisciplinary course will develop community experience and leadership in the Hamilton Intergenerational Music Program. In-class discussions will focus on the function and role of music in health and healthcare, intergenerational issues, leadership skills, and music education.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the B.H.Sc (Honours) Program, or registration in Level III or above of the B.H.Sc (Honours) Specializations, or registration in Level III or above of a Music program, or registration in Level III or above of a Health, Aging & Society program, or permission of instructor.

### HTHSCI 3N03 - WRITTEN COMMUNICATION IN HEALTH SCIENCES I

This course will explore various genres of written communication. Students will develop their editing and writing skills in a small group.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the B.H.Sc. (Honours) program or registration in Level III or above of the B.H.Sc. (Honours) Specializations

### HTHSCI 3PA2 A/B - INTEGRATED PATHOPHYSIOLOGY FOR NURSING

Building on the concepts encountered in NURSING/HTHSCI 2LA2 A/B, this course combines online multimedia learning modules with integrated tutorials in which students learn and apply pathophysiological concepts.

Tutorial (eighteen one hour sessions), twelve online multimedia modules; two terms

**Prerequisite(s):** Minimum grade of C- in NURSING 2NN3, HTHSCI 2H03, 2HH3, 2RR3, and a minimum grade of C- in NURSING 2LA2 A/B or HTHSCI 2LA2 A/B, and a Pass in NURSING 2K02 A/B, 2P03 and registration in the B.Sc.N. Basic (A); or a minimum grade of C- in NURSING 2AA3, 3Q03, HTHSCI 2C06, 2RR3, 3C04 and registration in the B.Sc.N. Post Diploma R.P.N. (E) Stream

**Antirequisite(s):** NURSING 3PA2 A/B

**Co-requisite(s):** NURSING 3SS3 and 3TT3 or NURSING 3RS3 and 3RT3

### HTHSCI 3QA3 - QUALITATIVE RESEARCH METHODS IN HEALTH

An inquiry-based course examining a wide range of qualitative methods used in health research, including ethnography, narrative, phenomenology, and arts- and science-based approaches. We explore qualitative methods in the clinical, public, and biomedical health sciences.

Three hours; one term

**Prerequisite(s):** Registration in Level 3 or above of an Honours program

### HTHSCI 3RS3 - EXPLORING THE FOUNDATIONS OF REHABILITATION SCIENCES

Students will engage in discussions focused on the fundamental concepts and theories specific to the role of rehabilitation professionals in the local, national, and global contexts. Students will explore the clinical practices and unique roles of physical therapy, occupational therapy, and speech language pathology.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above

### HTHSCI 3S03 - COMMUNICATION SKILLS

This course offers students a variety of learning experiences that will enable them to better understand the relationship between effective communication and desired health care outcomes. Students will be exposed to evidence based research, role playing, standardized simulations and audio-visual reviews.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the B.H.Sc. (Honours) program; or registration in Level III or above of the B.H.Sc. (Honours) Specializations; or registration in Level III or above in any Honours program

### HTHSCI 3SB3 - SUPERBUGS: BACTERIAL ANTIBIOTIC RESISTANCE

This course will examine the biochemistry of antibiotic resistance in bacteria. Prominent 'superbugs' plaguing patients will be covered, as well as potential novel interventions to move antimicrobial chemotherapy forward.

Three hours; one term

**Prerequisite(s):** HTHSCI 2K03

### HTHSCI 3T03 - INQUIRY INTO WORK, SELF AND PURPOSE

This course will explore ideas of work, career/life design and personal purpose. Students will undertake self-assessment activities, group projects and personal reflection with a view to integrating a critical appreciation of course content

into their personal decision making.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above

### HTHSCI 3U03 - MEDICAL GENETICS

This course will cover a broad spectrum of genetic disorders; with particular emphasis on inheritance patterns, molecular mechanisms, treatment and prevention.

Two lectures, one tutorial; one term

**Prerequisite(s):** HTHSCI 2K03 or BIOLOGY 2B03 and registration in Level III or above

### HTHSCI 3V03 - RESEARCH AND EXPERIMENTAL DESIGN

Analytical review of fundamental experiments with a focus on experimental design, employing data sets to solve experimental problems with an emphasis on how to approach the problem. This course will serve as an accompaniment to HTHSCI 3R06 A/B or as a precursor to the BIOCHEM 4F09 A/B or HTHSCI 4R12 A/B senior thesis courses.

Three hour lecture; one term

**Prerequisite(s):** Registration in Level III or above of the B.H.Sc. (Honours) Program; or registration in Level III or above of the Honours Integrated Science Program, Arts & Science Program, or any Honours program in the Faculty of Science

### HTHSCI 3X00 A/B - PRAXIS PATHWAYS 3

This is part 3 of the longitudinal Praxis Pathways Curriculum, in which students develop greater facility in their capacities for: collaboration in community; group process; leadership; lifelong learning; perspective-taking; reflection and reflexivity; and self-care and wellness. The development of information literacy and critical analysis skills supports and informs these goals.

One hour per month; two terms

**Prerequisite(s):** HTHSCI 2X03 A/B

*This course is evaluated on a Pass/Fail basis.*

First offered in 2021-22.

### HTHSCI 3X03 - PAIN: PERCEPTIONS, MECHANISMS AND MANAGEMENT

An introduction to perceptions, mechanisms and management of pain with a holistic interdisciplinary approach.

One lecture, one tutorial; one term

**Prerequisite(s):** Registration in Level III or above of the B.H.Sc. (Honours) Program, or registration in Level III or above of the B.H.Sc. (Honours) Specializations, or permission of the instructor

### HTHSCI 4A09 A/B S - THESIS

A thesis-based research project conducted under the direction and supervision of a member of the Faculty. Arrangements to register in HTHSCI 4A09 A/B, including agreement of the supervisor, must be made before the end of March in Level III.

Two terms

**Prerequisite(s):** Registration in B.H.Sc. (Honours) Program and permission of B.H.Sc. (Honours) Program, or supervision by a Faculty of Health Sciences supervisor and permission of B.H.Sc. (Honours) Program

**Antirequisite(s):** BIOLOGY 4F06 A/B, 4C12 A/B, HTHSCI 4B06 A/B, 4A12 A/B, 4A15 A/B, MOLBIOL 4G12 A/B, PHARMAC 4F09, PSYCH 4E09

*Not open to students with credit or registration in BIOCHEM 4P03.*



### HTHSCI 4A12 A/B S - THESIS

A thesis-based research project conducted under the direction and supervision of a member of the Faculty. Arrangements to register in HTH SCI 4A12, including agreement of the supervisor, must be made before the end of March in Level III.

Two terms

**Prerequisite(s):** Registration in B.H.Sc. (Honours) Program and permission of B.H.Sc. (Honour) Program, or supervision by a Faculty of Health Sciences supervisor and permission of B.H.Sc. (Honours) Program

**Antirequisite(s):** BIOLOGY 4F06 A/B, 4C12 A/B, HTHSCI 4B06 A/B S, 4A09 A/B, 4A15 A/B, MOLBIOL 4G12 A/B, PHARMAC 4F09, PSYCH 4E09  
*Not open to students with credit or registration in BIOCHEM 4P03.*

### HTHSCI 4A15 A/B S - THESIS

A thesis-based research project conducted under the direction and supervision of a member of the Faculty. Arrangements to register in HTH SCI 4A15, including agreement of supervisor must be made before the end of March in Level III.

Two terms

**Prerequisite(s):** Registration in B.H.Sc. (Honours) Program and permission of B.H.Sc. (Honours) Program, or supervision by a Faculty of Health Sciences supervisor and permission of B.H.Sc. (Honours) Program

**Antirequisite(s):** BIOLOGY 4F06 A/B, 4C12 A/B, HTHSCI 4B06 A/B, 4A09 A/B, 4A12 A/B, MOLBIOL 4G12 A/B, PHARMAC 4F09, PSYCH 4D06, 4D09, 4E09  
*Not open to students with a credit or registration in BIOCHEM 4P03.*

### HTHSCI 4AC3 - ADVANCED COMMUNICATION SKILLS

This course will build on Communication Skills acquired in HTHSCI 3S03 and expose students to more in-depth learning experiences via the Centre for Simulation Based Learning and classroom debriefs/presentations. This course will employ video and multimedia analysis to enhance learning, and develop advanced-level communication skills for difficult conversations.

Three hours; one term

**Prerequisite(s):** HTHSCI 3S03 Communication Skills and registration in Level IV

### HTHSCI 4AL3 - MODEL SYSTEMS

Examining the use of human, animal and cell model systems in research through investigation of primary research.

One lecture or workshop (three hours); one term

**Prerequisite(s):** Registration in Level III or above in the B.H.Sc. (Honours) Program; or registration in Level III or above of the Honours Integrated Science Program, Arts & Science Program, or any Honours program in the Faculty of Science

### HTHSCI 4B06 A/B S - SENIOR PROJECTS

A selection of information-based research projects conducted under the supervision of one or more members of the Faculty. Arrangements to register in HTHSCI 4B06 A/B including agreement of supervisor must be made before the end of March in Level III.

Two terms

**Prerequisite(s):** Registration in B.H.Sc. (Honours) Program and permission of B.H.Sc. (Honours) Program, or supervision by a Faculty of Health Sciences supervisor and permission of B.H.Sc. (Honours) Program

**Antirequisite(s):** BIOLOGY 4F06 A/B, 4C12 A/B, HTHSCI 4A09 A/B, HTHSCI 4A12 A/B, HTHSCI 4A15 A/B, MOLBIOL 4G12 A/B, PHARMAC 4F09, PSYCH 4D06, 4D09, 4E09, IBEHS 3I06 A/B  
*Not open to students with credit or registration in BIOCHEM 4P03.*

### HTHSCI 4BB3 - NEUROIMMUNOLOGY

This course will examine immune-brain communication, immune molecules and their signalling pathways, and the role of the immune system in normal brain function and CNS disease. It is recommended that students have an understanding of Immunology.

Two lectures, one tutorial; one term

**Prerequisite(s):** One of BIOLOGY 2B03, HTHSCI 2K03, ISCI 2A18 A/B, BIOTECH 3IV3, or HTHSCI 3I03

### HTHSCI 4BL3 - PEER TUTORING IN DESIGN THINKING

This course provides students an opportunity to develop their skills and knowledge of design thinking by acting as peer tutors to other students enrolled in HTH SCI 4ID3: Innovation by Design, an introduction to design thinking. Students will have an opportunity to support up to two interdisciplinary teams of students through a series of design project milestones.

Developing skills and tools for facilitating a design mindset in others will serve as the focus of an individual and a team project.

**Prerequisite(s):** Registration in Level III or above in any program; HTHSCI 3QA3, 4ID3, or 4LA3; and permission of the instructor

### HTHSCI 4C06 A/B - SENIOR PROJECT IN CHILD HEALTH

A selection of information-based research projects focused on Child Health conducted under the supervision of one or more members of the Faculty. Arrangements to register in HTH SCI 4C06 including agreement of supervisor must be made before the end of March in Level III.

Two terms

**Prerequisite(s):** Registration in Level IV of the B.H.Sc. (Honours) Child Health Specialization and permission of B.H.Sc. (Honours) Program

**Antirequisite(s):** HTHSCI 4C09 A/B, HTHSCI 4C12 A/B S, HTHSCI 4C15 A/B

### HTHSCI 4C09 A/B - THESIS IN CHILD HEALTH

A thesis-based research project focused on Child Health conducted under the direction and supervision of a member of the Faculty. Arrangements to register in HTHSCI 4C09, including agreement of the supervisor must be made before the end of March in Level III.

Two terms

**Prerequisite(s):** Registration in Level IV of the Bachelor of Health Sciences (Honours) - Child Health Specialization (B.H.Sc.) and permission of B.H.Sc. (Honours) Program

**Antirequisite(s):** HTHSCI 4C06 A/B, 4C12 A/B S, 4C15 A/B

### HTHSCI 4C12 A/B S - THESIS IN CHILD HEALTH

A thesis-based research project focused on Child Health conducted under the direction and supervision of a member of the Faculty. Arrangements to register in HTHSCI 4C12 A/B S, including agreement of the supervisor must be made before the end of March in Level III.

Two terms

**Prerequisite(s):** Registration in Level IV of the B.H.Sc. (Honours) Child Health Specialization and permission of B.H.Sc. (Honours) Program

**Antirequisite(s):** HTHSCI 4C06, HTHSCI 4C09 A/B, HTHSCI 4C15 A/B

### HTHSCI 4C15 A/B - THESIS IN CHILD HEALTH

A thesis-based research project focused on Child Health conducted under the direction and supervision of a member of the Faculty. Arrangements to register in HTHSCI 4C15, including agreement of the supervisor must be made before the end of March in Level III.

Two terms

**Prerequisite(s):** Registration in Level IV of the Bachelor of Health Sciences (Honours) - Child Health Specialization (B.H.Sc.) and permission of B.H.Sc. (Honours) Program

**Antirequisite(s):** HTHSCI 4C06 A/B, 4C09 A/B, 4C12 A/B S

### HTHSCI 4CH3 A/B - CHS EDUCATION PRACTICUM

Students in the Child Health Specialization will have the opportunity to experience and facilitate the skill/knowledge acquisition of their peers in CHS Level II within a group context.

Sessions arranged individually or in small groups; two terms

**Prerequisite(s):** Registration in Level IV of the B.H.Sc. (Honours) Child Health Specialization and permission of the instructor

### HTHSCI 4CH6 A/B - CHS INQUIRY ADVANCED

The course will be a continuation of principles and core elements of knowledge, research and application experienced in Level III. Students will be expected to integrate and apply their knowledge and critical thinking about child health at a more advanced level.

Four hours; two terms

**Prerequisite(s):** HTHSCI 3CH9 A/B and HTHSCI 3CH6 A/B

### HTHSCI 4CU3 - CULTURAL COMPETENCY IN HEALTH SCIENCES

Cultural competent practitioners can interpret and effectively act on the cultural context of an individual in their health care environment. Relationship building is key to cultural competence. Communications skills help us understand and manage each others expectations and attitudes and highlight each others strength using a wide range of individual and community resources. This course will use theoretical and practical exercises to build our cultural competency and examine how we can effectively act in our health care community.

Three hours; one term

**Prerequisite(s):** HTHSCI 3S03

### HTHSCI 4D03 - SPECIAL TOPICS IN HEALTH SCIENCES

This course provides an opportunity for individual or small groups to integrate concepts from their undergraduate courses.

**Prerequisite(s):** Registration in B.H.Sc. (Honours) Program and permission of B.H.Sc. (Honours) Program, or supervision by a Faculty of Health Sciences supervisor and permission of B.H.Sc. (Honours) Program

### HTHSCI 4D06 A/B - SENIOR PROJECT IN ENGAGING THE CITY

A project focused on community-based participatory research conducted under the direction and supervision of a member of the Faculty. The project can be an extension of a student's 3DD6 A/B Engaging the City project. Arrangements to register in HTHSCI 4D06 A/B including agreement of supervisor must be made before the end of March in Level III.

Two terms

**Prerequisite(s):** Permission of B.H.Sc. (Honours) Program

**Antirequisite(s):** HTHSCI 4B06 A/B, 4A09 A/B, 4A12 A/B, 4A15 A/B

### HTHSCI 4D09 A/B - THESIS IN ENGAGING THE CITY

A thesis focused on community-based participatory research conducted under the direction and supervision of a member of the Faculty. The thesis can be an extension of a student's 3DD6 A/B Engaging the City project. Arrangements to register in HTHSCI 4D09 A/B, including agreement of the supervisor must be made before the end of March in Level III.

Two terms

**Prerequisite(s):** Permission of B.H.Sc. (Honours) Program

**Antirequisite(s):** HTHSCI 4B06 A/B S, 4A09 A/B, 4A12 A/B, 4A15 A/B S

### HTHSCI 4D12 A/B - THESIS IN ENGAGING THE CITY

A thesis focused on community-based participatory research conducted under the direction and supervision of a member of the Faculty. The thesis can be an extension of a student's 3DD6 A/B Engaging the City project. Arrangements to register in HTHSCI 4D12 A/B, including agreement of the supervisor must be made before the end of March in Level III.

Two terms

**Prerequisite(s):** Permission of B.H.Sc. (Honours) Program

**Antirequisite(s):** HTHSCI 4B06 A/B S, 4A09 A/B, 4A12 A/B, 4A15 A/B S

Arrangements to register in this course, including agreement of the supervisor, must be made before the end of March in Level III.

### HTHSCI 4DE3 - SENIOR PROJECT IN ENGAGING THE CITY

A project focused on community-based participatory research conducted under the direction and supervision of a member of the Faculty. The project can be an extension of a students HTHSCI 3DD6 A/B - Engaging the City project. Arrangements to register in HTHSCI 4DE3 including agreement of supervisor must be made before the end of March in Level III.

One term

**Prerequisite(s):** Permission of B.H.Sc. (Honours) Program

### HTHSCI 4DM3 - DEMYSTIFYING MEDICINE

Students will work in small cross-disciplinary groups on selected topics presented at the McMaster Demystifying Medicine Seminar Series . Students will acquire a broad overview of various clinical topics, patient needs and associated biomedical research. Students will translate the acquired knowledge to patients and public, and develop educational material.

Three hours; one term

**Prerequisite(s):** Registration in Level IV in the B.H.Sc. (Honours) Program, or Level IV in the B.H.Sc. (Honours) Specialization; or registration in Level IV of the Honours Integrated Science Program, Arts & Science; or registration in Level IV in any Honours program.

### HTHSCI 4EE3 A/B - EDUCATION PRACTICUM IN HEALTH SCIENCES

An opportunity to explore pedagogy as it relates to best practice in education. Sessions arranged individually or in small groups; two terms

**Prerequisite(s):** Permission of the Assistant Dean, B.H.Sc. (Honours) program

### HTHSCI 4F03 - INTERDISCIPLINARY HEALTH & WELLNESS

This course will include one or more placements in an interdisciplinary health and wellness environment. In conjunction with these placements, students will be required to engage with the literature, community, and peers to understand and apply principles of interdisciplinary collaboration to current challenges in health and wellness. Students must arrange their clinical placement.

Sessions arranged individually or in small groups.

One term

**Prerequisite(s):** Registration in Level III or above of the B.H.Sc. (Honours) program, or Level III or above of the B.H.Sc. (Honours) Specializations, and permission of the instructor

### HTHSCI 4FF3 - INTEGRATIVE LEADERSHIP PROJECT

This course provides students an opportunity to integrate knowledge from pervious leadership courses and address a real health care or applied issue in

the workplace. The student will immerse in a leadership role to address a mutually agreed upon leadership issue. Mentorship and guidance will be provided by both a teacher and industry leader. Students integrate learning and demonstrate a leadership role in addressing

Seminar/Field Engagement (three hours); one term

**Prerequisite(s):** HTHSCI 4LB3, HTHSCI 4LC3

**Antirequisite(s):** NURSING 4FF3 A/B S

### HTHSCI 4G03 - PATHOANATOMY

Students will research the anatomy, surgical approach and etiology of a pathology assigned from an anatomical system of their choosing, depending on availability of cadavers. The goal is to give students an opportunity to prepare an educational surgical specimen from human materials.

Two lectures, one lab; one term

**Prerequisite(s):** HTHSCI 2FF3 and registration in the B.H.Sc. (Honours) program

### HTHSCI 4G06 A/B S - SENIOR PROJECT IN GLOBAL HEALTH

A senior project focused on a Global Health topic, with possible experiential components, conducted under the direction and supervision of a suitable expert. Arrangements to register in HTHSCI 4G06 A/B S, including agreement of the supervisor, must be made before the end of March in Level III.

Two terms

**Prerequisite(s):** HTHSCI 2DS3, HTHSCI 3H03, and permission of BHSc (Honours) Program

**Antirequisite(s):** HTHSCI 4G09 A/B, 4G12 A/B, 4G15 A/B

### HTHSCI 4G09 A/B S - THESIS IN GLOBAL HEALTH

A thesis-based research project focused on Global Health with experiential components, conducted under the direction and supervision of a suitable expert. Arrangements to register in HTHSCI 4G09 A/B S, including agreement of the supervisor, must be made before the end of March in Level III.

Two terms

**Prerequisite(s):** HTHSCI 2DS3, 3H03, and permission of BHSc (Honours) Program.

**Antirequisite(s):** HTHSCI 4G06 A/B, 4G12 A/B, 4G15 A/B

### HTHSCI 4G12 A/B - THESIS IN GLOBAL HEALTH

A thesis-based research project focused on Global Health with experiential components, conducted under the direction and supervision of a suitable expert. Arrangements to register in HTHSCI 4G12 A/B, including agreement of the supervisor, must be made before the end of March in Level III.

Two terms

**Prerequisite(s):** HTHSCI 2DS3, HTHSCI 3H03, and permission of B.H.Sc. (Honours) Program

**Antirequisite(s):** HTHSCI 4G06 A/B, 4G09 A/B, 4G15 A/B

### HTHSCI 4G15 A/B S - THESIS IN GLOBAL HEALTH

A thesis-based research project focused on Global Health with experiential components, conducted under the direction and supervision of a suitable expert. Arrangements to register in HTHSCI 4G15 A/B, including agreement of the supervisor, must be made before the end of March in Level III.

Two terms

**Prerequisite(s):** HTHSCI 2DS3, 3H03, and permission of B.H.Sc. (Honours) Program

**Antirequisite(s):** HTHSCI 4G06 A/B, 4G09 A/B, 4G12 A/B

### HTHSCI 4IC3 - INTEGRATION OF CHILDREN'S PHYSICAL AND MENTAL HEALTH

This course will examine issues related to the intersection of physical and mental health within the context of child health.

Three hours; one term.

**Prerequisite(s):** Registration in Level IV or above in B.H.Sc. (Honours) or B.H.Sc. (Honours) Specializations or permission of instructor

### HTHSCI 4ID3 - INNOVATION BY DESIGN I

This course will enable interdisciplinary student groups to engage in design thinking as a methodology to assess health-related challenges, collect meaningful data, iterate alternative design options, and build a prototype solution for testing with user groups. Students will learn conceptual and applied approaches to design thinking and develop capabilities for building innovative teams, having empathy with others and creative problem-solving.

**Prerequisite(s):** Registration in Level IV or above

**Antirequisite(s):** IBEHS 2E06

### HTHSCI 4II3 - ADVANCED CONCEPTS IN IMMUNOLOGY

This course will build on knowledge of the immune system and focus on the immune system in disease: allergy, inflammation, autoimmunity, immune deficiency, malignancy and cancer immunotherapy.

Two lectures, one tutorial; one term

**Prerequisite(s):** HTHSCI 3I03

### HTHSCI 4J03 - IMMUNOLOGICAL PRINCIPLES IN PRACTICE

This advanced course applies problem-based learning to immunological problems. Topics concern development of immunoassays, resistance to infection and immunity in health and disease.

One session (three hours), one tutorial; one term

**Prerequisite(s):** HTHSCI 3I03; or permission of the instructor

**Cross-list(s):** BIOCHEM 4J03

### HTHSCI 4JJ3 - BUILDING UNDERGRADUATE RESEARCH CAPACITY

This is a practical course for learning about how clinical professionals and researchers conduct their day-to-day research. Special topics may include research ethics, grant and proposal writing, managing multiple projects, the writing process.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the B.H.Sc. (Honours) Program; or registration in Level III or above of the B.H.Sc. (Honours) Specializations; or permission of instructor

### HTHSCI 4K03 - HUMAN PATHOPHYSIOLOGY

The course is designed to allow participants to think and solve problems in the area of physiology, pathophysiology and anatomy.

One lecture, one tutorial, one lab; one term

**Prerequisite(s):** HTHSCI 2FF3 or permission of the instructor

### HTHSCI 4KK3 - PATHOPHYSIOLOGY OF INFECTIOUS DISEASES

This course is designed to provide an in depth look at the clinical, medical and pathophysiological aspects of infectious diseases. These fundamentals include taxonomy, diagnostic methodology, epidemiology and virulence factors of pathogens and pathophysiological events and responses in different body systems in human host as a result of infections.

One lecture, one tutorial, one lab; one term

**Prerequisite(s):** HTHSCI 2FF3

*Offered in alternate years.*

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### HTHSCI 4LA3 - INNOVATION BY DESIGN II

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This course introduces students to strategic foresight and experiential futures in health leadership and innovation. Building on the design thinking methods and tools from Innovation by Design I, students will work in interdisciplinary teams to address a health-related challenge. Students will learn about identifying weak signals, scenario development, and storytelling as part of developing plausible health futures.

**Prerequisite(s):** HTHSCI 4ID3 (or equivalent by permission of instructor)

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### HTHSCI 4LB3 - LEADERSHIP AND MANAGEMENT 1

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This interprofessional/multidisciplinary course is designed to introduce and apply theories, frameworks and practices within the health care sector. Learners engage in tutorial discussion to learn about self-leadership, career navigation and foundational management practices. This course will appeal to those who have an interest in informal and formal leadership roles in the health care sector.

Tutorial (three hours); one term

**Prerequisite(s):** Health care or applied program; or permission from instructor

**Antirequisite(s):** HTHSCI 4D06 A/B, NURSING 4B06 A/B

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### HTHSCI 4LC3 - LEADERSHIP AND MANAGEMENT 2

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This interprofessional/multidisciplinary course builds on theoretical knowledge of self-leadership and foundational management practices in the health care sector and introduces theory and frameworks for leading teams and organizations. This course will appeal to those who wish to advance their leadership knowledge and immerse in understanding effective teams and organizations.

Tutorial (3 hours); one term

**Prerequisite(s):** HTHSCI 4LB3 or permission from instructor

**Antirequisite(s):** HTHSCI 4D06 A/B, NURSING 4B06 A/B

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### HTHSCI 4LD3 - GLOBAL HEALTH GOVERNANCE, LAW AND POLITICS

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This course surveys contemporary issues and debates in global health governance, law, and politics from an interdisciplinary perspective. Theory will converge with practice as students examine the historical development of global health, relevant actors and institutions, regulatory framework, principal coordinating mechanisms and emerging challenges to its effective governance. Three hours, one tutorial; one term

**Prerequisite(s):** Registration in Level III or above in the B.H.Sc. (Honours) Program or Arts & Science Program or Bachelor of Health Sciences (Honours) - Global Health Specialization (B.H.Sc.); or permission of instructor

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### HTHSCI 4LL3 - INTEGRATED HEALTH SYSTEMS

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Consideration of the issues inherent to the integration of current conventional medical approaches with other healing systems.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of the B.H.Sc. (Honours) Program; or registration in Level III or above of the B.H.Sc. (Honours) Specializations

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### HTHSCI 4M03 - ADVANCED CONCEPTS IN HEALTH PSYCHOLOGY

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This course will explore the role of psychological factors in health and disease. Topics include stress, coping, health promoting/compromising behaviours, patient-physician communication, adherence, pain, heart disease and cancer. Three hours; one term

**Prerequisite(s):** Registration in Level III or above and one of HTHSCI 1G03, Psych 1F03, 1N03 or 1X03.

Offered on alternate years.

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### HTHSCI 4MS3 - THE SOCIAL LIVES OF MOLECULES

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Ours is a molecular world. Complex interactions between individuals and diverse social groups underpin the discovery, manufacture, marketing and use of drugs, nutrients, poisons and cosmetics that influences our health and well-being in myriads of way; a fertile field for exploration in a problem-based course.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above in any program and permission of the instructor

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### HTHSCI 4NN3 - WRITTEN COMMUNICATION IN HEALTH SCIENCES II

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This course will be an advanced course in written communication, building on knowledge gained in Written Communication I. Students will explore and hone their writing skills in various forms.

Three hours; one term

**Prerequisite(s):** HTHSCI 3N03

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### HTHSCI 4NR3 - NURSING RESEARCH

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This course is designed to enhance the student's understanding of the research process. Emphasis is placed on the students potential role as a research collaborator in projects related to professional practice.

Lecture (three hours), 24-30 hours research practicum; one term

**Prerequisite(s):** Minimum grade of C- in NURSING 3SS3, HTHSCI 2H03, 2HH3, 2RR3 and a minimum grade of C- in NURSING 2LA2 A/B or HTHSCI 2LA2 A/B, and a Pass in NURSING 2K02 A/B, 2P03, and registration in the B.Sc.N. Basic (A) Stream; or a minimum grade of C- in NURSING 3RT3, HTHSCI 3C04, and a minimum grade of C- in NURSING 3PA2 A/B or HTHSCI 3PA2 A/B, and Pass in NURSING 3RY4, 3QQ3 and registration in the B.Sc.N. Post Diploma R.P.N. Stream; or minimum grade of C- in NURSING 3V03, and a minimum grade of C- in NURSING 3PF1 or HTHSCI 3PF1, and a Pass in NURSING 3ZB3, 3QQ3, and registration in the B.Sc.N. Accelerated (F) Stream; or permission of the instructor

**Antirequisite(s):** HTHSCI 4L02

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### HTHSCI 4NU3 - NUTRITION

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Students will have an opportunity to learn about nutrition and diet from a functional medicine approach. Multiple learning methods will be used including lecture, class activities and a term long group project.

Three hours; one term.

**Prerequisite(s):** Registration in Level 3 or above in B.H.Sc. (Honours) or Level 3 or above in B.H.Sc. (Honours) Specializations

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### HTHSCI 4003 - PRINCIPLES OF VIRUS PATHOGENESIS

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Current theories and knowledge on mechanisms that relate to virus pathogenesis and evasion of host cell responses.

Two lectures, one tutorial; one term

**Prerequisite(s):** HTHSCI 3I03, 3K03 and registration in Level III or above



### HTHSCI 4PA3 - GLOBAL HEALTH INNOVATION

Students will examine considerations, questions and challenges that govern the genesis, development and adoption of health innovation in low and middle income countries. There is an opportunity for students to build on their biomedical knowledge by applying interdisciplinary perspectives to a complex healthcare topic.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above in the B.H.Sc. (Honours) Program, or Level

III or above in the B.H.Sc. (Honours) Specialization; or registration in Level III or above of the

Honours Integrated Science Program, Arts & Science; or registration in Level III or above in any Honours program and permission of the instructor

### HTHSCI 4Q03 A/B S - COMMUNICATION SKILLS PRACTICUM

An opportunity to explore pedagogy as it relates to best practice in education.

Sessions arranged individually or in small groups; two terms

**Prerequisite(s):** Permission of the Assistant Dean, B.H.Sc. (Honours) program

### HTHSCI 4R09 A/B - THESIS IN BIOMEDICAL SCIENCES

A thesis based on a major research project in biomedical sciences supervised by a member of the Faculty. Arrangements to register in HTHSCI 4R09 A/B, including agreement of the supervisor, must be made before the end of March in level III.

Two terms

**Prerequisite(s):** Registration in Bachelor of Health Sciences (Honours) - Biomedical Sciences Specialization (B.H.Sc.) and permission of B.H.Sc. (Honours) Program

**Antirequisite(s):** HTHSCI 4R12 A/B S

### HTHSCI 4R12 A/B S - THESIS IN BIOMEDICAL SCIENCES

A thesis based on a major research project in biomedical sciences supervised by a member of the Faculty. Arrangements to register in HTHSCI 4R12 A/B, including agreement of the supervisor, must be made before the end of March in level III.

Two terms

**Prerequisite(s):** Registration in Bachelor of Health Sciences (Honours) - Biomedical Sciences Specialization (B.H.Sc.) and permission of the B.H.Sc. (Honours) program

**Antirequisite(s):** HTHSCI 4R09 A/B

### HTHSCI 4SA3 - COMPETITIVE ADVANTAGE THROUGH PEOPLE

This course offers students an opportunity to develop skills that will enable them to manage emotional and risky situations through open dialogue and personal exploration. Students will learn how to get the best out of themselves and others.

Three hours; one term

**Prerequisite(s):** Registration in Level IV B.H.Sc. (Honours) or registration in Level IV of the B.H.Sc. (Honours) Specializations

### HTHSCI 4SC3 - SOCIAL DETERMINANTS OF CHILD HEALTH

This course will examine issues related to social determinants within the context of child health.

Three hours; one term

**Prerequisite(s):** Registration of Level IV B.H.Sc. (Honours) or B.H.Sc. (Honours) Specializations or permission of instructor

### HTHSCI 4SS6 A/B - GROUP PROCESS PRACTICUM

An opportunity to explore theory and apply concepts of group dynamics and processes as it relates to best practice education.

Sessions arranged individually or in small groups; two terms

**Prerequisite(s):** Permission of the Assistant Dean, B.H.Sc. (Honours) program

**Antirequisite(s):** HTHSCI 4AA3

### HTHSCI 4TE3 - THE TEACHING HOSPITAL

This inquiry course will permit students to explore the evolution of the modern teaching hospital from its early days as bimaristans in medieval Persia to the modern global technological institutions that link patient care with the training of practitioners.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above in any program and permission of the instructor

### HTHSCI 4TT3 A/B S - RESEARCH PRACTICUM

An opportunity through peer tutoring and small group inquiry based learning to explore theory and apply concepts related to research and research ethics.

Three hours; two terms

**Prerequisite(s):** Registration in Level IV of the B.H.Sc. (Honours) Program or registration in Level IV of the B.H.Sc. (Honours) Specializations and permission of instructor.

### HTHSCI 4W03 - SPECIAL TOPICS IN HEALTH SCIENCES II

This course provides an opportunity for individual or small groups to integrate concepts from their undergraduate courses.

Sessions arranged individually or in small groups; one term

**Prerequisite(s):** Registration in

B.H.Sc. (Honours) Program and permission of B.H.Sc. (Honours) Program, or supervision by a Faculty of Health Sciences supervisor and permission of B.H.Sc. (Honours) Program

### HTHSCI 4WW3 A/B - EDUCATION PRACTICUM

This course will provide students with an opportunity to experience and gain theoretical knowledge of best practices in education as they relate to mentoring, building relationships, and critical pedagogy in community settings.

Three hours; two terms

**Prerequisite(s):** HTHSCI 3DD6 A/B, registration in Level IV and permission of instructor.

### HTHSCI 4X03 A/B S - COLLABORATION AND PEER TUTORING

An important part of our responsibility in the program is to develop a learning community that incorporates the concepts of collaboration, peer tutoring and life-long learning. This course will consist of three units to be taken over four years and will encourage these activities, both formally and informally.

**Prerequisite(s):** Registration in Level IV of the B.H.Sc. (Honours) Program or registration in Level IV of the B.H.Sc. (Honours) Specializations

**Antirequisite(s):** INQUIRY 3S03, SCIENCE 2L03, 3S03, SOCSCI 2L03

Last offered in 2022-23.

### HTHSCI 4XP3 A/B - PRAXIS PATHWAYS 4

This is the culmination of the longitudinal Praxis Pathways Curriculum, in which students enhance and deepen their capacities for: collaboration in community; group process; leadership; lifelong learning; perspective-taking; reflection and reflexivity; and self-care and wellness. The development of information literacy

and critical analysis skills supports and informs these goals.

Eight hours per month; two terms

**Prerequisite(s):** Registration in Level IV of the B.H.Sc. (Honours) Program.

First offered in 2022-23

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### HTHSCI 4XX3 - PROFESSIONAL TRANSITIONS

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This course will provide students with an opportunity to explore issues related to professionalism, the uncertainty of new directions, success/failure, choices, expectations and career challenges.

Three hours; one term

**Prerequisite(s):** Registration in Level IV in any Honours program

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### HTHSCI 4Y03 - SCIENCE, CULTURE AND IDENTITY

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Through selected readings and discussion, this course will explore some critiques of science and will appraise the challenge they present to scientific authority. The course will culminate in the presentation of a research project on a question developed by students individually or in groups.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above in the B.H.Sc. (Honours) Program, or Level III or above in the B.H.Sc. (Honours) Specialization; or registration in Level III or above of the Honours Integrated Science Program, Arts & Science; or registration in Level III or above in any Honours program and permission of the instructor.

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### HTHSCI 4YY3 - HEALTH FORUM PRACTICUM

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Students will come to understand the types of decisions that can have an impact on health, the roles of different organizations involved in making these decisions and the types of influences on these decisions. To accomplish this, students will organize, prepare for, and participate in a variety of simulations, including: hospital, Local Health Integration Network and WHO board meetings, as well as provincial and federal cabinet meetings.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above in the B.H.Sc. (Honours) Program, or Level III or above in the B.H.Sc. (Honours) Specialization; or registration in Level III or above of the Honours Integrated Science Program, Arts & Science; or registration in Level III or above and HTHSCI 2DS3 or GLOBALZN 1A03; or permission of the instructor.

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### HTHSCI 4ZZ3 - GLOBAL HEALTH ADVOCACY

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This course aims to foster appreciation for the complexity of today's most pressing global health challenges and the ways that various actors work to overcome them. Students will examine how individuals, organizations, and corporations advocate to national and international government organizations to tackle challenges that affect policy changes, and garner resources to address communicable and non-communicable diseases.

Three hours, one tutorial; one term

**Prerequisite(s):** Registration in Level III or above in the B.H.Sc. (Honours) Program, or Level III or above in the B.H.Sc. (Honours) Specialization; or registration in Level III or above of the Honours Integrated Science Program, Arts & Science; or registration in Level III or above in any Honours program and permission of the instructor

## Health Sciences (Engineering, Midwifery, Nursing)

### Note

The following Health Sciences courses are normally available only to students registered in Engineering (Chemical Engineering and Bioengineering or

Electrical and Biomedical Engineering), Midwifery, or B.Sc.N. (A), (B), (E) or (F) Streams, as applicable.

### Courses

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### HTHSCI 1C06 A/B - WORKING ACROSS DIFFERENCE IN MIDWIFERY

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This course draws on perspectives from sociology, anthropology, cultural studies and women's studies to explore the challenges and opportunities of working across differences of race, class, sexuality, ability (and other markers of difference) in midwifery care. The course will focus on developing and strengthening the skills required to work competently and compassionately across social and identity differences among and between midwives, midwifery clients and other health care providers.

Lectures/tutorials (three hours); both terms

**Prerequisite(s):** Registration in the Midwifery Program (B.H.Sc.)

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### HTHSCI 1CC6 - INTEGRATED BIOLOGICAL BASES OF NURSING PRACTICE I

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Students will apply principles of cellular biology, biochemistry and human anatomy and physiology essential to the assessment and understanding of health care challenges.

Lecture (two hours), tutorial (two hours), online tutorial; one term

**Prerequisite(s):** Registration in the B.Sc.N. Post Diploma R.P.N. (E) Stream

**Antirequisite(s):** HTHSCI 3BB3, KINESIOL 1Y03, KINESIOL 1YY3

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### HTHSCI 1D06 A/B - ANATOMY AND PHYSIOLOGY

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This course covers basic concepts of human structure and function, genetics and embryology through lectures, demonstrations and appropriate laboratory assignments.

Lectures/tutorial (four hours), labs (two hours); both terms

**Prerequisite(s):** Registration in the Midwifery Program (B.H.Sc.)

**Co-requisite(s):** HTHSCI 1BS0 if not already completed

**Antirequisite(s):** BIOLOGY 1J03, 3U03, 3UU3, HTHSCI 2F03, 2FF3, KINESIOL 1A03, 1A06, 1AA3, 1X06, 1Y03, 1YY3, MEDPHYS 4XX3, SCIENCE 4XX3

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### HTHSCI 1J03 - LIFE SCIENCES FOR CLINICAL PRACTICE

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This course provides an overview of basic concepts relating to chemistry, biochemistry and microbiology. Content areas will include practical applications of clinical chemistry, specimen collection, related disease entities and pathologies, and the significance of laboratory values.

One lecture (three hours) one lab (two hours); first term

**Prerequisite(s):** Registration in the Midwifery Program (B.H.Sc.)

**Co-requisite(s):** HTHSCI 1D06 A/B

**Antirequisite(s):** MIDWIF 1C03

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### HTHSCI 1LL3 - HUMAN BIOCHEMISTRY I

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Introduction to proteins, DNA, RNA, chromosomes and their building blocks; gene expression; proteins, carbohydrates and fats as fuels in the production of energy for living, including nutritional aspects.

Lecture (two hours), tutorial (one hour); one term

**Prerequisite(s):** Registration in the B.Sc.N. Basic (A) Stream or permission of the instructor

**Antirequisite(s):** HTHSCI 1CC6

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### HTHSCI 2C06 - INTEGRATED BIOLOGICAL BASES OF NURSING PRACTICE II

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Students will integrate concepts of pathophysiology and will include principles of microbiology and pharmacology essential to the assessment and

understanding of health care challenges.

Lecture (three hours), tutorial (one hour), online tutorials (two hours); one term

**Prerequisite(s):** Minimum grade of C- in HTHSCI 1CC6 and registration in the B.Sc.N Post Diploma R.P.N. (E) Stream

**Antirequisite(s):** HTHSCI 2H03, HTHSCI 2HH3, KINESIOL 1Y03, KINESIOL 1YY3

### HTHSCI 2H03 - INTRODUCTORY PHARMACOLOGY

An examination of the administration, distribution, action, metabolism and elimination of drugs generally and as related to specific systems.

Lecture/lab (two hours), tutorial (one hour); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 1G03, 1J02, HTHSCI 1H06 A/B, 1LL3 and a Pass in NURSING 1K02 A/B and registration in the B.Sc.N. Basic (A) Stream; or registration in the B.Sc.N. Accelerated (F) Stream; or permission of the instructor

**Antirequisite(s):** HTHSCI 2C06

### HTHSCI 2HH3 - INTRODUCTORY MICROBIOLOGY

An examination of the interactions of microbes in the human body including action, responses, treatment and prevention.

Lecture/lab (two hours), tutorial (one hour); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 1G03, 1J02, HTHSCI 1H06 A/B, 1LL3 and a Pass in NURSING 1K02 A/B and registration in the B.Sc.N. Basic (A) Stream; or registration in the B.Sc.N. Accelerated (F) Stream; or permission of the instructor

**Antirequisite(s):** HTHSCI 2C06

### HTHSCI 2LA2 A/B - INTRODUCTION TO INTEGRATED PATHOPHYSIOLOGY FOR NURSING FOR BASIC STREAM

The course combines online multimedia learning modules with integrated tutorials in which students learn and apply basic pathophysiological concepts. Tutorials ( twelve one hour sessions), nine online multimedia modules; two terms

**Prerequisite(s):** Minimum grade of C- in NURSING 1G03, 1J02, HTHSCI 1H06 A/B, 1LL3 and a Pass in NURSING 1K02 A/B and registration in the B.Sc.N. Basic (A) Stream

**Antirequisite(s):** NURSING 2LA2 A/B

**Co-requisite(s):** NURSING 2NN3

### HTHSCI 2M03 - REPRODUCTIVE PHYSIOLOGY

This course emphasizes intrinsic and extrinsic methods of regulation of reproduction and also provides the basis for understanding alterations from normal mechanisms including the influence of medical conditions.

One tutorial (three hours); first term

**Prerequisite(s):** HTHSCI 1D06 A/B and registration in the Midwifery Program (B.H.Sc.)

**Antirequisite(s):** MIDWIF 2D03

### HTHSCI 2PF3 A/B - INTRODUCTION TO INTEGRATED PATHOPHYSIOLOGY FOR ACCELERATED STREAM

The course combines online multimedia learning modules with integrated tutorials in which students learn and apply pathophysiological concepts. Tutorial (eighteen one hour sessions), twelve online multimedia modules; two terms

**Prerequisite(s):** Registration in the B.Sc.N. Accelerated (F) Stream

**Antirequisite(s):** NURSING 2PF3 A/B

**Co-requisite(s):** NURSING 2I04

### HTHSCI 2RR3 - INTRODUCTION TO THE SOCIAL DETERMINANTS OF HEALTH

This course provides an introduction to a number of macrohealth issues including determinants of health and political, economic and social factors that influence the organization of health care systems. This course introduces the biological, behavioural, social, economic and environmental factors that determine the health of populations. Major components to the course include: assessing health and socioeconomic status, understanding the structure and organization of the Canadian health care system, public policy, and several factors that affect health; such as, gender, income, work, & social exclusion. Lecture (one hour), online education (one hour), guided self-study (one hour); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 1G03, 1J02, HTHSCI 1H06 A/B, 1LL3 and a Pass in NURSING 1K02 A/B and registration in the B.Sc.N. Basic (A) Stream; or registration in the B.Sc.N. Accelerated (F) Stream; or registration in the B.Sc.N. Post Diploma R.P.N. (E) Stream

### HTHSCI 2S03 - INTRODUCTION TO STATISTICS FOR NURSING

An introduction to basic parametric and non-parametric statistical methods, including their application to the analysis of data relevant to nursing and health-related research questions. Computer analysis of data using appropriate software (e.g., SPSS, Excel) and interpretation of the statistical results will also be an integral component of the course.

Lecture (two hours), tutorial (one hour); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 1G03, 1J02, HTHSCI 1H06 A/B, 1LL3 and a Pass in NURSING 1K02 A/B and registration in the B.Sc.N. Basic (A) Stream; or registration in the B.Sc.N. Post Diploma R.P.N. (E) Stream; or permission of the instructor

**Antirequisite(s):** COLLAB 2L03, COMMERCE 2QA3, HTHSCI 2A03, SOCSCI 2J03

### HTHSCI 3BB3 - HUMAN BIOCHEMISTRY II: NUTRITION AND METABOLISM

This course will examine diet and exercise for health as well as biochemical processes in disease states. Nutritional requirements in different life stages and in prevalent disease states will also be discussed.

Lecture (two hours), tutorial (two hours); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 2NN3, HTHSCI 2H03, 2HH3, 2RR3 and a minimum grade of C- in NURSING 2LA2 A/B or HTHSCI 2LA2 A/B and a Pass in NURSING 2K02 A/B, 2P03 and registration in the B.Sc.N. Basic (A) Stream; or permission of the instructor

**Antirequisite(s):** KINESIOL 1F03, LIFESCI 2N03

### HTHSCI 3HN3 - PARTNERING WITH HAMILTON NEIGHBOURHOODS FOR HEALTH

This course brings together students from a variety of disciplines such as: nursing, geography, business, social work, health studies, engineering and health sciences to acquire and integrate knowledge of the principles of primary health care with a focus on intersectoral action and community participation, assets-based community development processes, ecosystems approaches to health, integrated knowledge exchange approaches with citizens, and population health interventions for healthier neighbourhoods and communities. While partnering with specific Hamilton neighbourhoods, students guided by faculty will work with neighbourhood planning groups to address specific issues for the development of healthy neighbourhoods and resilient communities.

Lecture/seminar/service learning (three hours); one term

**Prerequisite(s):** Registration in Level II or above; and permission of instructor

*This course contains off-campus components.*

### HTHSCI 3PF1 - INTEGRATED PATHOPHYSIOLOGY FOR ACCELERATED STREAM

Building on the concepts encountered in NURSING/HTHSCI 2PF3 A/B, this course combines online multimedia learning modules with integrated tutorials in which students learn and apply pathophysiological concepts.

Tutorial (six one hour sessions); four online multimedia modules; one term

**Prerequisite(s):** Minimum grade of C- in NURSING 2V04, HTHSCI 2H03, 2HH3, 2RR3, 3C04 and a minimum grade of C- in NURSING 2PF3 A/B or HTHSCI 2PF3 A/B, and a Pass in NURSING 2J04 and registration in the B.Sc.N. Accelerated (F) Stream

**Antirequisite(s):** NURSING 3PF1

**Co-requisite(s):** NURSING 3V03

### HTHSCI 4AR3 - NURSING RESEARCH PROJECT

This independent study course enhances the student's understanding of the research process through active engagement in clinical research, quality improvement, or patient safety research projects. Working alongside the researcher/faculty member and his/her research team, students have the opportunity to fully engage in scholarly research, which may include contributing to the writing of a proposal, collecting and/or analyzing data, and/or disseminating results. The student's plan of study is negotiated with the individual researcher/faculty member.

Thirty-six hours of research practicum plus independent study; one term

**Prerequisite(s):** Registration in Level II or above of any Stream of the B.Sc.N. Program; and permission of the instructor; and permission of the B.Sc.N. Programs Office.

This course may contain an off-campus component.

Students will not normally be permitted to apply more than two independent study or research project courses in the Health Sciences toward their elective requirements for the B.Sc.N. Program.

### HTHSCI 4BR3 - INDEPENDENT STUDY

A non-clinical course in which special topics will be considered in depth under the supervision of a faculty member. The plan of study must be negotiated with the faculty member.

Thirty-six hours of independent study project/practicum; one term

**Prerequisite(s):** Registration in Level II or above of any Stream of the B.Sc.N. Program; and permission of the instructor; and permission of the B.Sc.N. Programs Office

This course may contain an off-campus components.

Students will not normally be permitted to apply more than two independent study or research project course in the Health Sciences toward their elective requirements for the B.Sc.N. Program.

### HTHSCI 4DD6 A/B S - ADVANCED LEADERSHIP AND MANAGEMENT

This advanced course builds upon HTHSCI 4E06 content. It integrates theories and research in leadership and management to enhance health care provider's knowledge of key issues in today's workplace.

Tutorial or equivalent (four hours), independent study in an organization (six hours); one term

**Prerequisite(s):** HTHSCI 4E06 A/B S

**Antirequisite(s):** NURSING 4DD6 A/B S

### HTHSCI 4E06 A/B S - LEADERSHIP AND MANAGEMENT

Theories and principles of leadership and management are applied to the health care disciplines.

Problem based tutorial or equivalent (four hours); independent study at a clinical site (six hours); one term

**Prerequisite(s):** A minimum of one year clinical work experience in a health care profession or permission of the instructor

**Antirequisite(s):** NURSING 4B06 A/B S

### HTHSCI 4HH3 A/B S - QUALITY MANAGEMENT

This course focuses on the role of leadership in quality management in health care organizations. Theories, concepts and best practices are utilized to examine issues in the health care work environments. Concepts include patient safety, safety culture, benchmarks and scorecards, program evaluation and risk/utilization management.

Lecture/seminar (three hours); one term

**Prerequisite(s):** Registered Nurse and permission of the instructor

**Antirequisite(s):** NURSING 4HH3 A/B S

### HTHSCI 4I03 A/B S - LEADING INTERPROFESSIONAL TEAMS

This course introduces health care providers to the concepts and dynamics of teams within health care organizations. Theories and concepts related to leadership, communication and health systems are applied in the current work environment.

Problem-based tutorial or equivalent (three hours); one term

**Prerequisite(s):** Health care professional and permission of the instructor

**Antirequisite(s):** NURSING 4I03 A/B S

### HTHSCI 4Z03 A/B S - CONFLICT MANAGEMENT

An introduction to the types and processes of conflict in health care organizations. Exploration and application of theories and principles of conflict and negotiations to situations in the health care environment.

Tutorial (three hours); one term

**Prerequisite(s):** A minimum of one year clinical work experience in a health care profession or permission of the instructor

**Antirequisite(s):** NURSING 4Z03 A/B S

## Hebrew

Courses in Hebrew are administered by the Department of Religious Studies, University Hall, Room 123, ext. 23109

<http://religiousstudies.mcmaster.ca>

#### Department Notes

1. Students are advised to consult both the Department (University Hall, Room 123) and the Undergraduate Timetable for a list of the courses offered in the current year.
2. Students pursuing the Interdisciplinary Minor in Jewish Studies are urged to take at least six units of Hebrew language as part of their List A requirements.

#### Courses

*If no prerequisite is listed, the course is open.*

### HEBREW 2A03 - INTRODUCTION TO BIBLICAL HEBREW I

An introduction to the basics of grammar, syntax and vocabulary of the language of the Hebrew Bible. The student will begin to read in the Hebrew Bible.

Lectures and discussion (four hours); one term



**Antirequisite(s):** HEBREW 2A06, RELIGST 2HC3

**Cross-list(s):** SCAR 2HC3

### HEBREW 2B03 - INTRODUCTION TO BIBLICAL HEBREW II

An introduction to more grammar, syntax and vocabulary of the language of the Hebrew Bible. The knowledge acquired should enable the student to read the simple prose and poetry of the Hebrew Bible.

Lectures and discussion (four hours); one term

**Prerequisite(s):** HEBREW 2A03 or permission of the instructor

**Antirequisite(s):** HEBREW 2A06, RELIGST 2HD3

**Cross-list(s):** SCAR 2HD3

### HEBREW 3A03 - INTERMEDIATE HEBREW I

A reading course in classical (biblical) Hebrew. Sample texts will be read from some or all of the following: the Hebrew Bible, Mishnah, ancient Hebrew inscriptions and the Dead Sea Scrolls.

Four hours (two lectures); one term

**Prerequisite(s):** HEBREW 2B03 or permission of the instructor

**Antirequisite(s):** HEBREW 3A06, RELIGST 3HC3

**Cross-list(s):** SCAR 3HC3

### HEBREW 3B03 - INTERMEDIATE HEBREW II

Further sample texts will be read from some or all of the following: the Hebrew Bible, the Mishnah, ancient inscriptions and the Dead Sea Scrolls.

Four hours (two lectures); one term

**Prerequisite(s):** HEBREW 2B03 or permission of the instructor

**Antirequisite(s):** HEBREW 3A06, RELIGST 3HD3

**Cross-list(s):** SCAR 3HD3

## History

Courses in History are administered by the Department of History, Chester New Hall, Room 619, ext. 24270

<http://history.humanities.mcmaster.ca/>

**Note Regarding Level IV Seminars** Level IV seminars are open only to students registered in Levels III or IV of an Honours History program. Enrollment will be limited to approximately 15 students per seminar. The Department is able to offer only a selection of the seminars listed below every year. Information on courses may be obtained from the Department. Seminar places will be allotted each March for the succeeding session; early application to the Department is essential.

#### Note Regarding Online Courses

Some courses will be available online, including the following:

- HISTORY 1DD3 - The Making of the Modern World, 1750-1945
- HISTORY 1M03 - History of Greece and Rome
- HISTORY 1P03 - A History of Magic
- HISTORY 2A03 - Modern Middle Eastern Societies
- HISTORY 2CS3 - Caribbean Slavery in the Atlantic World
- HISTORY 2EE3 - Science and Technology in World History
- HISTORY 2SH3 - Canadian Sport History
- HISTORY 3H03 - Italian Renaissance, 1300-1600
- HISTORY 3HQ3 - History of Quebec
- HISTORY 3JJ3 - Crime, Criminal Justice and Punishment in Modern History
- HISTORY 3KK3 - The Vietnam War
- HISTORY 3WW3 - Women in Canada and the U.S. from 1920
- HISTORY 3XX3 - Human Rights in History

Students should note, however, that not all of these courses will be available online every year.

### Department Notes

1. The Department of History offers six Level I courses, each of which is designed to introduce the student to the study of History at the university level.
2. Not every History course listed in this Calendar is offered every year. Students should consult the Department of History web site (<http://history.humanities.mcmaster.ca/>) in March for a list of courses that will be offered in the following academic year.
3. Enrolment in any Level IV History seminar will be limited to approximately 15 students. Students must be registered in a Level III or IV Honours History program to enrol.
4. Students interested in Ancient History are advised to examine the courses offered by the Department of Classics.
5. Historical experiences are vast and varied across time periods, nations and identity groups. The Department of History recommends that students take courses that reflect the diverse experiences of different peoples in various time periods and geographical locations. As part of the Truth and Reconciliation process in Canada, the department also strongly recommends that students take courses that focus in whole or in part on the experiences of Indigenous peoples.

### Courses

*If no prerequisite is listed, the course is open.*

### HISTORY 1CC3 - THE RISE OF EMPIRES, 500-1950

A thematic survey of the interactions among peoples, cultures, and the environment as structured by evolving political and economic systems in the pre-modern era.

Lectures and tutorials (three hours); one term

**Antirequisite(s):** HISTORY 1B03

### HISTORY 1DD3 - THE MAKING OF THE MODERN WORLD, 1750-1945

An introduction to themes of global oppression and resistance, trade and consumption, the movement of peoples and ideas, and environmental change across the 19th and 20th centuries.

Three hours (lectures and tutorials); one term

May be offered in person or online

### HISTORY 1EE3 - THE HISTORICAL ROOTS OF CONTEMPORARY ISSUES

An investigation of the complex historical roots of contemporary social, political, and economic issues.

Lectures and tutorials (three hours); one term

### HISTORY 1FF3 - EXPLORING HISTORY IN A SMALL GROUP SETTING

This small seminar is intended for Level I students with a strong interest in history. The discussion-based format will mirror the experience of studying history at a more senior level. Topics will vary, representative of the interests of the department's teaching staff.

Seminar (three hours); one term

**Prerequisite(s):** Registration in Humanities 1 or Social Sciences 1; and Grade 12 History, 3 units of level I History, or permission of the department.

**Antirequisite(s):** HISTORY 2HI3

### HISTORY 1M03 - HISTORY OF GREECE AND ROME

The history of Greece and Rome from the bronze age to the fall of Rome based on literary, documentary and archaeological evidence.

Two lectures, one tutorial; one term

**Cross-list(s):** CLASSICS 1M03 .

*This course is administered by the Department of Classics. May be offered in person or online.*

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### HISTORY 1P03 - A HISTORY OF MAGIC

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This course probes the meaning and influence of magic in human societies from ancient societies through to the present. Topics include magic and religion, the social and political practices of astrology and charms, medicine and healing, the European Witchcraze and persecution, magic and political protest, and contemporary pop culture (i.e. Harry Potter).

Two lectures, one tutorial; one term

May be offered in person or online.

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### HISTORY 2A03 - MODERN MIDDLE EASTERN SOCIETIES

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A survey of the political and cultural history of the Middle East from 1800 to the present, with emphasis on contemporary social problems emerging from post-WWI colonialism, nationalism, Islamism and Arab-Israeli relations.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** PEACEST 2F03

*May be offered in person or online.*

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### HISTORY 2CC3 - THE MEDIEVAL WORLD 400-1050

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The Early Middle Ages: The barbarian kingdoms to the feudal monarchies.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

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### HISTORY 2CS3 - CARIBBEAN SLAVERY IN THE ATLANTIC WORLD

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This course explores the system of slavery in the Caribbean from the sixteenth to the nineteenth centuries within the context of the Atlantic World. It addresses such topics as slave resistance, the social, economic, and cultural consequences of slavery, and its abolition in the nineteenth century.

Three hours (two lectures, one tutorial); one term

**Prerequisite(s):** Registration in Level II or above

*May be offered in person or online.*

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### HISTORY 2DD3 - THE MEDIEVAL WORLD 1050-1400

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The High and Late Middle Ages: Themes in European history, society and culture.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

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### HISTORY 2DF3 - ART AND REVOLUTIONS IN FRANCE, 1789-1914

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This course examines the intersections of visual culture and the political revolutions of 1789, 1830, 1848 and 1870, as well as stylistic innovations in art including Romanticism, Realism, Impressionism, Pointillism, Fauvism, and Cubism.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Cross-list(s):** ARTHIST 2DF3

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### HISTORY 2EE3 - SCIENCE AND TECHNOLOGY IN WORLD HISTORY

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An introduction to the manner in which science and technology influence society and how society influences science and technology, paying particular attention to the transfer of knowledge and machines over time and between cultures.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level II or above

*May be offered in person or online.*

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### HISTORY 2EN3 - CARIBBEAN HISTORY

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This course considers the transition to freedom in the Caribbean from the late nineteenth century and the social, political, and cultural transformation of the region following the end of slavery.

Two lectures, one tutorial (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** HISTORY 3RC3

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### HISTORY 2G03 - MODERN LATIN AMERICA SINCE 1820

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Liberalism, nationalism, militarism and the various revolutions will be covered, as well as the U.S. role in Latin America and the Caribbean.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above

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### HISTORY 2GR3 - A HISTORY OF MONSTERS

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From Beowulf to the day after tomorrow, this course examines the cultural evolution of monsters, from the unknown to the forsaken to the darker corners of the self.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

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### HISTORY 2GW3 - A HISTORY OF GLOBAL WAR

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A survey of the course and development of the two global wars of the twentieth century covering the period from 1914 to 1945. The emphasis is on the military, economic, and political events that characterised the conflicts.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** HISTORY 2S03, 2Y03

**Cross-list(s):** PEACEST 2GW3

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### HISTORY 2H03 - TUDOR AND STUART BRITAIN, 1485-1714

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This survey course examines a period of profound political, religious, economic and social change in Britain during the reigns of the Tudor and Stuart Dynasties.

Three hours; lectures and tutorial

**Prerequisite(s):** Registration in Level II or above

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### HISTORY 2HH3 - PIRATES, PILGRIMS AND SLAVES IN THE MEDITERRANEAN, 1450-1750

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This course examines the Mediterranean region as a zone of intense cultural interaction. Particular emphasis will be given to the interaction between Christian, Jewish and Islamic societies.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level II or above

**Cross-list(s):** SCAR 2FF3

**Antirequisite(s):** RELIGST 2FF3

### HISTORY 2I13 - MODERN GERMANY

This course examines the complexities of German social and political history since 1890, including World War One, Third Reich, cold war division, questions of national identity and the peaceful revolution of 1989.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** PEACEST 2I13

### HISTORY 2IS3 - IMPEACHED! SCANDAL AND INTRIGUE IN AMERICAN POLITICAL AND SOCIAL HISTORY

This course explores how the roots of contemporary American politics can be explained through analysis of crucial junctures in American history, and also advance wider analysis of histories of race, gender and class in the US.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

### HISTORY 2J03 - AFRICA UP TO 1800

Survey of the political, social and economic history of Africa including the evolution of early human cultures, the rise and fall of civilizations and the contact between Africans and Europeans.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** PEACEST 2J03

### HISTORY 2JJ3 - AFRICA SINCE 1800

Survey of the political, social and economic history of Africa including the partitioning of the continent, the practices of European imperialism, independence and the process of national building.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** PEACEST 2JJ3

### HISTORY 2KK3 - HISTORY OF CAPITALISM

A History of Capitalism from 1500 to the present. This team-taught course introduces students to characteristics of capitalism, core institutions, and explanations for periodic crises. There are opportunities to read selections from leading proponents, agents, critics, and reformers. Essay topics will be negotiated with students, so that there will be an alignment with their programme/faculty.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level II and above

**Cross-list(s):** IBH 2BF3

### HISTORY 2MC3 - MODERN CHINA

A survey of China from 1840 to the present, with emphasis on political developments, revolutionary movements, social change, and China's relations with East Asia and the West.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

### HISTORY 2Q03 - IMPERIAL RUSSIA

A survey of Russian history from Peter the Great to the Revolutions of 1917.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

### HISTORY 2Q03 - THE SOVIET UNION

A history of the Soviet Union from 1917 to the present with an emphasis on social history, culture and identity.

Lectures and discussion (Three hours); one term

**Prerequisite(s):** Registration in Level II or above

### HISTORY 2R03 - U.S. HISTORY TO THE CIVIL WAR

A survey of the political, cultural, social and economic development of the United States to 1877, from the colonial and revolutionary eras to the Civil War and Reconstruction.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

### HISTORY 2RR3 - U.S. HISTORY SINCE THE CIVIL WAR

A survey of the political, cultural, social and economic development of the United States from Reconstruction to the present.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

### HISTORY 2SH3 - CANADIAN SPORT HISTORY

An exploration of selected topics and themes in the history of sport in Canada.

Three hours (two lectures, one tutorial); one term

**Prerequisite(s):** Registration in Level II or above

*May be offered in person or online.*

### HISTORY 2SS3 - LIBERTY, EMPIRE AND INDUSTRY: BRITAIN, 1688-1867

A wide-ranging survey of the British experience from the Glorious Revolution of 1688 to the widening of the Parliamentary franchise that included working-class men for the first time in 1867.

Three hours (two lectures, one tutorial); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** HISTORY 2MM3

### HISTORY 2T03 - SURVEY OF CANADIAN HISTORY, BEGINNINGS TO 1885

A survey of the political, cultural, social and economic development of Canada to 1885, from first nations and colonial origins to Confederation and the North West Rebellion.

Two lectures, one tutorial (three hours); one term

**Prerequisite(s):** Registration in Level II or above

### HISTORY 2TT3 - SURVEY OF CANADIAN HISTORY, 1885 TO THE PRESENT

A survey of the political, cultural, social and economic development of modern Canada, from the North West Rebellion and nation-building era to the present.

Two lectures, one tutorial (three hours); one term

**Prerequisite(s):** Registration in Level II or above

### HISTORY 2UV3 - AMERICAN FOREIGN RELATIONS SINCE 1898

Survey of major events and turning points of U.S. diplomatic history since the late 19th century. Emphasis on cultural dimensions of the American empire and selected historiographical controversies.

Two lectures, one tutorial (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** PEACEST 2UV3

### HISTORY 2V03 - RE-MAKING HISTORY

This course invites students to participate in the remaking of a moment in history-in the emotions, debates and conflicts that made that event important for our twenty-first-century world. See the department website for this year's topic. The course will consist of lectures and experiential learning, individual and group assignments, and a weekend conference.

**Prerequisite(s):** Registration in Level II or above

### HISTORY 3CG3 - CANADIANS IN A GLOBAL AGE, 1914 TO THE PRESENT

This course considers ways in which global developments influenced and were influenced by Canadian peoples, with a thematic emphasis on selected developments such as wars and revolutions, the development of international alliances and organizations, and the spread of mass communication and consumer culture.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

### HISTORY 3CH3 - CATASTROPHIC HISTORY: NATURAL & TECHNOLOGICAL DISASTERS

An examination of how natural and technological disasters have shaped past societies and how catastrophe features as an important method of understanding the human condition.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

### HISTORY 3CW3 - CANADA IN A WORLD OF EMPIRES, 1492-1919

A thematic exploration of the interactions of European and North American cultures and societies in the northern half of the continent, with special attention to the fate of European imperial projects, ideologies and institutions in the new world.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

### HISTORY 3DD3 - JEWS AND JESUS

A study of Judaism in the Greco-Roman World. The course will explore selected questions in political history, the development of sects and parties, the role of the temple, apocalypticism and the Dead Sea Scrolls.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Cross-list(s):** SCAR 3DD3

**Antirequisite(s):** RELIGST 3DD3

*This course is administered by the Department of Religious Studies.*

### HISTORY 3DF3 - ART AND POLITICS IN SECOND EMPIRE FRANCE

This course examines the intersections of politics and visual culture in France 1852-1870 and critical issues related to photography, painting, sculpture, printmaking, architecture and the Universal Expositions of 1855 and 1867.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** ARTHIST 3J03

**Cross-list(s):** ARTHIST 3DF3

### HISTORY 3EC3 - CHINESE INTELLECTUAL TRADITIONS

A survey of philosophical traditions and political thought in pre-modern Chinese history.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

### HISTORY 3FF3 - NAZI GERMANY

This course examines the origins and growth of National Socialism, its twelve years in power and the war that led to its demise. Themes under consideration will also include daily life in Germany in the 1930s and the Holocaust.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

### HISTORY 3GN3 - MOMENTS IN TWENTIETH CENTURY HISTORY THROUGH THE GRAPHIC NOVEL

This course will consider the graphic novel as an historical source. It will pair, in chronological order, graphic novels, which address a moment in twentieth-century history, with related scholarly studies of the same moment.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

### HISTORY 3H03 - ITALIAN RENAISSANCE, 1300-1600

An examination of the nature and influence of one of the most important cultural episodes in European history. Topics will include the Italian merchant and urban life, political culture, humanism, art and architecture.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

*May be offered in person or online.*

### HISTORY 3HI3 - ADVANCED HISTORICAL INQUIRY

In-depth investigation of historical issues and problems in a small class setting. Topics will vary, representative of the interests of the department's teaching staff.

Seminar (three hours); one term

**Prerequisite(s):** One of HISTORY 1FF3, 2HI3; and registration in Level III of an Honours program in History; or permission of the department

### HISTORY 3HQ3 - HISTORY OF QUEBEC

This course is a lecture-seminar survey of Quebec history from the British Conquest of 1760 to the present. Topics to be covered include Quebec's place in a new empire, colonial society and economy, the rise of political protest, rebellion, and nationalism, the role of key institutions such as the Catholic Church, the industrialization of Quebec, and the postwar modernization of state and society. Students will engage in seminar discussions and be expected to complete a number of written assignments stressing critical and analytical skills.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level II or above

*May be offered in person or online.*

### HISTORY 3I03 - THE INTERNATIONAL RELATIONS OF THE EUROPEAN POWERS, 1870-1945

An examination of the origins and course of the First World War; the failure of post-war stabilization; and the origins and course of the Second World War.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above



### HISTORY 3J03 - THE UNITED STATES IN THE 1960S

An examination of the political, social and cultural changes that occurred in the United States during the 1960s. Topics include the civil rights struggle, Black Power movement, New Left, opposition to the Vietnam War, counterculture, feminism and the conservative backlash.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

### HISTORY 3JJ3 - CRIME, CRIMINAL JUSTICE AND PUNISHMENT IN MODERN HISTORY

A study of the changing face of the institutions of criminal justice and of criminal behaviour, as revealed in statistical and conventional historical works. The focus will be on North America, Great Britain and France.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above, with a minimum of six units of History

### HISTORY 3KK3 - THE VIETNAM WAR

The history of the First and Second Indochina Wars (1945-1973) is examined from multiple perspectives. Explores how and why the war was fought, as well as its global legacy.

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** PEACEST 3KK3

### HISTORY 3N03 - POVERTY, PRIVILEGE AND PROTEST IN CANADIAN HISTORY

An examination of the political, economic, and social factors shaping the persistence of poverty in Canada in the 1800s and 1900s, together with an analysis of reactions to such inequality. This includes investigation of ideological divisions, ethnic relations, and gender dynamics within the working class and within the labour movement.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

**Cross-list(s):** IBH 3BC3

### HISTORY 3RU3 - EARLY MODERN RUSSIA

This course explores the changing character of Russia in the pre-modern period. It provides an important foundation for later courses on Imperial and Soviet history.

Lecture and discussion (three hours)

**Prerequisite(s):** Registration at Level II or above

### HISTORY 3UA3 - THE HISTORY OF THE FUTURE

This course examines how technology has historically shaped social ideas about the future and how these social ideas about the future shaped subsequent technology.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

### HISTORY 3W03 - WOMEN IN CANADA AND THE U.S. TO 1920

This course examines key areas of women's history, such as indigenous cultures, slavery, immigration, religion, witchcraft, the family, sexuality, paid and unpaid labour and the first wave of the women's movement.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** WOMENST 3G03

### HISTORY 3WW3 - WOMEN IN CANADA AND THE U.S. FROM 1920

This course examines key areas of women's history, such as the impact of the Great Depression and the Second World War, the civil rights movement, the sexual revolution and the second wave of the women's movement.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** WOMENST 3GG3

*May be offered in person or online.*

### HISTORY 3XX3 - HUMAN RIGHTS IN HISTORY

A thematic examination of the global historical evolution of the notion of human rights from antiquity up to the Universal Declaration of Human Rights in the 20th century.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level II or above

**Cross-list(s):** PEACEST 3XX3

*May be offered in person or online.*

### HISTORY 3YY3 - BRITAIN AND THE FIRST WORLD WAR

This course is designed to be an in-depth thematic exploration of the British experience of the First World War. Military, political, social, economic, technological and cultural issues and concerns will be considered.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** PEACEST 3YY3

### HISTORY 3ZZ3 - JUDAISM IN THE MODERN WORLD

Jews and Judaism in a century of catastrophe and renewal. The progress of Emancipation; Jews in Canada and the U.S.; the Jewish catastrophe in Europe; the Jewish identities in literature and the arts.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** RELIG ST 2XX3, 3ZZ3

**Cross-list(s):** SCAR 3ZZ3

*This course is administered by the Department of Religious Studies.*

### HISTORY 4AW3 - NORTH ATLANTIC CROSSINGS, 1750-1940

This course focuses on the cultural and intellectual interplay between Britain, Canada, and the United States, focusing on the contexts of Enlightenment; the effect of transatlantic revolution; the rise of evangelicalism; the Darwinian revolution; and the differing origins and outcomes of the 'progressive' impulse.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4CE3 - EARLY CANADIAN HISTORY

Selected them in early Canadian history. Information on the precise focus of the seminar may be obtained in the Department each February.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4CM3 - MODERN CANADIAN HISTORY

A selected theme in the history of modern Canada. Information on the precise focus of the seminar may be obtained in the Department each February.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4CZ3 - ADVANCED RESEARCH IN EARLY CANADIAN HISTORY

The focus of this course is on the formulation and execution of an original research paper on a topic related to early Canadian history.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4E03 - MEDIEVAL PEOPLE

An examination of some representative medieval lives. Figures discussed may include the abbess Hildegard of Bingen, the scholars and lovers Heloise and Abelard, the knight William Marshall, and the 'Good Wife' of the Magier de Paris.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4FF3 - HISTORY OF HEALTH AND MEDICINE

Themes will vary, and may include health and medicine from a comparative perspective, the relationship between imperialism and medicine, public health and urban environment, exercise and health.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4G03 - NATION AND GENOCIDE IN THE MODERN WORLD

A thematic study of genocide and mass murder in the twentieth century from a human rights and humanitarian law perspective. The first part of the course covers the theoretical and legal aspects of genocide studies. The second part explores specific case studies of colonial massacres, the Holocaust, and the Cambodian and Rwanda genocides.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History or Peace Studies

**Cross-list(s):** PEACEST 4GG3

*Departmental permission required.*

### HISTORY 4H03 - THE MAKING OF MODERN CHINA

An exploration of changes and continuities in 19th - and 20th -century China.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4HH3 - CHINA'S GREAT CULTURAL REVOLUTION

A critical assessment of the origins, development, and consequences of the darkest political campaign in 1960s-70s China.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4HP3 - THE HISTORY PRACTICUM

The history practicum offers a capstone experience for upper-level students. It is an opportunity for experiential learning in the field of history. Selected students will work closely with a supervisor on an ongoing historical project at one of Hamilton's many heritage sites.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV or above of any Honours program in History

**Antirequisite(s):** HISTORY 3HP3

*Departmental permission required.*

### HISTORY 4I03 - WOMEN AND SOCIAL MOVEMENTS IN THE 19TH- AND 20TH- CENTURY UNITED STATES

Women's involvement in social movements such as anti-lynching, unionization, feminism and civil rights is used to discuss power, social change, race, femininity, masculinity and class in U.S. history.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4JJ3 - U.S. FOREIGN RELATIONS

Topics in the history of the United States Foreign relations in the modern era.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4K03 - ENVIRONMENT AND ENVIRONMENTALISM IN MODERN NORTH AMERICA

Explores how different social groups in the United States and Canada confronted the sometimes adverse impact of urban and industrial growth on the physical environment of their communities.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4KK3 - RESEARCH ON THE BRITISH ATLANTIC, 1750-1850

This seminar course will generate research projects on topics ranging from the political, cultural, and social impacts of the American Revolution on Atlantic societies, the nature of Atlantic slavery in an age of emancipation, the nature of counter-revolutionary impulses, and the creation of new settler societies after the American Revolution.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4LJ3 - LAW, ORDER AND JUSTICE IN CANADA, 1800-2000

This research seminar examines criminal justice in Canada from colonial to recent times. Topics include criminal codes, court structure, rules of evidence, jury reforms, summary justice, police, punishments, and prominent trials.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4LP3 - THE CULTURAL HISTORY OF PARIS, 1789-1914

Topics to be examined include: developments in architecture and city planning; the conservation of historic buildings and monuments; cultural institutions such as museums and art exhibitions; and the impact of gender, race and economics on experiences and concepts of identity in France's capital.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

**Cross-list(s):** ARTHIST 4LP3

*Departmental permission required.*

### HISTORY 4MM3 - WHITE SUPREMACISTS AND HUMAN RIGHTS ACTIVISTS IN MODERN CANADIAN HISTORY

This course examines the prejudice and discrimination targeting racialized groups such as Indigenous Peoples, African Canadians, Asian immigrants, Jews, and immigrants from Southern and Eastern Europe. The course also examines human rights activism.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

**Antirequisite(s):** HISTORY 4A06 A/B

*Departmental permission required.*

### HISTORY 4NN3 - UTOPIA AND ITS HISTORIES

We remain fascinated with competing ideas of what constitutes an ideal society. This seminar explores changes and continuities in western ideas of utopia and dystopia over the past 500 years.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4P03 - CONTEMPORARY EUROPE

Topics in the history of Europe during the 20th Century.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4PP3 - DIVIDED GERMANY

This seminar will examine the social, political, and cultural development of East and West Germany from Allied occupation to the fall of the Berlin Wall.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4QQ3 - THE SOVIET EXPERIENCE

Focuses on themes and issues of historical and historiographical importance in Russia from 1917.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4QR3 - QUANTITATIVE RESEARCH ON MAJOR TOPICS IN HISTORY

A study of selected major topics where statistics have been prominent (for example, the emergence of modern economies, the slave trade, class and wealth, local and regional studies, crime); assessment of statistical evidence; collecting and analyzing data for a research paper.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History.

*Departmental permission required.*

### HISTORY 4RP3 - INDEPENDENT RESEARCH PROJECT

A reading and/or research program under the supervision of one member of the Department. A major paper is required, as well as a formal oral examination.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History with a Grade Point Average of at least 9.0

**Antirequisite(s):** HISTORY 4RP6 A/B

*Departmental permission required.*

### HISTORY 4RP6 A/B - ADVANCED INDEPENDENT RESEARCH

A reading and research program under the supervision of one member of the Department. A major paper is required, as well as a formal oral examination.

Seminar (two hours); two terms

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History with a Grade Point Average of at least 10.0

**Antirequisite(s):** HISTORY 4RP3

*Departmental permission required.*

### HISTORY 4RR3 - TRUTH AND RECONCILIATION AFTER ATROCITY

This course explores truth commissions and other truth-seeking mechanisms established globally to address historical atrocities and contemporary human rights abuses.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History or Peace Studies

**Cross-list(s):** PEACEST 4RR3

*Departmental permission required.*

### HISTORY 4S03 - THE GERMAN REFORMATION

This course examines the Reformation as a critical religious, political and cultural event. Topics include Lutheran and Calvinist theology, gender, confessionalization and the role of printing.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4SC3 - SPORT AND CULTURE

Themes and topics critically examining issues in sport historiography. Topics include: masculinities, social class, race, and gender construction; nationalisms; place, space, and aesthetics; clubs, class and citizenship; hegemonic sport; and sport, meaning, and representation, among other things. Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4SS3 - EARLY MODERN FRANCE, 1450-1789

France was without question one of the most powerful polities in early modern Europe and serves as a useful focal point for understanding the emergence of absolutism, colonization, imperialism, urbanization and changing gender and social roles.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

*Departmental permission required.*

### HISTORY 4YY6 A/B - THE WORLD WARS

An examination of the two world wars of the twentieth century. Topics may include the military, political, social, economic and intellectual history of the conflicts.

Seminar (two hours); two terms

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History

**Antirequisite(s):** HISTORY 4Y06

*Departmental permission required.*

## Human Behaviour

Courses in HUMBEHV are administered by the Department of Psychology, Neuroscience & Behaviour.

Psychology Building, Room 102, ext. 23000

<http://www.science.mcmaster.ca/pnb/>

#### Courses

*If no prerequisite is listed, the course is open.*

See also courses in *PSYCH*.

### HUMBEHV 2A06 A/B - INTRODUCTION TO AUTISM SPECTRUM DISORDER (ASD)

Apply neurodevelopmental and behavioural characteristics to Autism Spectrum Disorder (ASD) and its core features and diagnostic criteria. This course provides an introduction to understanding individuals with ASD.

Three hour lectures; two terms

**Prerequisite(s):** Registration in Level II or above of the B.A.Sc. in Human Behaviour (Autism & Behavioural Science Specialization) program

### HUMBEHV 2B06 A/B - INTRODUCTION TO APPLIED BEHAVIOUR ANALYSIS (ABA) I

Apply principles of behaviour analysis. Access and interpret journal publications in the field of autism and applied behaviour analysis.

Three lectures; two terms

**Prerequisite(s):** Registration in Level II or above of the B.A.Sc. in Human Behaviour (Autism & Behavioural Science Specialization) program

### HUMBEHV 2C03 - SPECIALIZED INSTRUCTIONAL STRATEGIES (SIS) I

Analyze evidence-based behavioural approaches to teaching individuals with autism new skills.

Three hour lectures; one term

**Prerequisite(s):** Registration in Level II or above of the B.A.Sc. in Human Behaviour (Autism & Behavioural Science Specialization) program

### HUMBEHV 2FP6 - FIELD PLACEMENT I

Experience 126 hours in the field working within individuals with Autism Spectrum Disorder or other behavioural challenges.

*This course is evaluated on a Pass/Fail basis.*

Placement (126 hours); Spring/Summer Term

**Prerequisite(s):** HUMBEHV 2A06 A/B, 2B06 A/B, 2C03 and completion or registration in HUMBEHV 3F03

**Co-requisite(s):** HUMBEHV 2FS3

### HUMBEHV 2FS3 - FIELD PLACEMENT I SEMINAR

Seminar to be taken concurrently with Field Placement I, HUMBEHV 2FP6.

Online seminar/discussion (two hours); Spring/Summer term

**Co-requisite(s):** HUMBEHV 2FP6

### HUMBEHV 2HB0 - HUMAN BEHAVIOUR PROFESSIONAL DEVELOPMENT

A professional development course supplementing the Bachelor of Applied Science in Human Behaviour program which must be completed prior to Level III.

*This course is evaluated on a Pass/Fail basis.*

One lecture; one term

**Prerequisite(s):** Registration in Level II of a B.A.Sc. in Human Behaviour program

### HUMBEHV 2L03 - ECE CURRICULUM I

Examine and evaluate the impact of personal beliefs and values in regard to professional practice with children, families and communities. Utilize theories of curriculum to examine the interests and intelligence of children.

Lectures, may include blended content (three hours); one term

**Prerequisite(s):** Registration in Level II or above of the B.A.Sc. in Human Behaviour (Early Childhood Education Specialization) program

### HUMBEHV 2M03 - LEARNING ENVIRONMENT I

Plan, organize, implement and evaluate program ideas and activities. Develop a repertoire of resources by setting up an engaging learning environment.

Lectures, may include blended content (three hours); one term

**Prerequisite(s):** Registration in Level II or above of the B.A.Sc. in Human Behaviour (Early Childhood Education Specialization) program

### HUMBEHV 2TL3 - RESPONSIVE CARE FOR INFANTS AND TODDLERS

In this course, students will explore positive and responsive communications with infants and toddlers. Students will design appropriate environments based on developmentally appropriate practices.

Lectures, may include blended content (three hours); one term

**Prerequisite(s):** Registration in Level II or above of the B.A.Sc. in Human Behaviour (Early Childhood Education Specialization) program



### HUMBEHV 2XP6 - ECE FIELD PLACEMENT I

Apply knowledge, skills and ethics in a professional practice environment while working with individuals with autism or behavioural needs or their caregivers.

*This course is evaluated on a Pass/Fail basis.*

Professional practice (144 hours); Session I, Spring/Summer Term

**Prerequisite(s):** HUMBEHV 2L03, 2M03, 2TL3

**Co-requisite(s):** HUMBEHV 3XS3

### HUMBEHV 3CB3 - TREATING CHALLENGING BEHAVIOUR I

Students will learn theory behind assessing/analyzing why people engage in problem behaviours. Emphasis will be placed on ethical considerations based on the BACB ethical code.

Three lectures, tutorial (two hours); one term

**Prerequisite(s):** HUMBEHV 2B06 A/B, 3F03

**Antirequisite(s):** HUMBEHV 4K06 A/B

### HUMBEHV 3D03 - APPLIED BEHAVIOURAL ANALYSIS (ABA) II

Apply principles of behaviour analysis. Access and interpret journal publications in the field of autism and applied behaviour analysis.

Three hour lecture; one term

**Prerequisite(s):** HUMBEHV 2B06 A/B and registration in Level IV of the B.A.Sc. in Human Behaviour (Autism & Behavioural Science Specialization) program

### HUMBEHV 3E06 A/B - BEHAVIOURAL SKILL BUILDING

This course focuses on curriculum development with an emphasis on speech and language, social and play skills, personal care skills and inclusion into less restrictive environments.

Three hour lecture; two terms

**Prerequisite(s):** Registration in Level III or above of the B.A. Sc. in Human Behaviour (Autism & Behavioural Science Specialization) program

### HUMBEHV 3F03 - ETHICS AND PROFESSIONALISM

This course will introduce the foundations of ethical thinking and will review the different perspectives and rationale for ethical decision making within a behavioural framework.

On-line lecture/discussions (three hours); one term

**Prerequisite(s):** Registration in Level III or above of the B.A.Sc. in Human Behaviour (Autism & Behavioural Science Specialization) program

### HUMBEHV 3FP9 - FIELD PLACEMENT II

The placement will consist of 210 hours of participation in an ABA / IBI program for children with ASD. The student will further develop their technical skills through application of their knowledge gained in the prerequisite courses. In addition to implementing a further range of treatment plans, students will be required to critically evaluate ongoing interventions within the placement.

*This course is evaluated on a Pass/Fail basis.*

Placement (210 hours); Spring/Summer Term

**Prerequisite(s):** HUMBEHV 3E06 A/B, 3G03

**Co-requisite(s):** HUMBEHV 3FS3

### HUMBEHV 3FS3 - FIELD PLACEMENT II SEMINAR

Seminar to be taken concurrently with Field Placement II, HUMBEHV 3FP9.

Online seminar/discussion (two hours); Spring/Summer term

**Co-requisite(s):** HUMBEHV 3FP9

### HUMBEHV 3G03 - SPECIALIZED INSTRUCTIONAL STRATEGIES (SIS) II

This course introduces the student to evidence-based behavioural approaches applied in teaching individuals with autism. Topics will be approached by providing the student with an understanding of the terms used, a description of the teaching techniques characterized in each of the models (where applicable) and a basic understanding of the conceptual elements motivating the approaches.

Three hour lecture; one term

**Prerequisite(s):** HUMBEHV 2C03 and registration in Level III or above of the B.A.Sc. in Human Behaviour (Autism & Behavioural Science Specialization) program

### HUMBEHV 3H03 - WORKING WITH FAMILIES AND TEAMS

This course presents the student with theories, terminology and applications underlying current approaches to teamwork and working with the families of children with Autism Spectrum Disorders. The focus will be on effective collaboration with a multi-disciplinary team, which is essential to successful intensive behavioural intervention. Students will develop the interpersonal, job-oriented skills necessary to problem-solve as team members in a flexible, empathetic, resourceful, and productive manner.

Three hour lecture; one term

**Prerequisite(s):** Registration in Level IV of the B.A.Sc. in Human Behaviour (Autism & Behavioural Science Specialization) program

### HUMBEHV 3IP3 A/B S - INQUIRY PROJECT

Students will explore a topic of their choosing under the supervision of an approved faculty member. Over the course of their project, students will develop the skills necessary to systematically investigate and assess an existing body of empirical literature.

**Prerequisite(s):** Registration in Level III or above of an Honours Human Behaviour (B.A.Sc.) program and permission of faculty supervisor and program director

*Not open to students with credit in PNB 3Q03.*

### HUMBEHV 3MD3 - RESEARCH METHODS FOR HUMAN BEHAVIOUR

This course will give students an overview of how to think empirically, and of the methods psychologists use to study behavior.

Three lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level III or above of an Honours Human Behaviour (B.A.Sc.) program

**Antirequisite(s):** PNB 3RM3

First offered in 2020-2021.

### HUMBEHV 3003 - ECE CURRICULUM II

Integrate and evaluate various curricula and theories of early learning. Reflect on the impact of diverse beliefs and values systems and the role in curriculum development.

Lectures, may include blended content (three hours); one term

**Prerequisite(s):** HUMBEHV 2L03 and registration in Level III or above of the B.A.Sc. in Human Behaviour (Early Childhood Education Specialization) program

### HUMBEHV 3P03 - LEARNING ENVIRONMENT II

Recognizing that children's interests and abilities are key components of effective learning environments, develop advanced skills in planning curriculum for children. Plan developmentally appropriate activities.

Lectures, may include blended content (three hours); one term

**Prerequisite(s):** HUMBEHV 2M03 and registration in Level III or above of the B.A.Sc. in Human Behaviour (Early Childhood Education Specialization) program

### HUMBEHV 3Q03 - HEALTH, SAFETY & NUTRITION

Apply the basic principles of health, safety & nutrition in young children. Transfer the principles of health policies and practices to situations in child care settings.

Lectures, may include blended content (two hours); one term

**Prerequisite(s):** Registration in Level III or above of the B.A.Sc. in Human Behaviour (Early Childhood Education Specialization) program

### HUMBEHV 3RS3 - ABA RESEARCH DESIGNS

This course will prepare students on how to conduct research using an ABA framework. A focus will be on how to conduct and draw conclusions based on single subject designs.

Three lectures; one term

**Prerequisite(s):** HUMBEHV 2B06 A/B, and registration Level III or above of the B.A.Sc. in Human Behaviour (Autism & Behavioural Science Specialization) program

### HUMBEHV 3ST3 - STATISTICS FOR HUMAN BEHAVIOUR

This course will give students an overview of descriptive and inferential statistics as applied in psychology.

Three lectures; one term

**Prerequisite:** Registration in Level III or above of an Honours Human Behaviour (B.A.Sc.) program

**Antirequisite(s):** HUMBEHV 3HB3, SOCSCI 2J03

*Not open to students with credit or registration in STATS 2B03, PNB 2XE3, 3XE3, ARTSSCI 2R03, COMMERCE 2QA3, or HTHSCI 2A03.*

### HUMBEHV 3XP6 - ECE FIELD PLACEMENT II

Building on previous experience, students will participate in early learning environments through field placement. Outcomes of this course are to expand the students teaching techniques and to provide opportunities for practical application of program related content.

*This course is evaluated on a Pass/Fail basis.*

Professional practice (144 hours); Session II, Spring/Summer Term

**Prerequisite(s):** HUMBEHV 2XP6

**Co-requisite(s):** HUMBEHV 3XS3

### HUMBEHV 3XS3 - THEORY TO PRACTICE I AND II

Students will be supported throughout their field placement experience. Pedagogy for the Early Years with focus on the four foundations: belonging, well-being, engagement, and expression.

Online lecture/discussions (two hours); Spring/Summer Term

**Co-requisite(s):** HUMBEHV 2XP6, 3XP6

### HUMBEHV 4CB3 - TREATING CHALLENGING BEHAVIOUR II

Students will learn how to develop intervention plans for individuals engaging in problem behaviours. Emphasis will be placed on utilizing the least intrusive, least restrictive and most effective treatment.

Lecture (three hours), tutorial (two hours); one term

**Prerequisite(s):** HUMBEHV 3CB3

**Antirequisite(s):** HUMBEHV 4K06 A/B

### HUMBEHV 4HB3 - SEMINAR I FOR HONOURS HUMAN BEHAVIOUR (B.A.SC.)

This course provides students with an opportunity to develop skills for investigations in selected areas of human behaviour.

Seminar and discussion (three hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours Human Behaviour (B.A.Sc.) program

### HUMBEHV 4HC3 - SEMINAR II FOR HONOURS HUMAN BEHAVIOUR (B.A.SC.)

This course provides students with an opportunity to develop skills for investigations in selected areas of human behaviour.

Seminar and discussion (three hours); one term

**Prerequisite(s):** Registration in Level IV of an Honours Human Behaviour (B.A.Sc.) program

### HUMBEHV 4I03 - PARENT AND STAFF TRAINING

Students will learn and practice techniques for individual and group presentation formats for the training of families or professionals. Students will also learn how to maintain procedural integrity, use performance feedback, evaluate the effects of training, and understand the challenges that may impact before, during and after mediator training. Emphasis will be placed on in-class presentations and role-play practice.

Lectures, may include blended content (three hours); one term

**Prerequisite(s):** Registration in Level IV of the B.A.Sc. in Human Behaviour (Autism & Behavioural Science Specialization) program

### HUMBEHV 4IP3 A/B S - SENIOR INQUIRY PROJECT

Students will explore a topic of their choosing under the supervision of an approved faculty member. Over the course of their project, students will develop the skills necessary to systematically investigate and assess an existing body of empirical literature.

**Prerequisite(s):** Registration in Level IV of an Honours Human Behaviour (B.A.Sc.) program and permission of faculty supervisor and program director. Students are expected to have a minimum GPA of 8.0. Cannot be taken concurrently with HUMBEHV 3IP3 A/B, S.

*Not open to students with credit or registration in HUMBEHV 4RP6 A/B, PNB 3Q03, 4Q03.*

### HUMBEHV 4J03 - TRANSITION PLANNING AND IMPLEMENTATION

This course will prepare the student for assisting in planning and mediating transitions for children with ASD within and across home, school and community settings.

Three lectures (may include blended content); one term

**Prerequisite(s):** Registration in Level IV of the B.A.Sc. in Human Behaviour (Autism & Behavioural Science Specialization) program

### HUMBEHV 4N03 - PRINCIPLES OF ETHICAL PRACTICE

Apply principles of fairness, equity and diversity to support the development and learning of children, within the context of their family, culture and society. Examine professional ethics and partnership practices as it relates to working with children and families.

Lectures, may include blended content (three hours); one term

**Prerequisite(s):** Registration in IV of the B.A.Sc. in Human Behaviour (Early Childhood Education Specialization) program

### HUMBEHV 4RP6 A/B - INDEPENDENT RESEARCH PROJECT

Students will explore a topic of their choosing under the supervision of a faculty member by systematically investigating an existing body of empirical literature or data set to produce a major scholarly work.

For information and guidelines regarding this course, refer to the department web site at: <http://www.science.mcmaster.ca/pnb/undergraduate/courses.html> and click on HUMBEHV 4RP6 A/B, or contact the program director.

**Prerequisite(s):** Registration in Level IV of an Honours Human Behaviour (B.A.Sc.) program and permission of the faculty supervisor and program director. Students are expected to have a minimum GPA of 10.0.

Cannot be taken concurrently with HUMBEHV 3IP3 A/B S.

*Not open to students with credit or registration in HUMBEHV 4IP3 A/B S.*

### HUMBEHV 4SC6 A/B - SCIENCE COMMUNICATION IN THE BEHAVIOURAL SCIENCES

Students will learn critical writing skills to translate basic research for popular media outlets. Examples of bad journalism and inaccurate reporting will be highlighted.

Three lectures; two terms

**Prerequisite(s):** Registration in Level IV of an Honours Human Behaviour program

**Antirequisite(s):** PNB 4SC6 A/B

Cannot be taken concurrently with BIOLOGY 4C09 A/B, 4C12 A/B, 4F06 A/B, HUMBEHV 4RP6 A/B, ISCI 4A12 A/B, NEUROSCI 4L09 A/B, 4L12 A/B, ORIGINS 4A09 A/B, PNB 4D06 A/B, 4D09 A/B, 4DD6 A/B.

*Not open to students with credit or registration in HUMBEHV 4IP3 A/B S.*

### HUMBEHV 4U03 - INCLUSION IN THE ECE CLASSROOM

Examine attitudes toward children with exceptionalities and the concept of inclusion and integration. Integrated programs will be explored as well as class-wide adaptive programming. Develop an awareness of diversity around the area of exceptionality.

Lectures, may include blended content (three hours); one term

**Prerequisite(s):** Registration in Level IV of the B.A.Sc. in Human Behaviour (Early Childhood Education Specialization) program

### HUMBEHV 4V12 - ECE FIELD PLACEMENT III

Building on the skills from previous two placements, students will have opportunities to pursue their special interest and passion in an alternative placement experience. In these settings, students will engage with children, families, staff, and other professionals.

*This course is evaluated on a Pass/Fail basis.*

288 hours; Spring/Summer Term

**Prerequisite(s):** HUMBEHV 3Q03, 3P03, 3Q03, 3XP6

**Co-requisite(s):** HUMBEHV 4VS3

### HUMBEHV 4VS3 - THEORY TO PRACTICE III

Seminar to be taken concurrently with Professional Practice III, HUMBEHV 4V12.

Online lecture/discussion (two hours); Spring/Summer Term

**Co-requisite(s):** HUMBEHV 4V12

### HUMBEHV 4W03 - SUPERVISING FOR LEADERSHIP AND QUALITY

Apply relevant legislation and necessary administrative procedures for operating a child care centre. Reflect on the importance of the supervisor/administrators role in establishing an effective team and mentoring relationship, personnel management, and the role of professional and

community resources.

Two and a half hours (lectures, may include blended content); one term

**Prerequisite(s):** Registration in Level IV of the B.A.Sc. in Human Behaviour (Early Childhood Education Specialization) program

## Humanities

**Courses** *If no prerequisite is listed, the course is open.*

### HUMAN 1QU3 - INSIGHT AND INQUIRY: QUESTIONS TO CHANGE THE WORLD

In a world of smartphones and google, it seems we can find answers in an instant-the greatest challenge is to ask the right questions, recognizing that how we ask a question determines the nature of the answers available to us. Effective leaders are constantly formulating creative questions, about themselves and about the world around them. Working, in part, in the technology-enriched environment of an active learning classroom, students will focus on how to ask good questions about specific issues and how to use those questions to interrogate the evidence in different ways. The skills students acquire will apply to other university courses and the world beyond.

3 hours, discussion; one term

**Prerequisite(s):** Registration in Humanities I, Studio Art I or Music I

### HUMAN 1VV3 - VOICE AND VISION: WORDS TO CHANGE THE WORLD

Is the pen mightier than the sword? It depends on the writer. Effective leaders understand that clear writing is persuasive writing. They understand their audience and context. Working, in part, in the technology-enriched environment of an active learning classroom, students will explore the elements of effective writing for a range of audiences and situations, from a tweet to academic writing to a job application letter. These critical skills will serve as the foundation for student success.

3 hours, discussion; one term

**Prerequisite(s):** Registration in Humanities I, Studio Art I or Music I

### HUMAN 2DH3 - INTRODUCTION TO DIGITAL HUMANITIES

This course will introduce students to digital humanities research methods and tools. Students will learn about three primary impulses that drive digital scholarship: analysis, preservation, and resource creation. They will work with existing digital resources, learning to use and assess them effectively; and will also digitize material to create new resources while learning about copyright, intellectual property, and accessibility.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above

### HUMAN 3CL3 - COMMUNITY LEADERSHIP AT MCMASTER

Students complete at least 48 hours of volunteer work as mentors to other McMaster students in a variety of positions; for example, as language assistants and conversation partners in Level 1 language classes; as writing tutors, peer helpers, or note-takers for specific courses. Students work with the faculty supervisor to set learning objectives, and reflect on these experiences. The course is graded on a Pass/Fail basis.

**Prerequisite(s):** Registration in Level II or above of any program; and permission of the instructor responsible for the position. Students must complete an application; details on the application process are available in the Humanities Academic Advising Office (CNH 107).

### HUMAN 3CM3 - LEADERSHIP: CROSS-CULTURAL MENTORING LAB

Through on-campus experiential placements (embedded mentorship), students will participate in the peer mentoring of international students in the McMaster English Language Development (MELD) program. Students receive upfront training and ongoing support in mentorship, using aspects of the learning-centred mentoring paradigm (reciprocity, collaboration and the elaboration of mutually-defined goals). Students document their learning through a structured portfolio. Prior to beginning mentorship placements, students will participate in intensive training workshops (start of term) on: second language learning, reflective practice, goal-setting, and cross-cultural communication.

Discussion and placements (three hours), training sessions; one term

**Prerequisite(s):** Registration in Level II or above of any program; completion of online application; and permission of the Associate Dean (Humanities) or delegate

### HUMAN 3D12 - FULL-TIME DISCOVERY CHANNEL INTERNSHIP

This course integrates academic knowledge with an internship experience involving the research, writing and production of content for Discovery Channel Canada. Students will also gain valuable experience in production coordinating and management. Students accepted to this placement will document their learning experiences through a portfolio. The employer establishes the number of positions available.

*This course is evaluated on a Pass/Fail basis.*

Normally 35 hours per week.

**Prerequisite(s):** Registration in Level 3 or above of any Honours Humanities program; and permission of the Associate Dean or delegate.

*Enrolment and credit in this course is contingent upon the students successfully having secured a position with the employer, and on satisfactory employer evaluation(s).*

### HUMAN 3IF0 - FULL-TIME INTERNSHIP

Full-time, non-credit internship or experiential education opportunity. The goal of the internship or placement experience is for students to focus on professional development and expanding their employment-related skills, while exploring career options and beginning to build networks in different professional fields.

*This course is evaluated on a Pass/Fail basis.*

Normally 26-40 hours per week.

**Prerequisite(s):** Registration in Level II or above of a program in the Faculty of Humanities; and permission of the Associate Dean or delegate

*HUMAN 3IF0 may be repeated.*

### HUMAN 3IPO - PART-TIME INTERNSHIP

Part-time, non-credit internship or experiential education opportunity. The goal of the internship or placement experience is for students to focus on professional development and expanding their employment-related skills, while exploring career options and beginning to build networks in different professional fields.

*This course is evaluated on a Pass/Fail basis.*

Normally 5-15 hours per week.

**Prerequisite(s):** Registration in Level II or above of a program in the Faculty of Humanities; and permission of the Associate Dean or delegate

*HUMAN 3IPO may be repeated.*

### HUMAN 3LM3 - FOUNDATIONS OF LEADERSHIP

Effective leaders possess strong ethical values, emotional and social intelligence, excellent communication skills, and creativity; they have empathy, and are able to influence and inspire through informed, reasoned arguments. Students will explore how these elements fit together in various leadership models and how they apply cross-culturally. They will also take several assessments that measure their developing skills, as well as engage in reflective practice to increase self-awareness. Students apply these leadership skills through the peer-to-peer mentoring of first year international students in the McMaster English Language Development (MELD) program. Student learning is documented through a structured portfolio.

Lecture and discussion (two hours), placement (one hour); one term

**Prerequisite(s):** Registration in Level II and HUMAN 3CM3, or registration in Level III or above of any program; completion of online application; and permission of the Associate Dean (Humanities) or delegate.

### HUMAN 3W03 - APPLIED HUMANITIES I

Students gain applied experience in a field related to a Humanities discipline by applying skills and knowledge acquired in undergraduate studies in practical areas such as research projects, pedagogy and work placements. Students participate in defining learning goals and experiences.

**Prerequisite(s):** Registration in Level III or IV of any Honours program offered by the Faculty of Humanities. Students must contact the Academic Advising Office, CNH-107, for details on the application process.

*Permission of the Associate Dean of the Faculty of Humanities is required.*

### HUMAN 4CM3 - CROSS-CULTURAL MENTORING AND COACHING PRACTICUM

This course consists of an on-campus placement in embedded mentoring and coaching. Students will participate in the peer mentoring of international students in the McMaster English Language Development (MELD) program, as well as develop coaching skills through their contributions to the training of first-time peer mentors. Since this course consists of a work placement, students will also further develop essential skills in workplace accountability, collaboration and communication, through interactions and regular team meetings with MELD staff. Students are expected to document their experience and to submit an interim report, and final report or portfolio.

*This course is graded on a Pass/Fail basis.*

Placement (four-five hours weekly), training and collaboration (one hour weekly); one term

**Prerequisite(s):** HUMAN 3CM3 and permission of the Associate Dean (Humanities) or delegate

### HUMAN 4LC3 - LEADERSHIP CAPSTONE: THEORY AND PRACTICE

Working with a faculty supervisor, students will combine theory and practice by conducting in-depth research on a chosen aspect of leadership followed by proposing and, in most cases, implementing a practical application of that knowledge.

Three hours; one term

**Prerequisite(s):** One of PHILOS 2D03, 2N03, 2TT3 or 2YY3; and HUMAN 3CM3, 3LM3 and 4RM3 (or 4LM3); completion of online application; and permission of the Associate Dean (Humanities) or delegate

*First offered in 2019/20*



## HUMAN 4RM3 - LEADERSHIP: RELATIONSHIP MANAGEMENT

Team work, conflict management, negotiation, giving and receiving feedback, communicating vision and expectations these are all key elements of leadership. Ultimately, succeeding in these areas is about managing relationships. Building upon the foundational elements of leadership already acquired, students will gain a deeper awareness of their own and others' motivations, strengths, filters, and responses to conflict, of and how to apply this knowledge to communicate effectively.

Three hours; one term

**Prerequisite(s):** HUMAN 3CM3 or 3LM3; and permission of the Associate Dean (Humanities) or delegate

**Antirequisite(s):** HUMAN 4LM3

## HUMAN 4W03 A/B S - APPLIED HUMANITIES II

Students gain applied experience in a field related to a Humanities discipline by applying skills and knowledge acquired in undergraduate studies in practical areas such as research projects, pedagogy and work placements. Students participate in defining learning goals and experiences.

**Prerequisite(s):** Registration in Level III or IV of any Honours program offered by the Faculty of Humanities. Students must contact the Academic Advising Office, CNH-107, for details on the application process.

*Permission of the Associate Dean of the Faculty of Humanities is required.*

## HUMAN 4WL3 A/B - WILSON LEADERSHIP SCHOLAR CAPSTONE

This course may be taken by Wilson Leadership Scholar Award winners. Working under the supervision of the Wilson Leadership Scholar Award Director and Associate Director, students will combine leadership theory and practice through the creation and completion of applied community outreach projects.

Two to four hours; two terms

**Prerequisite(s):** Open to Wilson Leadership Scholar Award winners; permission of the Wilson Leadership Scholarship Award Associate Director is required.

*This course is graded on a Pass/Fail basis.*

## IBH (Integrated Business and Humanities)

IBH courses are administered by the DeGroote School of Business and the Faculty of Humanities.

### IBH 1AA3 - FINANCIAL ACCOUNTING

This course will help students understand the purpose of accounting, its implementation, its usefulness for decision-making, its effect on behaviour and contracts, and its surrounding controversies over accounting methods.

Lectures (three hours)

**Prerequisite(s):** Registration in Level I of the Integrated Business and Humanities Program

**Antirequisite(s):** Not open to students with credit or enrolment in COMMERCE 1AA3

### IBH 1AB3 - PERSPECTIVES ON CANADIAN BUSINESS

This course will examine how the business environment can affect Canadian organizations and their stakeholders. Functional areas of business will be introduced in order to understand the basics of management. The course will introduce students to business principles, techniques, and terms within both

the Canadian and global context. This will include a discussion on the business environment, management theory, and the introduction of functional areas of business. The overall objective is that upon completion, students will have a foundation for future business courses.

**Prerequisite(s):** Registration in Level 1 of the Integrated Business and Humanities Program

Lectures (three hours)

**Antirequisite(s):** Not open to students with credit or enrolment in LINGUIST 1ZZ3 or 2S03

### IBH 1AC3 - INTRODUCTION TO LANGUAGE AND SOCIETY

This course equips students with basic linguistic terminology and the necessary tools to examine the relationship between language and society. Topics covered include linguistic variation (regional, social, situational), language and gender, language and disadvantage/power, multilingualism, language change, pidgin and creole languages.

Lectures (three hours)

**Prerequisite(s):** Registration in Level 1 of the Integrated Business and Humanities Program

**Antirequisite(s):** Not open to students with credit or enrolment in LINGUIST 1ZZ3 or 2S03

### IBH 1AD3 - IBH IN THE COMMUNITY

As community engagement is a key component of the IBH program, this course will introduce students to the politics, processes and functioning of communities and provides foundational knowledge and skills for effective and principled community engagement. As an IBH student, you will be a member of many communities - your workplace, your professional group, your neighborhood, your city, your country, the world. In the future, whether as a business professional, humanist or health /social services provider, you will be called upon to participate in community activities and community change.

Lectures (three hours), tutorial (one hour)

**Prerequisite(s):** Registration in Level 1 of the Integrated Business and Humanities Program

**Antirequisite(s):** Not open to students with credit or enrolment in CMTYENGA 2A03

### IBH 1BA3 - LEADERSHIP COACHING 1

Description: This course provides the foundations for building the critical competencies in Managing (Doing things Right) to Leading (Doing the Right Things). Through in-class group coaching, students will develop and practice the successful thinking and associated behaviours required to grow Emotional Intelligence in the four primary components of Self-Awareness, Self- Management, Social Awareness, Social Management. The coaching model of What? (Understanding the critical theoretical foundations), So What? (Specific meaning/impacts for individual students), Now What? (action steps for application to self and other), provides the format for teaching and learning.

Lectures (three hours)

**Prerequisite(s):** Registration in Level 1 of the Integrated Business and Humanities Program

**Antirequisite(s):** Not open to students with credit or enrolment in COMMERCE 1BA3 or 4BN3

### IBH 1BB3 - INSIGHT AND INQUIRY: QUESTIONS TO CHANGE THE WORLD

Effective leaders are able to formulate creative questions, recognizing that how we ask a question determines the nature of the answers available to us. Working in the technology-enriched environment of an active learning classroom, students will focus on how to ask good questions about specific

issues and how to use those questions to interrogate evidence in different ways.

Lectures (three hours)

**Prerequisite(s):** Registration in Level 1 of the Integrated Business and Humanities Program

**Antirequisite(s):** Not open to students with credit or enrolment in HUMAN 1QU3

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### IBH 1BC3 - FUNDAMENTALS OF ETHICS

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An introduction to ethical theory and to its application to contemporary moral problems. Topics covered may include the nature of morality and its relationship to culture, religion, and self-interest; the strengths and weaknesses of normative ethical theories, including utilitarianism, Kantianism, virtue ethics and social contract theory; and ethical issues raised by war, torture, world hunger, assisted dying, affirmative action, corporations, and the environment.

Lectures (three hours), tutorial (one hour)

**Prerequisite(s):** Registration in Level 1 of the Integrated Business and Humanities Program

**Antirequisite(s):** Not open to students with credit or enrolment in PHILOS 2YY3

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### IBH 1BD3 - INTRODUCTION TO PEACE STUDIES FOR IBH

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An introduction to the applications of peace research to business and the Triple Bottom Line (economics, ecology, ethics), focusing on the concepts of peace, war, security, conflict, violence and nonviolence, and examining opportunities for active peace-making and conflict transformation in daily life and in business.

Lectures (three hours), tutorial (one hour)

**Prerequisite(s):** Registration in Level 1 of the Integrated Business and Humanities Program

**Antirequisite(s):** Not open to students with credit or enrolment in PEACEST 1A03

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### IBH 2AA3 - INTRODUCTION TO MARKETING

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This course introduces the conceptual underpinnings and operational facets of marketing with a primarily consumer (as opposed to an industrial) focus. During this course, students will learn about the 4Ps of marketing: product, price, promotion, and place.

Lectures (three hours)

**Prerequisite(s):** Registration in Level II of the Integrated Business and Humanities Program

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### IBH 2AB3 - INFORMATION SYSTEMS IN MANAGEMENT

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This course prepares Integrated Business and Humanities students to leverage information systems effectively. The course focuses on the opportunities and pitfalls provided by information systems, how they are likely to affect the world, and what managers need to know to make effective use of information systems in business and society.

**Prerequisite(s):** IBH 1AA3 and registration in Level 2 of the Integrated Business and Humanities Program

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### IBH 2AC3 - TALENT MANAGEMENT

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This course provides knowledge of the key aspects of identifying, selecting, developing, and managing people in organizations, emphasizing the link between talent management and practices and organizational strategy. Topics include job design and job analysis, staffing, the legal environment, training and development, performance appraisal, compensation, health and safety, and

labour relations.

Lectures (three hours)

**Prerequisite(s):** IBH 1BA3 and registration in Level II of the Integrated Business and Humanities Program.

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### IBH 2AD3 - STATISTICAL DATA ANALYSIS

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Overwhelmed with big data, businesses are looking at ways of analysing this data to better understand their customers and develop innovative business models. Using several programming tools, this course will provide students with skills to build data models and perform common statistical analysis techniques.

Topics will include sampling techniques, common distributions, inference and hypothesis testing, regression, analysis of variance, categorical data analysis and nonparametric inference. The course will also address issues related to data security, confidentiality and ethics.

Lectures (three hours), tutorial (one hour)

**Prerequisite(s):** Registration in Level 2 of the Integrated Business and Humanities Program.

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### IBH 2AE3 - CRITICAL THINKING

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Critical thinking essentially distinguishes between the capacity and quality of human thought. That is, it essentially denies that thought is merely the ability to process information and to make judgments with respect to it. Rather, critical thinking attests that there are certain modes of thinking that we can cultivate

to clearly and carefully understand, evaluate, and communicate information.

This course introduces students to such modes of thought. In order to facilitate such an introduction the course will be guided by four intellectual virtues that critical thinking fundamentally involves:

- 1) humility (the ability to admit limitations, ignorance, or confusion, etc.),
- 2) carefulness (the ability to identify and avoid mistakes and errors in reasoning),
- 3) thoroughness (the ability to think clearly and distinctly, providing sufficient justification for claims), and
- 4) open-mindedness (the ability judge fairly, empathetically, and with sensitivity to alternative beliefs).

Within these guidelines course topics will include the nature, limitations and justifications of knowledge, cognitive errors, formal and informal fallacies of reasoning, the structure of arguments, deductive and inductive reasoning, basic propositional and categorical logic, and sociocultural criticism.

Lectures (three hours), tutorial (one hour)

**Prerequisite(s):** Registration in Level II of the Integrated Business and Humanities Program.

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### IBH 2AF3 - GLOBAL BUSINESS EXPERIENCE

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This course has two main objectives: 1) is to understand the role that business plays in the global economy, especially its role in global poverty as well as global peace by immersing students in an international learning experience. 2) For students to understand the historical, sociological, and economic impact in order to assess economic development projects in a developing country. In this course students will learn how globalization connects the developed and developing worlds; how business and the economy maintain structural inequalities and global wealth disparities; the global economic, social, and environmental impact of Western business decisions; the historical, political, geographical, gendered, and cultural context in which business operates, and the impact of economic development policies.

Lectures (3 hours)

**Prerequisite(s):** Registration in Level II of the Integrated Business and Humanities Program

### IBH 2BA3 - MANAGERIAL ACCOUNTING

An introduction to concepts underlying the use of cost accounting information for managerial planning and control and for inventory valuation. The nature and analysis of costs and the usefulness and limitations of accounting data for decision-making, including ethical considerations, will be discussed.

Lectures (three hours), tutorial (one hour)

**Prerequisite(s):** IBH 1AA3 and registration in Level II of the Integrated Business and Humanities Program.

### IBH 2BB3 - INTRODUCTION TO FINANCE

This course provides an overview of financial management and the financial system. The goal is to equip students with the basic understanding of how financial decisions are made. Students will learn fundamental finance concepts and tools, and how they are applied in practice. The course will lay a foundation for more advanced finance courses that students will subsequently take. Topics include time value of money, capital budgeting, risk and return tradeoff, and security valuation.

Lectures (three hours)

**Prerequisite(s):** IBH 1AA3, ECON 1B03 and registration in Level II of the Integrated Business and Humanities Program.

### IBH 2BC3 - OPERATIONS MANAGEMENT

Operations management (OM) is the science and art of creating and delivering goods and services to customers. Basic topics in operations management include goods and service design, facility design, locating facilities, quality management, project planning, supply chain management, lean operating systems, forecasting customer demand, process strategy, and inventory management. These days this field of study is subjected to changes and challenges. Maintaining a sustainable environment while efficiently converting resources into safe and quality outputs, coordinating between operations and other business functions, increasing profitability while providing a safe workplace and honouring stakeholder commitments are a few to mention. These topics will be discussed in this introductory operations management course.

Lectures (three hours), tutorial (one hour)

**Prerequisite(s):** Registration in Level II of the Integrated Business and Humanities Program.

### IBH 2BD3 - MORAL ISSUES

An introduction to moral philosophy through a consideration of issues in professional ethics (e.g., health care and energy). Topics such as abortion, human experimentation, euthanasia, genetic screening, sustainability and pollution will be investigated.

Lectures (three hours), tutorial (one hour)

**Prerequisite(s):** Registration in Level 2 of the Integrated Business and Humanities Program.

### IBH 2BE3 - CANADIAN BUSINESS HISTORY: THE CANADIAN EXPERIENCE IN INTERNATIONAL PERSPECTIVE

Canadian business history has fallen out of favour among recent historians. While the field was extensively studied in previous decades, it became displaced by the growing popularity of social and cultural history. However, Canadian business history is deeply intertwined with broader questions about the economic, social and political climate of the country. Through examining key themes in business history in the last two centuries, this course will provide a broader perspective on the role and perception of Canadian business and industry in the country's past. It will also question what these lessons can tell us about its present economic state and its potential futures. This course

includes discussion sessions which, along with the assignments, are intended to help students develop their critical reading and communication skills. Students do not need a background in economic or business history to succeed in this course.

Lectures (three hours), tutorial (one hour)

**Prerequisite(s):** Registration in Level II of the Integrated Business and Humanities Program.

### IBH 2BF3 - HISTORY OF CAPITALISM

A History of Capitalism from 1500 to the present. This team-taught course introduces students to characteristics of capitalism, core institutions, and explanations for periodic crises. There are opportunities to read selections from leading proponents, agents, critics, and reformers. Essay topics will be negotiated with students, so that there will be an alignment with their programme/faculty.

Lectures (3 hours), tutorial (1 hour)

**Prerequisite(s):** Registration in Level II or above in the Integrated Business and Humanities Program

### IBH 3AA3 - RELATIONSHIP MANAGEMENT

Team work, conflict management, negotiation, giving and receiving feedback, communicating vision and expectations these are all key elements of leadership. Ultimately, succeeding in these areas is about managing relationships. Building upon the foundational elements of leadership already acquired, students will gain a deeper awareness of their own and others motivations, strengths, filters, and responses to conflict, of and how to apply this knowledge to communicate effectively.

Lectures (3 hours), tutorial (1 hour)

**Prerequisite(s):** Registration in Level III of the Integrated Business and Humanities Program

### IBH 3AB3 - APPLIED MARKETING MANAGEMENT

This course builds upon material covered in Introduction to Marketing. It relies on practical, real world case studies to develop students marketing decision-making skills, and their ability to analyze the business environment in which organizations operate. A major field project, which has student teams working with businesses to audit current practices, study the environment and develop a marketing plan, is a critical part of this course.

Lectures (3 hours)

**Prerequisite(s):** Registration in Level III of the Integrated Business and Humanities Program

### IBH 3AC3 - CORPORATE FINANCE

This course examines various aspects of the financial management of the firm including the sources and methods of financing, capital structure, dividend policy, leasing, mergers and acquisitions, working capital management, effects of taxation on financial decisions and international aspects of finance.

Lectures (3 hours), tutorial (1 hour)

**Prerequisite(s):** IBH 2BB3 and Registration in Level III or above in the Integrated Business and Humanities Program

### IBH 3AD3 - CROSS-CULTURAL COMMUNICATION

Students will explore the links between language and culture and learn skills necessary to be intermediaries between cultures. Topics include: communication between genders, the cognitive role of metaphor, language and perception, emotions across cultures, culture and advertising, body language and cultural stereotyping.

Lectures (3 hours), tutorial (1 hour)

**Prerequisite(s):** Registration in Level III or above in the Integrated Business and Humanities Program

### **IBH 3BA3 - UNDERSTANDING ENTREPRENEURSHIP AND SOCIAL ENTREPRENEURSHIP FROM A HISTORICAL AND THEORETICAL LENS**

Students in this course will learn what constitutes entrepreneurship, how it has been practiced throughout history, as well as the necessary social, political, ethical and economic foundations that support a contemporary entrepreneurial economy. They will study empirical research examining entrepreneurial trends in Canada and world-wide, including social entrepreneurship.

Lectures (3 hours)

**Prerequisite(s):** Registration in Level 3 of the Integrated Business and Humanities Program

### **IBH 3BB3 - ORGANIZATIONAL STRATEGY**

In this course, students will explore frameworks that help them conduct strategic analysis, and formulate and implement new strategies to improve organizational performance. The course is structured to provide strategic management tools and frameworks to assist organizations of all types, from public and private for-profit firms through social businesses and social enterprises to traditional non-profit and charitable organizations. Through case-based discussion, guest speakers, and experiential exercises, professors will push students to answer key questions such as: How do organizations across the for-profit and non-profit continuum define their purpose, and conceptualize, create, and capture value? How do these organizations analyze strategic opportunities and structure effective investments? What is the nature of competitive advantage in for-profit and non-profit contexts and how is it gained and sustained?

Lectures (3 hours)

**Prerequisite(s):** Registration in Level III or above in the Integrated Business and Humanities Program

### **IBH 3BC3 - POVERTY, PRIVILEGE AND PROTEST IN CANADIAN HISTORY**

An examination of the political, economic, and social factors shaping the persistence of poverty in Canada in the 1800s and 1900s, together with an analysis of reactions to such inequality. This includes investigation of ideological divisions, ethnic relations, and gender dynamics within the working class and within the labour movement.

Lectures (3 hours), tutorial (1 hour)

**Prerequisite(s):** Registration in Level III or above in the Integrated Business and Humanities Program

### **IBH 3BD3 - INTERPERSONAL COMMUNICATION**

This course offers an introduction to contemporary interpersonal communication theories and research. Topics include: small group communication, persuasive communication, argumentation strategies, conflict resolution and computer mediated, intercultural, international and political communication.

Lectures (3 hours), tutorial (1 hour)

**Prerequisite(s):** Registration in Level III or above in the Integrated Business and Humanities Program

### **IBH 3BE3 - OPERATIONS MANAGEMENT**

Operations management (OM) is the science and art of creating and delivering goods and services to customers. Basic topics in operations management include goods and service design, facility design, locating facilities, quality

management, project planning, supply chain management, lean operating systems, forecasting customer demand, process strategy, and inventory management. These days this field of study is subjected to changes and challenges. Maintaining a sustainable environment while efficiently converting resources into safe and quality outputs, coordinating between operations and other business functions, increasing profitability while providing a safe workplace and honouring stakeholder commitments are a few to mention. These topics will be discussed in this introductory operations management course.

Lectures (three hours), tutorial (one hour)

**Prerequisite(s):** IBH 2AD3 and Registration in Level III of the Integrated Business and Humanities Program.

### **IBH 4AA3 - LEADERSHIP: FOSTERING EFFECTIVE COMMUNICATION THROUGH VISUAL LITERACY**

This course is designed to further expand students' foundation in ethical business practice in a leadership position; in critical thinking and verbal expression; and in business- and social history with a global perspective; it will detail these skills and qualities by providing students with acute awareness of the impact of the multi-faceted visual environment they will work in, and with the necessary skills of visual literacy to 'read', evaluate, manage and produce visual messages adequately in different socio-cultural settings. The importance of creativity that is at play in visual communication will be explored, and students will have an opportunity for hands-on experience with the creative process in making art. Experience with accessing their own creative potential will contribute to their professional success.

Lectures (three hours), tutorials (one hour)

**Prerequisite(s):** Registration in Level IV of the Integrated Business and Humanities Program

### **IBH 4AB6 A/B - SOCIAL ENTREPRENEURSHIP CAPSTONE**

In this course students will learn to apply skills learned in entrepreneurship, social entrepreneurship and community engagement from an experiential perspective.

Lectures (three hours), tutorials (one hour)

**Prerequisite(s):** Registration in Level IV of the Integrated Business and Humanities Program

### **IBH 4BA3 - LEADERSHIP EFFECTIVENESS: BUILDING PERSONAL AND ORGANIZATIONAL SUCCESS**

The objective of this course is to prepare students to take on increasingly higher levels of leadership in their organizations, creating career paths for personal success, organizational effectiveness and contribution to society at large

Lectures (three hours)

**Prerequisite(s):** Registration in Level IV of the Integrated Business and Humanities Program

## **Indigenous Studies**

Courses in Indigenous Studies are administered by the Indigenous Studies Program.

L.R Wilson Hall, Room 1811, ext. 23788

<https://indigenous.mcmaster.ca>

### **Department Notes**

1. Those students who completed INDIGST 2M06 A/B prior to September 2017 can use these 6-units towards the fulfillment of INDIGST 2M03 and INDIGST 2MM3. Those students who completed INDIGST 2AA3 prior



to September 2016 may request approval of an additional 3-unit research methodology course, to use in fulfillment of this 6-unit research methodology requirement. Students are encouraged to consult the Director of the Indigenous Studies Program for approval of an alternate applicable course.

- Students who have completed only 3 units of level I Indigenous Studies will be required to complete 3 more units of Level I Indigenous Studies by the end of the following academic year.
- is considered as a Level I Indigenous Studies course.

### Courses

*If no prerequisite is listed, the course is open.*

*See also courses in Reconciliation*

### INDIGST 1A03 - INTRODUCTION TO INDIGENOUS STUDIES

An introduction to Indigenous peoples' world views from pre-contact to the Indian Act of 1876. Indigenous history and philosophy will be examined along with the issues of representation and colonialism.

Lectures and seminars (three hours); one term

### INDIGST 1AA3 - INTRODUCTION TO CONTEMPORARY INDIGENOUS STUDIES

This course will explore the relationship between Indigenous peoples and mainstream society in the 20th century with regard to governmental policy, land claims, economic development, and self-determination.

Lectures and seminars (three hours); one term

**Cross-list(s):** ARTSSCI 1CC3

### INDIGST 1B03 - RECONCILING WHAT? INDIGENOUS RELATIONS IN CANADA

An examination of sociopolitical and historical relations between Indigenous peoples and Canada in a post-1951 time period. We will study how colonialism, assimilation and resistance movements are situated in an era of reconciliation.

3 hours; lecture and seminar: one term

**Antirequisite(s):** RECONCIL 1A03

### INDIGST 2A03 - INDIGENOUS PEOPLES' SPIRITUALITY

This course will examine the spirituality based knowledge of Aboriginal peoples across North America. The philosophies, world view, sacred ways of knowing and relationship to the natural world will be explored.

Three hours (lectures and seminars); one term

**Prerequisite(s):** INDIGST 1A03, 1AA3 or RECONCIL 1A03, or permission of the Instructor

### INDIGST 2B03 - HISTORY OF INDIGENOUS PEOPLES' SOVEREIGNTY

An examination of North America Indigenous People's political and economic history in the pre-contact, early contact, and colonial eras within a post-colonial context. Topics will include: self-determination, resource management, land claims, and economic development.

Three hours (lectures and seminars); one term

**Prerequisite(s):** INDIG ST 1A03, 1AA3 or RECONCIL 1A03, or permission of the Instructor, or ANTHROP 1AA3 or 1AB3.

### INDIGST 2BB3 - CONTEMPORARY INDIGENOUS KNOWLEDGE AND SOCIETIES

A comparative study of selected cultures of this continent, dealing with traditional and modern situations.

Three hours (lectures and discussion); one term

**Prerequisite(s):** INDIGST 1A03, 1AA3 or RECONCIL 1A03, or permission of the Instructor

**Cross-list(s):** ANTHROP 2B03

### INDIGST 2C03 - CURRENT ISSUES IN INDIGENOUS STUDIES: SELECTED TOPICS

A review of the geographic, cultural and demographic composition of Inuit, First Nations and Metis, and of the major current developments on land, cultural integrity, treaties, economic development, community social development and self-government.

Three hours (lectures and seminars); one term

**Prerequisite(s):** INDIGST 1A03, 1AA3 or RECONCIL 1A03, or permission of the Instructor

*INDIGST 2C03 may be repeated, if on a different topic, to a total of six units.*

### INDIGST 2D03 - TRADITIONAL INDIGENOUS ECOLOGICAL KNOWLEDGE

This course is a study of the ecological teachings of Indigenous peoples and of their relationships with the natural environment in historical and contemporary times.

Three hours (lectures and seminars); one term

**Prerequisite(s):** INDIG ST 1A03, 1AA3 or RECONCIL 1A03, or permission of the Instructor

**Cross-list(s):** ANTHROP 2DA3, GEOG 2EK3

### INDIGST 2F03 - RESIDENTIAL SCHOOLS IN CANADA: HISTORY AND IMPACT

This course will examine the assimilationist policies that underscored the Indian Residential School system in Canada. The subsequent effects of intergenerational trauma and approaches to healing and reconciliation will also be explored.

Three hours (lectures and seminars); one term

**Prerequisite(s):** INDIGST 1A03, 1AA3 or RECONCIL 1A03, or permission of the Instructor

### INDIGST 2G03 - INDIGENOUS PERSPECTIVES ON PEACE AND CONFLICT

An examination of Indigenous philosophies of peace and approaches to conflict resolution from pre-contact to the present, with particular emphasis on Haudenosaunee tradition and the Great Law of Peace.

Three hours (lectures and seminars); one term

**Prerequisite(s):** INDIGST 1A03, 1AA3 or RECONCIL 1A03, or permission of the Instructor

### INDIGST 2H03 - INDIGENOUS CELEBRITY

An examination of (in)famous Indigenous people who have become cast as icons in the national consciousness of North America. We will discuss selected individuals and the circumstances around their fame, both historically and in the present.

3 hours; lecture and seminar: one term

**Prerequisites(s):** INDIGST 1A03; 1AA3 or RECONCIL 1A03 or permission of the Instructor

### INDIGST 2J03 - INDIGENOUS EXPERIENTIAL EDUCATION

This course will incorporate a variety of interfaces (both within and outside the classroom) in the exploration of Indigenous-based approaches to knowledge. Students will gain insight into how voice, sound, materiality and the land inform how knowledge is transmitted and understood.

3 hours; lecture and seminar; one term

Prerequisite(s): INDIGST 1A03 or 1AA3 or RECONCIL 1A03 or permission of the Instructor

### INDIGST 2K03 - INDIGENOUS FUTURISMS AND WONDERWORKS

Through a focus on Indigenous articulated realities and futures, this course refuses colonial narratives of the 'disappearing Indian' and insists upon Indigenous presence in past, present, and future as essential for envisioning a human future. Genres of study will include fiction, graphic novels, film, non-fiction, performance, and wonderworks.

Three hours; lecture and seminar: one term

Prerequisite(s): INDIGST 1A03; 1AA3 OR RECONCIL 1A03 or permission of the Instructor or three units of Level I English and Cultural Studies

**Cross-list(s):** ENGLISH 2KA3

### INDIGST 2M03 - INDIGENOUS RESEARCH METHODS AND ETHICS

This course will address methodological and ethical issues related to conducting research with Indigenous peoples. Indigenous and Western approaches to the constructions of knowledge are explored with an emphasis on Indigenous knowledges and how they are practiced in methodological approaches to research.

3 hours; lecture and seminar

**Prerequisite(s):** INDIGST 1A03, 1AA3 or RECONCIL 1A03, or permission of the Instructor

**Antirequisite(s):** INDIGST 2AA3 and INDIGST 2M06 A/B

### INDIGST 2MM3 - INDIGENOUS WAYS OF KNOWING: THEORY

This course will explore Indigenous ways of knowing as they relate to Indigenous cosmologies and worldviews. A range of written text and oral tradition will be introduced as foundational aspects of Indigenous knowledges. Interdisciplinary approaches based on the work of Indigenous scholars redefining the field of Indigenous Studies will also be examined.

Three hours; lecture and seminar

**Prerequisite(s):** INDIGST 1A03, 1AA3 or RECONCIL 1A03, or ARTSSCI 1C03, or permission of the Instructor

**Antirequisite(s):** INDIGST 2AA3 and INDIGST 2M06 A/B

### INDIGST 2U03 - INDIGENOUS TEXTILES AND DESIGN

An examination of Indigenous cultural traditions and textile art-based practices. Students will gain cultural and technical knowledge from an Indigenous artist in the design and creation of their own pieces.

3 hours; lecture and seminar: one term.

**Prerequisite(s):** INDIGST 1A03, 1AA3 or RECONCIL 1A03

### INDIGST 3C03 - STUDY OF IROQUOIS FIRST NATIONS IN CONTEMPORARY TIMES

An intensive examination of the Iroquois Confederacy and its attempts to maintain its culture, socio-political systems and economic independence.

Lectures and seminars (three hours); one term

**Prerequisite(s):** Three units of Level II Indigenous Studies or permission of

the instructor

### INDIGST 3CC3 - CONTEMPORARY INDIGENOUS SOCIETIES: SELECTED TOPICS

An intensive examination of selected political, economic, or social problems faced by selected Indigenous peoples.

Lectures and seminars (three hours); one term

**Prerequisite(s):** Three units Level II Indigenous Studies or permission of the instructor

*INDIGST 3CC3 may be repeated, if on a different topic, to a total of six units.*

### INDIGST 3D03 - CONTEMPORARY NATIVE LITERATURE IN CANADA

A study of significant works by Native writers who give voice to their experience in Canada. Issues to be examined include appropriation of voice, Native identity, women in Indigenous societies, and stereotyping.

Three hours (lectures and seminars); one term

**Prerequisite(s):** Three units of Level II Indigenous Studies or six units of Level II English or permission of the instructor

**Cross-list(s):** ENGLISH 3W03, PEACEST 3W03

### INDIGST 3E03 - CONTEMPORARY NATIVE LITERATURE IN THE UNITED STATES

A study of contemporary works by Native writers in the United States.

Native representations of voice, identity, gender, and popular culture will be examined.

Three hours (lectures and seminars); one term

**Prerequisite(s):** Three units of Level II Indigenous Studies or six units of Level II English or permission of the instructor

**Cross-list(s):** ENGLISH 3X03, PEACEST 3X03

### INDIGST 3EE3 - INDIGENOUS REPRESENTATIONS IN FILM

A study of how Indigenous peoples and narratives have been represented in film. We explore how the historical and sociopolitical are informed through depictions of Indigenous peoples, cultures and places in cinema.

3 hours; lecture and seminar: one term.

**Prerequisite(s):** Three units of Level II Indigenous Studies or permission of the Instructor.

### INDIGST 3F03 - INDIGENOUS ART AND VISUAL CULTURE IN CANADA, 1960 TO THE PRESENT

A survey of visual art production from Indigenous Canadian communities since c.1960 including: painting, sculpture, installation, film/video, performance and hip hop. The course focuses on First Nations' and Métis' artistic practices and examines how those are framed in the context of museums in the 21st century.

Three hours; one term.

**Prerequisite(s):** Registration in Level II or above of a program in Art History, Art, or Indigenous Studies, or permission of the instructor.

**Cross-list(s):** ARTHIST 3BB3

### INDIGST 3G03 - INDIGENOUS CREATIVE ARTS AND DRAMA: SELECTED TOPICS

The creative processes of Indigenous cultures are studied through the examination of selected forms of artistic expression, which may include art, music, dance and/or drama.

Lectures and seminars (three hours); one term

**Prerequisite(s):** Three units of Level II Indigenous Studies or permission of the instructor

*INDIGST 3G03 may be repeated, if on a different topic, to a total of nine units.*

### INDIGST 3H03 - INDIGENOUS MEDICINE I - PHILOSOPHY

This course will examine the Aboriginal concepts of health and wellness. The wholistic traditional approach will be used in the classroom as well as in visits by elders, medicine people and class trips to places of health, wellness and healing.

Lectures and seminars (three hours); one term

**Prerequisite(s):** Three units of Level II Indigenous Studies or permission of the instructor

*Not open to students with credit in INDIGST 3CC3, if the topics were Traditional Approaches to Healing and Wellness or Indigenous Peoples Health.*

### INDIGST 3HH3 - INDIGENOUS MEDICINE II - PRACTICAL

This course will examine the concept of traditional medicines, their histories and their connection to Aboriginal philosophies of wellness (studied in Part I); procedures for procurement and use of the medicines will be addressed and emphasis will be placed on the reasons for efficacy.

Lectures and seminars (three hours); one term

**Prerequisite(s):** Three units of Level II Indigenous Studies or permission of the instructor

*Not open to students with credit in INDIGST 3CC3, if the topics were Traditional Approaches to Healing and Wellness or Indigenous Peoples Health.*

### INDIGST 3J03 - GOVERNMENT AND POLITICS OF INDIGENOUS PEOPLE

An historical examination of the leadership and politics in Canada's indigenous communities, with a particular focus on pre-contact political structures, the Indian Act and its consequences and contemporary social questions.

Three hours; (lectures and seminars); one term

**Prerequisite(s):** Three units of Level II Indigenous Studies or permission of the instructor or registration in Honours Political Science Specialization in Public Law and Judicial Studies.

**Cross-list(s):** POLSCI 3C03

### INDIGST 3K03 - INDIGENOUS HUMAN RIGHTS

A study of government policies and their impact on Indigenous Peoples, specifically Indian Affairs in Canada and the United States. Topics will include individual and collective rights of Indigenous Peoples and the conceptual problems which arise in a Westernized justice system.

Three hours (lectures and seminars); one term

**Prerequisite(s):** Three units of Level II Indigenous Studies or permission of the instructor or registration in Honours Political Science Specialization in Public Law and Judicial Studies.

**Cross-list(s):** POLSCI 3KA3

### INDIGST 3L03 - INDIGENOUS INDEPENDENT STUDY

In consultation with the Director of Indigenous Studies, students will research an approved topic, on the basis of materials outside normally available course offerings. A major paper will be required.

**Prerequisite(s):** Registration in an Indigenous Studies program and permission of the Director

### INDIGST 3N03 - INDIGENOUS WOMEN: LAND, RIGHTS, AND POLITICS

This course will focus on issues Indigenous women identify as relevant to their current quality of life and social wellbeing. Indigenous knowledge, women's ways of knowing, the impacts of colonialism, gender and methodologies will

be examined.

Lectures and seminars (three hours); one term

**Prerequisite(s):** Three units of Level II Indigenous Studies; or permission of the instructor

### INDIGST 3P03 - HAUDENOSAUNEE HEALTH, DIET AND TRADITIONAL BOTANY

Working with traditional knowledge holders, this course will explore the relationship between ethnobotany and agricultural practice to Haudenosaunee cultural beliefs and concepts of health and wellness.

Three hours (two hour lecture, one hour tutorial); one term

**Prerequisite(s):** Six units of Level I or II Indigenous Studies, Mohawk or Cayuga language, or permission of the Instructor

**Cross-list(s):** ANTHROP 3PA3

### INDIGST 3Q03 - HISTORIES OF INDIGENOUS SPORT AND RECREATION

Sport and recreation improve quality of life with physical health, personal wellness and fostering belonging. Indigenous Peoples sport history will be studied from various nations level of organization, covering techniques, demonstration and non-competitive gains.

3 hours; lecture and seminar: one term.

**Prerequisite(s):** Three units of Level II Indigenous Studies or permission of the Instructor

### INDIGST 3R03 - OGWEHO:WEH EXPERIENTIAL LAND-BASED LEARNING

This experiential course immerses students in material and social expressions of the Ogweho:weh culture. Students will learn about ancient wisdoms, knowledges and beliefs as expressed through storytelling, history, art and song. Students will engage, experience and produce knowledge through Indigenous ways of knowing and being.

3 hours; lecture and seminar: one term.

**Prerequisite(s):** Three units of Level II Indigenous Studies or permission of the Instructor

### INDIGST 3S03 - OTHER-THAN-HUMAN WORLDS AND RELATIONS

This course will draw on Indigenous cosmological foundations of human and other-than-human relations in the formation of Indigenous realities. We will explore the multiplicity of other-than-human worlds and their role in Indigenous knowledge generation.

3 hours; lecture and seminar: one term.

**Prerequisite(s):** Three units of Level II Indigenous Studies or permission of the Instructor

### INDIGST 4A03 - STORYTELLING AND ENVIRONMENTAL CONSERVATION

This course will focus on practical storytelling activities that will contribute to the archives of an Indigenous community for the purposes of historical preservation. Emphasis will be placed on knowledge transmission and gift exchange in the form of a digital story produced by the student.

3 hours; lecture and seminar: one term

**Prerequisite(s):** Registration in Level IV of an Indigenous Studies Program or permission of the Director.

### INDIGST 4B03 - INDIGENOUS LITERARY GOVERNANCE AND RESISTANCE

Through an examination of non-fiction Indigenous writings, this course will focus on Trans-Indigenous practices of governance, diplomacy, advocacy, and resistance to settler colonialism through literary means. Students will engage both historic and contemporary examples of politicized writings by Indigenous peoples who insist upon and fight for the sovereignty of their nations.

3 hours; lecture and seminar: one term

**Prerequisite(s):** Registration in Level IV of an Indigenous Studies Program or permission of the Director.

### INDIGST 4D03 - INDIGENOUS CRITICAL THEORY AND INQUIRY

An intensive examination of current scholarship by Indigenous theorists from an array of disciplines, including feminism, environmentalism, literature, and governance.

Seminar (three hours); one term

**Prerequisite(s):** Registration in Level IV of an Indigenous Studies Program or permission of Director

### INDIGST 4HH3 - INDIGENOUS HEALTH AND INTERDISCIPLINARY APPROACHES

This course will explore the multiple components of health and wellness as viewed by Indigenous cultures in the past and in a contemporary context. Social determinants of health, including the effects of colonialism, will be evaluated and discussed.

Seminar (three hours); one term

**Prerequisite(s):** Registration in Level IV of an Indigenous Studies Program or permission of Director

### INDIGST 4IW3 - TWENTY-FIRST CENTURY INDIGENOUS WRITING AND FILM

A critical examination of recent works by Indigenous authors and filmmakers that give voice to contemporary social, cultural, and political realities in Canada.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of an Indigenous Studies Program. Departmental permission required.

**Cross-list(s):** ENGLISH 4IW3

*This course is administered by the Department of English and Cultural Studies.*

### INDIGST 4L03 - INDIGENOUS COMMUNITY RESEARCH EXPERIENCE

Students will work with a supervisor to conceive and develop a community based research project that directly benefits an Indigenous community, whether urban or rural. Topics may include health and wellness, land claims, education, language, and/or environmental issues.

**Prerequisite(s):** Registration in Level IV of an Indigenous Studies Program or permission of Director

### INDIGST 4RI3 - COLONIALISM AND RESISTANCE IN REPRESENTATIONS OF INDIGENOUS WOMANHOOD

This course looks to representations of Indigenous womanhood in a range of contemporary and historical cultural productions for insights into how colonialism shapes all of our lives, in radically different ways.

**Prerequisite(s):** Registration in Level IV of an Honours program in English, Cultural Studies and Critical Theory, Indigenous Studies, or permission of the Department.

**Cross-list(s):** ENGLISH 4RI3

### INDIGST 4T06 A/B - HONOURS THESIS

In consultation with a member of the Programs Committee of Instructors, students will prepare an essay on an approved topic. Students who are interested in taking 4T06 A/B should contact a potential supervisor early in the first term.

**Prerequisite(s):** Level IV of Indigenous Studies Program or permission of Director.

## Innovation

### INNOVATE 1X03 - THE WORLD OF ENTREPRENEURSHIP

Course description: Fundamentals of entrepreneurship via a series of guest lectures by prominent entrepreneurs. Case studies will be used to analyse strategies and methods for growing a scalable business.

One lecture (three hours); offered in both terms

### INNOVATE 1Z03 - ARTIFICIAL INTELLIGENCE - INNOVATIVE TECHNOLOGIES

Students will cover the history, goals, social impact and philosophical implications of artificial intelligence via a series of guest lectures by prominent researchers, entrepreneurs and theorists in this area. Speakers will highlight the numerous applications and huge possibilities in the field of AI.

One lecture (three hours), second term

### INNOVATE 2X03 - LEAN STARTUP

Course description: Introduction to lean methodologies of building a successful start-up business, including market validation, analysing market potential for start-up ideas, establishing a business model and failing fast. Students will learn how to test business ideas and hypotheses with customers and stakeholders.

Three lectures, second term

### INNOVATE 2Z03 - SPRINT METHODOLOGIES

Rapid prototyping, testing and iteration of ideas with customers using design sprint methodologies. Students will also learn about agile development and pathways from idea to market.

Three lectures, second term

**Prerequisite(s):** Registration in Level II or above of any program

### INNOVATE 3EX3 - EXPERIENTIAL LEARNING IN INNOVATION

This course will provide students an opportunity to gain direct experience working at an existing start-up company. Course credit will be evaluated based on the maintenance of a comprehensive learning portfolio.

Lectures, one term

**Prerequisite(s):** INNOVATE 1X03, 2X03, 2Z03, and permission of the instructor

### INNOVATE 3X03 - PERSUASION, PITCHING SKILLS AND MARKETING

In both individual and group settings, students will explore the theoretical and practical aspects of how to persuasively market and sell their ideas, their vision and their products to target audiences.

Three lectures; first term



**Prerequisite(s):** Registration in Level II or above of any program

### INNOVATE 3Z03 - FROM FOUNDER TO CEO

Students will learn how a start-up Founder transitions into becoming a CEO to properly manage and grow the company, effectively manage Human Resources and work with a Board of Directors.

One lecture (three hours); second term

**Prerequisite(s):** Registration in Level II or above of any program

### INNOVATE 3ZZ3 - IMAGINING AND NAVIGATING THE FUTURE

This ambitious interdisciplinary course provides a platform for students to develop the strategic foresight, planning and leadership skills needed to imagine and shape the future. Students will analyze the systems, trends and uncertainties driving the future of such business and social domains as workplaces, healthcare systems, climate change, and financial markets. Students will also develop the skills needed to mobilize people and resources towards desired outcomes. In addition to team experiential learning projects, students will explore future directions on issues of personal interest.

Lectures (three hours); first term

**Prerequisite(s):** Registration in Level III or above in a four or five year program

### INNOVATE 4EX6 A/B - FOUNDERS STARTUP

Working with The Forge, McMaster's startup accelerator, students will form teams to develop a new startup venture. Through the application of lean startup and design sprint methodologies, students will rapidly test and iterate product-market fit with customers and refine their business models. Admission to the course will be based on a written application (one application per team) and a successful panel interview. At the end of the course, students will pitch their validated business models and evidence for product-market fit to a panel of Forge entrepreneurs, advisers, and mentors for possible entry into The Forges Stage II program.

Lectures; both terms

**Prerequisite(s):** INNOVATE 1X03, 2X03, 2Z03, and permission of the instructor.

## INSPIRE (Interession)

<https://intersession.mcmaster.ca/>

[springintersession@mcmaster.ca](mailto:springintersession@mcmaster.ca)

DIRECTOR- SPRING INTERSESSION

John Maclachlan/B.Sc., M.A., Ph.D. (McMaster)

### Courses

### INSPIRE 1A03 - MULTIDISCIPLINARY EXPERIENTIAL LEARNING OPPORTUNITIES FOR EVERYONE

Involving a team of instructors from across the McMaster campus, INSPIRE 1A03 is an experiential learning course supporting student exploration of questions and issues impacting Hamilton and the surrounding region over a four-week period in May. This course will give students the opportunity to choose from a series of learning experiences that will occur in studio, workshops, lab, and field, both on and off campus, allowing the course to be geared towards their interests. Details are available on the Interession Program website <https://intersession.mcmaster.ca>.

Nine hours, lectures (two hours) and workshops/fieldwork/studios/labs (seven hours); Interession term (May)

This course is open to students from all McMaster Faculties.

### INSPIRE 3EL1 - EXPERIENTIAL LEARNING OPPORTUNITIES

Experiential learning courses supporting the exploration of multidisciplinary topics open to all students from all Faculties and from every Level. Content and schedule will vary with courses generally taking place within the month of May. Details for this one-unit course can be found on the Spring Interession website (<http://intersession.mcmaster.ca>) or by contacting the Spring Interession administration ([springintersession@mcmaster.ca](mailto:springintersession@mcmaster.ca)).

Interession term (May)

INSPIRE courses may be repeated on a different topic. Some experiential learning opportunities may require a fee to cover costs of travel and other logistics.

### INSPIRE 3EL2 - EXPERIENTIAL LEARNING OPPORTUNITIES

Experiential learning courses supporting the exploration of multidisciplinary topics open to all students from all Faculties and from every Level. Content and schedule will vary with courses generally taking place within the month of May. Details for this two-unit course can be found on the Spring Interession website

(<http://intersession.mcmaster.ca>) or by contacting the Spring Interession administration ([springintersession@mcmaster.ca](mailto:springintersession@mcmaster.ca)).

Interession term (May)

INSPIRE courses may be repeated on a different topic. Some experiential learning opportunities may require a fee to cover costs of travel and other logistics.

### INSPIRE 3EL3 - EXPERIENTIAL LEARNING OPPORTUNITIES

Experiential learning courses supporting the exploration of multidisciplinary topics open to all students from all Faculties and from every Level. Content and schedule will vary with courses generally taking place within the month of May. Details for this three-unit course can be found on the Spring Interession website (<http://intersession.mcmaster.ca>) or by contacting the Spring Interession administration

([springintersession@mcmaster.ca](mailto:springintersession@mcmaster.ca)).

Interession term (May)

INSPIRE courses may be repeated on a different topic. Some experiential learning opportunities may require a fee to cover costs of travel and other logistics.

## Integrated Science

Courses in Integrated Science are administered by the School of Interdisciplinary Science.

General Sciences Building, Room 105, ext. 21181

Email: [sis@mcmaster.ca](mailto:sis@mcmaster.ca)

<https://www.science.mcmaster.ca/sis/undergraduate/isci.html>

### Notes

1. Within Integrated Science courses, there is a strong emphasis on inquiry-based learning and students will be involved in individual and team research projects in field and laboratory settings. Students will also develop scientific literacy skills through study of scientific writing and through writing practice.
2. ISCI 1A24 A/B covers some of the content from the following Level I areas of study: Calculus, Introductory Biology and Life Sciences, Introductory Chemistry, Introductory Earth & Environmental Science, Introductory Physics, and Introduction to Psychology. Students are advised to refer to individual course listings to determine when ISCI 1A24 A/B serves as an appropriate requisite.
3. ISCI 2A18 A/B covers some of the content from the following Level II areas of study: Introductory Neuroscience, Ecology, Calculus, Nucleic Acids and

Proteins, History of the Earth, and Thermodynamics. Students are advised to refer to individual course listings to determine when ISCI 2A18 A/B serves as an appropriate requisite.

4. Some Level III and/or IV research methodology/project courses, and Level IV independent study, inquiry, literature review, and thesis courses may not be open to students in an Honours Integrated Science program. Students are advised to refer to individual course listings for appropriate exclusions.
5. All students completing a concentration are strongly encouraged to meet with the academic advisor in the department in which they are completing the concentration to discuss program requirements and course selections.
6. Students are strongly encouraged to check prerequisites for upper-level courses. The prerequisites should be considered when selecting courses.

#### Courses

*If no prerequisite is listed, the course is open.*

### ISCI 1A24 A/B - INTEGRATED SCIENCE I

Integrates learning of essential knowledge and skills from the fundamental scientific disciplines (biology, chemistry, mathematics, physics, earth science and psychology) in the context of pertinent topics and projects. Interdisciplinary teams of instructors will teach and linkages between discipline areas will be emphasized partly through study of 'thematic modules.'

One mandatory one-day field trip will be held.

Integrated lectures, labs, tutorials, field trips, discussions; two terms

**Prerequisite(s):** Registration in Honours Integrated Science I

**Co-requisite(s):** BIOSAFE 1BS0 (or HTHSCI 1BS0), WHMIS 1A00 if not already completed. Both requirements must be completed prior to the first lab.

### ISCI 2A18 A/B - INTEGRATED SCIENCE II

Integrates learning of biochemistry, biology, chemistry, earth science, mathematics, neuroscience and physics. Students will participate in individual and team research projects in field and laboratory settings and will further develop skills in research methodology, ethics, and science literacy.

Integrated lectures, labs, tutorials, field trips, discussions; two terms

**Prerequisite(s):** Registration in Level II of an Honours Integrated Science program

### ISCI 3A12 A/B - INTEGRATED SCIENCE III

Interdisciplinary research projects and development of scientific and literacy skills (including data analysis, inquiry/scientific communication and leadership). Students will participate in individual and team research projects in field and laboratory settings. Up to three mandatory one-day field trips will be held.

Integrated lectures, labs, tutorials, field trips, discussions; two terms

**Prerequisite(s):** Registration in Level III of an Honours Integrated Science program

### ISCI 3Z09 - INTEGRATED SCIENCE III FOR EXCHANGE STUDENTS

Integrated research projects and independent study project completed in one term exchange program with the University of Leicester's Natural Sciences Programme. Development of scientific and literacy skills including data analysis, inquiry, and scientific communication. Students will participate in individual and team research projects in field and laboratory settings.

Integrated lectures, laboratories, tutorials, field trips and discussions; one term

**Prerequisite(s):** Registration in Level III or above of the University of Leicester's Natural Sciences Programme and on exchange with the Integrated Science program. Permission of the Director of the School of Interdisciplinary Science (SIS) is required.

This course is open only to those students from the University of Leicester in the Natural Sciences Programme who are on exchange for one term with

the Honours Integrated Science program. Not open to students with credit or registration in any Honours Integrated Science program.

### ISCI 4A12 A/B - INTEGRATED SCIENCE IV

Individual/group thesis project as well as directed study of at least one research problem through published materials and/or field inquiry and/or data analysis.

Seminars/discussion; two terms

**Prerequisite(s):** Registration in Level IV of an Honours Integrated Science program

### ISCI 4ZF0 - INTEGRATED SCIENCE FIELD WORK

Administrative requirement for field work corresponding with ISCI 4A12 A/B.

*This course is evaluated on a Complete/Not Complete basis.*

**Prerequisite(s):** Registration in Level III or above of an Honours Integrated Science program; and permission of the instructor

Students must register in ISCI 4A12 A/B in the same or subsequent session as ISCI 4ZF0.

## Integrated Biomedical Engineering and Health Sciences (IBEHS)

### IBEHS 1EE0 - INTRODUCTION TO THE ENGINEERING CO-OP PROGRAM

Orientation to Engineering Co-op programs, self-assessment exercises, job and employer research, cover letter and resume writing, interviewing skills and work place professionalism.

Five sessions; first or second term

**Prerequisite(s):** Registration in the Integrated Biomedical Engineering and Health Sciences (IBEHS) Co-op program

**Cross-list(s):** ENGINEER 1EE0

*Not open to students in their final level.*

### IBEHS 1P10 A/B - HEALTH SOLUTIONS DESIGN PROJECTS I

Project-based integrated learning course using healthcare problems to teach design and engineering content. Topics in ethics and professionalism, health and safety, communication, visualization, computation, and materials introduced.

Three lectures, one lab (three hours), one tutorial (two hours); both terms

**Prerequisite(s):** Registration in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program

**Antirequisite(s):** ENGINEER 1C03, 1D04, 1P03, 1P13 A/B, MATLS 1M03

### IBEHS 2E06 A/B - HEALTH, ENGINEERING SCIENCE AND ENTREPRENEURSHIP I

The course will explore the concepts of human-centred design, foresight, and systems design as central to discovering and defining health problems. Students will develop capabilities in creative confidence and collaboration through group projects using a design thinking process.

Lecture (three hours); both terms

**Prerequisite(s):** IBEHS 1P10 A/B and registration in the Health, Engineering Science and Entrepreneurship Specialization of the Integrated Biomedical Engineering and Health Sciences (IBEHS) program

**Antirequisite(s):** HTHSCI 4ID3

### IBEHS 2ECO - ENGINEERING WORK TERM

Minimum of 12 weeks of full-time employment in a professional environment. First or second term

**Prerequisite(s):** Registration in the Integrated Biomedical Engineering and Health Sciences (IBEHS) Co-op program IBEHS 1EE0 and permission from the Engineering Co-Op and Career Services.

**Cross-list(s):** ENGINEER 2ECO

*Not open to students in their final level.*

### IBEHS 2P03 - HEALTH SOLUTIONS DESIGN PROJECTS II

Second course of the design and innovation sequence. Problem solving approaches discussed. Topics reinforced in the context of a biomedical engineering project conducted in multidisciplinary groups.

Two lectures, one lab (three hours); second term

**Prerequisite(s):** IBEHS 1P10 A/B and registration in Level II of the Integrated Biomedical Engineering and Health Sciences (IBEHS) program or registration in the Chemical Engineering & Bioengineering program.

**Antirequisite(s):** CHEMENG 4LL3

### IBEHS 2R00 A/B - CURRENT RESEARCH INITIATIVES I

Each year students will complete 1.5 units of this course but final evaluation will occur in Level V. Students will attend and document 6-12 additional learning opportunities each year. This may include health science rounds and seminars in any faculty at any university. It may also include attending national or international meetings in the health science, business or engineering domains. The content of this process may inform activities in the Health Entrepreneurship courses and learning portfolios will be used for evaluation. To be completed during the second year of study.

One session; both terms

**Prerequisite(s):** Registration in the Health, Engineering Science and Entrepreneurship Specialization of the Integrated Biomedical Engineering and Health Sciences (IBEHS) program

### IBEHS 3A03 - BIOMEDICAL SIGNALS AND SYSTEMS

Linear systems, signals, input-output relations of linear systems; discrete and continuous time systems; transfer functions, Fourier transforms, Laplace transforms; sampling theory; stability.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** MATH 2Z03 and registration in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program

**Antirequisite(s):** SFWRENG 3MX3, ELEC ENG 3TP3

### IBEHS 3E06 A/B - HEALTH, ENGINEERING SCIENCE AND ENTREPRENEURSHIP II

The course will continue to explore the concepts of entrepreneurship beginning with core curriculum integrated from organizational behaviour, leadership, finance and marketing, discovery, validation and design thinking. Students will work in groups on the creation of value from problems in the health and engineering disciplines.

Lecture (three hours); both terms

**Prerequisite(s):** IBEHS 2E06 A/B and registration in the Health, Engineering Science and Entrepreneurship Specialization of the Integrated Biomedical Engineering and Health Sciences (IBEHS) program

### IBEHS 3H03 - RESEARCH PROJECT

A special course of study to be arranged by mutual consent of a supervisor and the student, to carry out experiments, research and/or theoretical investigations. Students may consider this course to advance a project

conceived in the Health Solutions Design Projects courses.

One term

**Prerequisite(s):** Registration in Level III of an IBEHS program and permission of the program

**Antirequisite(s):** IBEHS 3I06 A/B

### IBEHS 3I06 A/B - RESEARCH PROJECT

A special course of study to be arranged by mutual consent of a supervisor and the student, to carry out experiments, research and/or theoretical investigations. Students may consider this course to advance a project conceived in the Health Solutions Design Projects courses.

Two terms

**Prerequisite(s):** Registration in Level III or above of an IBEHS program and permission of the program.

**Antirequisite(s):** CHEMENG 4Y04 A/B, CIVENG 4Z04, COMPENG 40H4, COMPENG 40J4, COMP ENG 40K4, ELECENG 40H4, ELECENG 40J4, ELECENG 40K4, ENGPYHS 3H04 A/B, ENGPYHS 4H04 A/B, IBEHS 3H03, MATLS 4KA3, MATLS 4KB3, MATLS 4K06, MECHENG 4X04 A/B, HTHSCI 3H03, HTHSCI 3H06 A/B, HTHSCI 3BM6 A/B, HTHSCI 4B06 A/B

### IBEHS 3P04 - HEALTH SOLUTIONS DESIGN PROJECTS III: ANALYSIS AND DECISION MAKING

Working in groups, students approach an open-ended design problem, applying design thinking, problem solving skills, systems analysis, simulation and optimization; topics in economic decision-making are introduced; oral and written communication is emphasized in the context of biomedical engineering activities.

Two lectures, one tutorial (two hours); second term

**Prerequisite(s):** IBEHS 2P03, IBEHS 3A03 and registration in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program

### IBEHS 3R00 A/B - CURRENT RESEARCH INITIATIVES II

Each year students will complete 1.5 units of this course but final evaluation will occur in Level V. Students will attend and document 6-12 additional learning opportunities each year. This may include health science rounds and seminars in any faculty at any university. It may also include attending national or international meetings in the health science, business or engineering domains. The content of this process may inform activities in the Health Entrepreneurship courses and learning portfolios will be used for evaluation. To be completed during the third year of study.

One session; both terms

**Prerequisite(s):** IBEHS 2R00 A/B

### IBEHS 4A03 - BIOMEDICAL CONTROL SYSTEMS

Modelling of control systems in the continuous-time domain; representations; model linearization; performance of control systems in time and frequency; stability; control design. Particular emphasis will be given to biomedical applications.

Three lectures, one tutorial (one hour); second term

**Prerequisite(s):** IBEHS 3A03 and registration in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program

**Antirequisite(s):** ELECENG 3CL4, MECHENG 4R03

### IBEHS 4B03 - BIOMECHANICS

An introduction of engineering principles applied to biomechanics problems including cellular biomechanics, hemodynamics, circulatory system, respiratory system, muscles and movement and skeletal biomechanics.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** Registration in Level IV of the Integrated Biomedical Engineering and Health Sciences (IBEHS) program

**Cross-list(s):** MECHENG 4BB3

### IBEHS 4C03 - STATISTICAL METHODS IN BIOMEDICAL ENGINEERING

Probability theory, random variables, random processes, statistical inference, regression, correlation, error analysis, and experimental design.

Three lectures, one tutorial (one hour); second term

**Prerequisite(s):** Registration in Level III or above of the Integrated Biomedical Engineering and Health Sciences (IBEHS) program

**Antirequisite(s):** STATS 3J04, STATS 3Y03, MATLS 3J03

### IBEHS 4D03 - INTRODUCTION TO MEDICAL IMAGING

Through this introductory course, students will learn methods of how medical images are formed, and will gain knowledge of the Fourier transform and its applications in medical imaging. Basic understanding of the sources of noise and artifacts in the different modalities will also be attained, along with an understanding of the limits to the achievable resolution. Imaging modalities that will be covered include ultrasound, x-rays, computed tomography and magnetic resonance imaging.

Two lectures, one lab (three hours); second term

**Prerequisite(s):** IBEHS 3A03 and registration in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program or registration in Level IV Electrical and Biomedical Engineering.

**Antirequisite(s):** MEDPHYS 4D03

### IBEHS 4E06 A/B - HEALTH, ENGINEERING SCIENCE AND ENTREPRENEURSHIP III

The course will explore the concepts of entrepreneurship beginning with core curriculum integrated from organizational behaviour, leadership, finance and marketing, discovery, validation and design thinking. Students will work in groups on the creation of value from problems in the health and engineering disciplines as these developed from IBEHS 3E06 A/B.

Two lecture hours; one three-hour tutorial; both terms

**Prerequisite(s):** IBEHS 2E06 A/B and registration in the Health, Engineering Science and Entrepreneurship Specialization of the Integrated Biomedical Engineering and Health Sciences (IBEHS) program

### IBEHS 4F04 - BIOMEDICAL INSTRUMENTATION AND MEASUREMENT

An introduction of engineering principles applied to the design of biomedical instrumentation including: electrodes, mechanical, chemical and other transducers; signal processing and data acquisition; safety; neuromuscular; cardiovascular, biochemical, biomechanical and other clinical instrumentation.

Three lectures; one tutorial; one lab every other week; first term

**Prerequisite(s):** IBEHS 3A03, and registration in the Integrated Biomedical Engineering and Health Sciences (IBEHS) Program.

**Cross-list(s):** ELECENG 4BD4

### IBEHS 4P04 - HEALTH SOLUTIONS DESIGN PROJECTS IV: ECONOMICS AND PROJECT MANAGEMENT

Working in groups, students identify a healthcare need, connect with a client, propose and work towards solution, and present a proposal for development to a group of stakeholders; topics related to project management are introduced; applications in engineering economics, including time value of money, value engineering, cash flow analysis, and comparison methods.

Two lectures, one tutorial (two hours); first term

**Prerequisite(s):** IBEHS 3P04 and registration in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program

### IBEHS 4QZ3 - MODELLING OF BIOLOGICAL SYSTEMS

Introduction to mathematical and engineering methods for describing and predicting the behaviour of biological systems; including sensory receptors, neuromuscular and biomechanical systems; statistical models of biological function; kinetic models of biological thermodynamics.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** IBEHS 4C03 and registration in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program

**Cross-list(s):** ELECENG 4BC3

### IBEHS 4R00 A/B - CURRENT RESEARCH INITIATIVES III

Each year students will complete 1.5 units of this course but final evaluation will occur in Level V. Students will attend and document 6-12 additional learning opportunities each year. This may include health science rounds and seminars in any faculty at any university. It may also include attending national or international meetings in the health science, business or engineering domains. The content of this process may inform activities in the Health Entrepreneurship courses and learning portfolios will be used for evaluation. To be completed during the fourth year of study.

One session; both terms

**Prerequisite(s):** IBEHS 3R00 A/B

### IBEHS 5E15 A/B - HEALTH, ENGINEERING SCIENCE AND ENTREPRENEURSHIP (CAPSTONE)

This course provides an opportunity for students to integrate and apply learning from the previous four years of the program. Projects and proposals from Health and Entrepreneurship courses will achieve maturity and will be examined by faculty members and members of the business, engineering and health communities outside the university. The final focus will be on quality entrepreneurship with the potential for high impact.

One lecture; both terms

**Prerequisite(s):** IBEHS 4E06 A/B and registration in the Health, Engineering Science and Entrepreneurship Specialization of the Integrated Biomedical Engineering and Health Sciences (IBEHS) program

### IBEHS 5P06 A/B - BIOMEDICAL CAPSTONE DESIGN PROJECT

The design process; safety; a term project composed of small teams of students including an oral presentation and written report.

Two lectures; both terms

**Prerequisite(s):** IBEHS 4P04 and registration in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program

### IBEHS 5R06 A/B - CURRENT RESEARCH INITIATIVES IV

Each year students will complete 1.5 units of this course, but final evaluation will occur in Level V. Students will attend and document 6-12 additional learning opportunities each year. This may include health science rounds and seminars in any faculty at any university. It may also include attending national or international meetings in the health science, business or engineering domains. The content of this process may inform activities in the Health Entrepreneurship courses and learning portfolios will be used for evaluation. To be completed during the 5th year of study.

One lecture; both terms

**Prerequisite(s):** IBEHS 4R00 A/B



## International Engagement

### INTENG 2A03 A/B S - INTERNATIONAL ENGAGEMENT AT HOME

This course recognizes a local volunteer experience (a minimum of 100 hours) which promotes a deeper understanding of cross-cultural issues and linguistic diversity in the Canadian context. Students participate in defining learning goals and experiences.

Graded on a Pass/Fail basis.

**Prerequisite(s):** Registration in Level II or above

Students must contact the Humanities Academic Advising Office, CNH-107, for details on the application process.

Permission of the Associate Dean of the Faculty of Humanities is required.

### INTENG 3A03 - INTERNATIONAL ENGAGEMENT CAPSTONE

Students will integrate and reflect upon aspects of their experiences within the Certificate in International Engagement, culminating in a final project (digital portfolio) and presentation (digital/poster). This course is to be completed under the supervision of an appropriate faculty member.

Graded on a Pass/Fail basis.

One term

**Prerequisite(s):** 3 units of INTL 2A03 A/B S or XCH credit

Students must contact the Humanities Academic Advising Office, CNH-107, for details on the application process.

Permission of the Associate Dean of the Faculty of Humanities is required.

## Inuktitut

Courses in Inuktitut are administered by the Indigenous Studies Program.

L.R. Wilson Hall, Room 1811, ext. 23788

<https://indigenous.mcmaster.ca>

### INKUT 1Z03 - INTRODUCTION TO INUIT LANGUAGE AND CULTURE

The course will study Inuktitut, the Inuit language in spoken and written forms with attention to dialect differences across the Arctic.

3 hours (lecture and seminar); one term

### INKUT 2Z03 - INTERMEDIATE INUKTITUT

This course expands on the vocabulary and the oral skills for Inuktitut. In addition, the course reviews the written component of the language.

3 hours; lecture and seminar: one term.

## Italian

Courses in Italian are administered by the Department of Linguistics and Languages.

Togo Salmon Hall, Room 629, ext. 24388

<http://linguistics.humanities.mcmaster.ca/>

### Notes

1. Students should note that the Department has classified its Italian language courses under the following categories:

**Introductory Level Language Course:** ITALIAN 1Z06 A/B S

**Intermediate Level Language Courses:** ITALIAN 1A03, 1AA3, 2Z03, 2ZZ3

**Advanced Level Language Courses:** ITALIAN 3Z03

2. Not all courses are offered on an annual basis. Students should consult the timetable for available courses.
3. Students may be required to take a placement test in the Department of

- Linguistics and Languages to assess their proficiency in the language.
4. The following course is open as an elective to students registered in Level II or above of any undergraduate program.

ITALIAN 3X03 Italy Today Through Film (Taught in English)

### Courses

*If no prerequisite is listed, the course is open.*

### ITALIAN 1A03 - INTERMEDIATE ITALIAN I

Intended for students who already have knowledge of Italian. Reviews and extends grammar and vocabulary for composition and group oral practice through short presentations. Uses Italian film and popular music to explore regional identities.

Three hours; one term

**Prerequisite(s):** Grade 12 U or M equivalent or other equivalent or permission of the Department

**Antirequisite(s):** ITALIAN 2Z03

The Department reserves the right to place students in the course most appropriate to their abilities.

### ITALIAN 1AA3 - INTERMEDIATE ITALIAN II

Continues grammar and vocabulary expansion from Italian 1A03. Uses Italian film and popular music to explore cultural themes. The sequel to this course is ITALIAN 3Z03.

Three hours; one term

**Prerequisite(s):** ITALIAN 1A03

**Antirequisite(s):** ITALIAN 2ZZ3

The Department reserves the right to place students in the course most appropriate to their abilities.

### ITALIAN 1Z06 A/B S - BEGINNER'S INTENSIVE ITALIAN

Introduction to basic written and spoken Italian through Italian popular music and film. Students learn about current social and political issues in Italian culture. Delivered in a blended format.

Lecture and web module (three hours); two terms

**Antirequisite(s):** Grade 12 U or M equivalent

*The Department reserves the right to place students in the course most appropriate to their abilities.*

### ITALIAN 2Z03 - INTERMEDIATE ITALIAN I

Intended for students who already have knowledge of Italian. Reviews and extends grammar and vocabulary for composition and group oral practice through short presentations. Uses Italian film and popular music to explore regional identities.

Three hours; one term

**Prerequisite(s):** ITALIAN 1Z06 A/B

**Antirequisite(s):** ITALIAN 1A03

The Department reserves the right to place students in the course most appropriate to their abilities.

### ITALIAN 2ZZ3 - INTERMEDIATE ITALIAN II

Continues grammar and vocabulary expansion from Italian 2Z03. Uses Italian film and popular music to explore cultural themes. The sequel to this course is ITALIAN 3Z03.

Three hours; one term

**Prerequisite(s):** ITALIAN 2Z03

**Antirequisite(s):** ITALIAN 1AA3

The Department reserves the right to place students in the course most appropriate to their abilities.

### ITALIAN 3X03 - ITALY TODAY THROUGH FILM (TAUGHT IN ENGLISH)

A survey of modern Italian culture (post-WWII) through film. Topics may include: the development of post-war consumption, Italy's economy, gender roles and the family, immigration, the North/South relationship, the mafia, political corruption and the media.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above

### ITALIAN 3Z03 - ADVANCED ITALIAN I

This course is designed to improve the student's written and oral proficiency through analysis of short stories and film.

Three hours; one term

**Prerequisite(s):** ITALIAN 1AA3 or 2ZZ3

### ITALIAN 4I13 A/B S - INDEPENDENT STUDY

The student will prepare, under the supervision of a faculty member, a research paper involving independent study in an area where the student has already demonstrated competence.

**Prerequisite(s):** 12 units of Italian above Level I and permission of the Department

## Japanese

Courses in Japanese language are administered by the Department of Linguistics and Languages.

Togo Salmon Hall, Room 629, ext. 24388

<http://linguistics.humanities.mcmaster.ca/>

For the requirements for the *Minor in Japanese Studies*, please see the *Department of Religious Studies* section of this calendar.

#### Note

Not all courses are offered on an annual basis. Students should consult the timetable for available courses.

#### Courses

*If no prerequisite is listed, the course is open.*

### JAPANESE 1Z06 A/B S - BEGINNER'S INTENSIVE JAPANESE

An introduction to basic spoken and written discourse skills in Japanese. Acquisition of elementary grammar, kana/kanji scripts and oral communication skills will be emphasized. Open to students with no prior background in Japanese. The sequel to this course is JAPANESE 2Z03.

Three hours (up to one hour may be offered on-line); two terms

The Department reserves the right to place students in the course most appropriate to their abilities.

### JAPANESE 2X03 - JAPANESE ANIME (TAUGHT IN ENGLISH)

This course introduces students to Japanese popular culture and the art of Japanese animated film known as Anime. The course will situate Anime in the context of Japanese film and visual art.

Three hours; one term

### JAPANESE 2Z03 - INTERMEDIATE INTENSIVE JAPANESE I

This course aims to further develop students' spoken and written discourse skills in Japanese. Acquisition of lower intermediate grammar, additional kanji scripts and oral communication skills will be emphasized. The sequel to this course is JAPANESE 2ZZ3.

Three hours (up to one hour may be offered on-line); one term

**Prerequisite(s):** A grade of at least B- in JAPANESE 1Z06 A/B

*Not open to students with credit in JAPANESE 2ZZ3. The Department reserves the right to place students in the course most appropriate to their abilities.*

### JAPANESE 2ZZ3 - INTERMEDIATE INTENSIVE JAPANESE II

This course aims to consolidate students' intermediate spoken and written discourse skills. Acquisition of higher intermediate grammar, additional kanji scripts and oral communication skills will be emphasized. The sequel to this course is JAPANESE 3Z03.

Three hours (up to one hour may be offered on-line); one term

**Prerequisite(s):** JAPANESE 2Z03

The Department reserves the right to place students in the course most appropriate to their abilities.

## Kinesiology

Courses in Kinesiology are administered by the Department of Kinesiology.

Ivor Wynne Centre, Room 219C, ext. 24462

<http://www.science.mcmaster.ca/kinesiology>

#### Department Notes

1. Kinesiology students may not register in Level III or IV Kinesiology courses until all appropriate required Level I and II Kinesiology courses have been successfully completed.
2. Not all Level III and IV Kinesiology courses are offered each year.
3. KINESIOL 1Y03 and 1YY3 (as of September 2013) are only available to Medical Radiation Sciences students.
4. KINESIOL 3A03 and 3V03 are available for elective credit for students enrolled in Level III or above of a non-Kinesiology program. Space for such students is limited and places are assigned on a first come basis.
5. KINESIOL 2G03 and 3E03 (or LIFESCI 3K03) may be used to satisfy Psychology course requirements for Kinesiology students pursuing a Minor in Psychology.
6. KINESIOL 2G03 may be used to satisfy Health Studies course requirements for Kinesiology students pursuing a Minor in Health Studies.
7. KINESIOL 4SS3 may be used to satisfy Gerontology course requirements for Kinesiology students pursuing a Minor in Gerontology.
8. Honours Biology (Physiology Specialization) students lacking KINESIOL 2Y03 and 2YY3 are strongly encouraged to contact the instructor of KINESIOL 2C03 to discuss possible prerequisite deficiencies.
9. Honours Biology (Physiology Specialization) students lacking KINESIOL 2Y03 and 2YY3 are strongly encouraged to contact the instructor of KINESIOL 2CC3 to discuss possible prerequisite deficiencies.
10. *Routine Practices*, an on-line module available through Mosaic (Health and Safety Training), must be completed prior to attendance in the first lab associated with each of: KINESIOL 1A03, 1AA3, 1Y03, 1YY3, 2Y03, 2YY3.

#### Courses

**All courses are open only to Kinesiology students unless otherwise specified. (See Notes 3 and 4 above.)**

### KINESIOL 1A03 - HUMAN ANATOMY AND PHYSIOLOGY I

An introduction to the basic embryology and tissue development and examination of the anatomy and physiology of the nervous, articular, skeletal and muscular systems.

Two hours (lectures), one hour (web module), two hours (labs, alternating weeks); weekly tests; one term

**Prerequisite(s):** Registration in Level I Honours Kinesiology

**Co-requisite(s):** WHMIS 1A00 if not already completed. This requirement must be completed prior to the first lab. Routine Practice, a mandatory on-line health and safety module, available through Mosaic, must be completed prior to the first lab.

**Antirequisite(s):** HTHSCI 1D06 A/B, 1H06 A/B, 2F03, 2FF3, 2L03, 2LL3, KINESIOL 1Y03, 2Y03

### **KINESIOL 1AA3 - HUMAN ANATOMY AND PHYSIOLOGY II**

An examination of the anatomy and physiology of the cardiovascular, respiratory, digestive, renal, endocrine and reproductive systems. Two hours (lectures), one hour (web module), two hours (labs, alternating weeks); weekly tests; one term

**Prerequisite(s):** KINESIOL 1A03; and registration in Level I Honours Kinesiology

**Co-requisite(s):** WHMIS 1A00 if not already completed. This requirement must be completed prior to the first lab. Routine Practice, a mandatory on-line health and safety module, available through Mosaic, must be completed prior to the first lab.

**Antirequisite(s):** HTHSCI 1D06 A/B, 1H06 A/B, 2F03, 2FF3, 2L03, 2LL3, KINESIOL 1YY3, 2YY3

### **KINESIOL 1E03 - MOTOR CONTROL AND LEARNING**

Examination of the behavioral and psychological principles of motor control and motor learning. Topics include measurement of motor performance, sensory processes, perception, memory, attention, practice and feedback, and neuroscience fundamentals in motor control.

Three hours (lectures, labs); one term

**Prerequisite(s):** Registration in Level I Honours Kinesiology

### **KINESIOL 1F03 - HUMAN NUTRITION AND HEALTH**

An introduction to the study of human nutrition, with an examination of the role of nutrition, and, where applicable, physical activity in the prevention and treatment of chronic diseases.

Three hours (lectures); one term

**Prerequisite(s):** Registration in Level I Honours Kinesiology

### **KINESIOL 1K03 - FOUNDATIONS IN KINESIOLOGY**

Introduces students to the field of kinesiology, describing how the various sub-disciplines integrate together into a unified understanding of the study of human movement. Students will also learn how knowledge is generated, interpreted and disseminated within the field of kinesiology, and be introduced to a variety of academic/career options that are available upon graduation.

Three hours (lectures, tutorial); one term

**Prerequisite(s):** Registration in Level I Honours Kinesiology

### **KINESIOL 1Y03 - HUMAN ANATOMY AND PHYSIOLOGY I**

An introduction to the basic embryology and tissue development and examination of the anatomy and physiology of the nervous, articular, skeletal and muscular systems.

Two hours (lectures), one hour (web module), two hours (labs, alternating weeks); weekly tests; one term

**Prerequisite(s):** Registration in Level I Medical Radiation Sciences

**Co-requisite(s):** WHMIS 1A00 if not already completed. This requirement must be completed prior to the first lab. Routine Practice, a mandatory on-line health and safety module, available through Mosaic, must be completed prior to the first lab.

**Antirequisite(s):** HTHSCI 1D06 A/B, 1H06 A/B, 2F03, 2FF3, 2L03, 2LL3, KINESIOL 1A03, 2Y03

### **KINESIOL 1YY3 - HUMAN ANATOMY AND PHYSIOLOGY II**

An examination of the anatomy and physiology of the cardiovascular, respiratory, digestive, renal, endocrine and reproductive systems.

Two hours (lectures), one hour (web module), two hours (labs, alternating weeks); weekly tests; one term

**Prerequisite(s):** KINESIOL 1Y03 and registration in Level I Medical Radiation Sciences

**Co-requisite(s):** WHMIS 1A00 if not already completed. This requirement must be completed prior to the first lab. Routine Practice, a mandatory on-line health and safety module, available through Mosaic, must be completed prior to the first lab.

**Antirequisite(s):** HTHSCI 1D06 A/B, 1H06 A/B, 2F03, 2FF3, 2L03, 2LL3, KINESIOL 1AA3, 2YY3

### **KINESIOL 2A03 - BIOMECHANICS**

An introduction to the analysis of human motion using fundamental mechanical principles, with a focus on inquiry and laboratory skills.

Lectures (three hours), labs (two hours); one term

**Prerequisite(s):** Registration in Level II of a Kinesiology program

**Antirequisite(s):** LIFESCI 3J03

### **KINESIOL 2C03 - NEUROMUSCULAR EXERCISE PHYSIOLOGY**

Examination of neuromuscular function during exercise, with an emphasis on factors limiting strength, speed and power performance. Adaptations to training will also be considered, as well as mechanisms of training-induced muscle damage.

Lectures (three hours), labs (two hours); one term

**Prerequisite(s):** KINESIOL 1A03 and 1AA3 and registration in Level II of a Kinesiology program; or both KINESIOL 2Y03 and 2YY3 (or KINESIOL 1Y03 and 1YY3), or BIOLOGY 2A03, and registration in Honours Biology (Physiology) (See *Department Note 8* above.)

### **KINESIOL 2CC3 - CARDIORESPIRATORY AND METABOLIC EXERCISE PHYSIOLOGY**

Examination of cardiorespiratory function and metabolic regulation during exercise, with emphasis on factors limiting human performance. Adaptations to training will also be considered.

Lectures (three hours), labs (two hours); one term

**Prerequisite(s):** KINESIOL 1A03, 1AA3, 1F03 and registration in Level II of a Kinesiology program; or both KINESIOL 2Y03 and 2YY3 (or KINESIOL 1Y03 and 1YY3), or BIOLOGY 2A03, and registration in Honours Biology (Physiology) (See *Department Note 9* above.)

### **KINESIOL 2E03 - MUSCULOSKELETAL ANATOMY**

Examination of anatomy with a focus on bones, joints, muscles and connective tissues of the spine and extremities. Experiential approach to functional movement analysis.

Lectures (two hours), labs (two hours); one term

**Prerequisite(s):** KINESIOL 1A03, 1AA3 and registration in Level II of a Kinesiology program

### **KINESIOL 2F03 - GROWTH, MATURATION AND PHYSICAL ACTIVITY IN CHILDREN AND YOUTH**

Examines the growth and maturation from various perspectives (i.e., biological, behavioural/psychological and social/environmental), and the influence these processes have on physical activity in the first two decades of life.

Lectures (three hours); one term

**Prerequisite(s):** KINESIOL 1A03, 1AA3, 1E03 and registration in Level II of a Kinesiology program

### KINESIOL 2G03 - HEALTH PSYCHOLOGY

An introduction to health psychology that examines the interplay between psychology and biology, emphasizing the complexity of maintaining health and preventing disease. Topics include sleep, stress, addictions, pain, and mental health.

Lectures (three hours); one term

**Prerequisite(s):** Registration in Level II of a Kinesiology program

**Antirequisite(s):** HTHSCI 2J03

### KINESIOL 2Y03 - HUMAN ANATOMY AND PHYSIOLOGY I

An introduction to the basic embryology and tissue development and examination of the anatomy and physiology of the nervous, articular, skeletal and muscular systems.

Two hours (lectures), one hour (web module), two hours (labs, alternating weeks); weekly tests; one term

**Prerequisite(s):** Grade 12 Biology U or BIOLOGY 1P03; and registration in Level II or above

**Co-requisite(s):** WHMIS 1A00, if not already completed. This requirement must be completed prior to the first lab. Routine Practice, a mandatory on-line health and safety module, available through Mosaic, must be completed prior to the first lab.

**Antirequisite(s):** HTHSCI 1D06 A/B, 1H06 A/B, 2F03, 2FF3, 2L03, 2LL3, KINESIOL 1A03, 1Y03

Registration priority is given to students in a Life Sciences program.

### KINESIOL 2YY3 - HUMAN ANATOMY AND PHYSIOLOGY II

An examination of the anatomy and physiology of the cardiovascular, lymphatic respiratory, digestive, renal endocrine and reproductive systems.

Two hours (lectures), one hour (web module), two hours (labs, alternating weeks); weekly tests; one term

**Prerequisite(s):** KINESIOL 1Y03 or 2Y03; and registration in Level II or above

**Co-requisite(s):** WHMIS 1A00, if not already completed. This requirement must be completed prior to the first lab. Routine Practice, a mandatory on-line health and safety module, available through Mosaic, must be completed prior to the first lab.

**Antirequisite(s):** HTHSCI 1D06 A/B, 1H06 A/B, 2F03, 2FF3, 2L03, 2LL3, KINESIOL 1AA3, 1YY3

Registration priority is given to students in a Life Sciences program.

### KINESIOL 3AA3 - BIOMECHANICS II

Study of kinematics and kinetics of human movement, including electromyography, fluid and tissue mechanics with applications.

Lectures, lab (three hours); one term

**Prerequisite(s):** KINESIOL 2A03 and registration in Level III or above of an Honours Kinesiology program

### KINESIOL 3B03 - ADAPTED PHYSICAL ACTIVITY

An introduction to developmental, emotional, behavioural, learning and orthopedic disabilities with an emphasis on adapting physical activity to meet individual needs.

Lectures and student-led interactive group presentations (three hours); one term

**Prerequisite(s):** Six units from HTHSCI 1D06 A/B, 1H06 A/B, 2F03, 2FF3, 2L03, 2LL3, KINESIOL 1A03, 1AA3, 1Y03, 1YY3, 2Y03, 2YY3; and registration in Level III or above

This course may be taken as elective credit by undergraduates in Level III or above of a non-Kinesiology program. However, enrolment for such students is limited.

### KINESIOL 3E03 - NEURAL CONTROL OF HUMAN MOVEMENT

Neuromuscular control underlying human movement. Topics include basic neurophysiology, mechanisms of sensation, reflexes, voluntary movement and theories of motor control with special reference to brain function.

Lectures (three hours); one term

**Prerequisite(s):** KINESIOL 1E03 and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

**Antirequisite(s):** LIFESCI 3K03

### KINESIOL 3F03 - ATHLETIC TRAINING & CONDITIONING

This course focuses on fundamental principles of strength and conditioning for high performance athletes. Theory explored in the classroom and will be applied in a lab setting.

Lectures/labs (four hours); one term

**Prerequisite(s):** KINESIOL 2C03, 2E03 and registration in Level III or above of Honours Kinesiology

### KINESIOL 3H03 - EXERCISE PSYCHOLOGY

Examination of psychological antecedents and consequences of exercise.

Emphasis is placed on using theory and research to understand and improve exercise participation.

Lectures/tutorials (three hours); one term

**Prerequisite(s):** KINESIOL 2G03 and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

### KINESIOL 3HN3 - HUMAN NEUROPHYSIOLOGY

Provides an in-depth exploration of the sensorimotor cortex and spinal pathways that control movement of the upper and lower limbs. Topics will include mono and poly-synaptic reflex pathways and their modulation, electrophysiology measures as indices of nerve conduction, non-invasive brain stimulation, and electroencephalography. Emphasis placed on gaining theoretical and technical skills to perform human neurophysiology.

Lectures/lab (three hours); one term

**Prerequisite(s):** KINESIOL 1A03, 1AA3, 1E03, 2C03 and registration in Level III or above of Honours Kinesiology

### KINESIOL 3K03 - SPORTS INJURIES

This course will focus on an understanding of mechanism of injury, and injury prevention as applied to common injuries associated with sport and physical activity. Emphasis is placed on developing fundamental injury assessment and treatment skills.

Lectures (two hours), lab (two hours); one term

**Prerequisite(s):** KINESIOL 2E03; and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

*Approximately \$20.00 will be charged for supplies used in labs.*

### KINESIOL 3L03 - EXERCISE TESTING AND PRESCRIPTION

Emphasis on exercise testing and prescription for the healthy adult population. Field and laboratory techniques for exercise testing, interpretation, and exercise prescription are major topics. Students can apply this information to advanced fitness appraisal and prescription certifications.

Three hours (lectures), two hours (labs); one term

**Prerequisite(s):** KINESIOL 2C03, 2CC3 and registration in Level III or above of Honours Kinesiology



### KINESIOL 3N03 - ERGONOMICS I: WORKPLACE INJURY RISK ASSESSMENT

Analysis and quantification of musculoskeletal injury risks in the workplace, with an emphasis on reducing work related low back and upper extremity disorders.

Lecture (three hours), lab (two hours); one term

**Prerequisite(s):** KINESIOL 2A03 and registration in Level III or above of Honours Kinesiology

### KINESIOL 3Q03 - MOTOR DEVELOPMENT ACROSS THE LIFESPAN

Introduction to motor development theories, principles and concepts covering the human life span. Topics include, early motor development during childhood, the maturation of perceptual-motor process during adolescence, the stabilization period during adulthood and changes that accompany aging.

Lectures (three hours); one term

**Prerequisite(s):** KINESIOL 1E03 and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

### KINESIOL 3RP3 - KINESIOLOGY RESEARCH PRACTICUM

This placement course provides students in Honours Kinesiology the opportunity to explore different research laboratory experiences within the Department of Kinesiology. Students will complete a final paper related to the research laboratory experience.

Students are responsible for arranging a suitable laboratory experience and supervision (from a Kinesiology faculty member), and are required to submit an application to the Kinesiology Academic Program Advisor thirty days prior to the start of Term (application/information can be found at <http://www.science.mcmaster.ca/kinesiology/undergraduate-studies/courses.html>). Normally students will spend 60 hours in the laboratory during the placement, occasional lecture; one term

**Prerequisite(s):** Registration in Level III or above of Honours Kinesiology

### KINESIOL 3U03 - HUMAN GROWTH AND MATURATION

In depth analysis of genetic and endocrine influences on the morphological and functional development of fat, skeletal muscle and bone tissue during childhood, in the context of exercise, physical performance capacity and health. Lecture/seminar (three hours); one term

**Prerequisite(s):** KINESIOL 2F03 and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

### KINESIOL 3V03 - SPORT PSYCHOLOGY

This course examines how psychological factors influence and are influenced by participation and performance in sport. Topics include: personality, motivation, arousal, attitude, perception, aggression, competition, concentration confidence and goal setting.

Three lectures; one term

**Prerequisite(s):** Registration in Level III or above

*This course may be taken as elective credit by undergraduates in Level III or above of a non-Kinesiology program. However, enrolment for such students is limited.*

### KINESIOL 3Y03 - HUMAN NUTRITION AND METABOLISM

An in-depth analysis of human nutrition and metabolism, with an emphasis on the impact of diet on human physical performance in both healthy and chronic disease states.

Lectures (three hours); one term

**Prerequisite(s):** KINESIOL 1F03 and registration in Level III or above of

Honours Kinesiology (B.Sc.Kin.)

### KINESIOL 3Z03 - NEUROMUSCULAR PLASTICITY IN HEALTH AND DISEASE

This course is designed to provide students with an advanced understanding of peripheral neuromuscular biology (i.e., motor neuron, neuromuscular synapse, skeletal muscle) as it applies to exercise and select neuromuscular disorders. Emphasis will be on the cellular mechanisms that regulate neuromuscular plasticity in response to acute and chronic physical activity in healthy individuals, as well as in pre-clinical models of disease and in patients with neuromuscular disorders.

Three lectures; one term

**Prerequisite(s):** KINESIOL 2C03 and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

### KINESIOL 4A03 - ADVANCED BIOMECHANICS

In-depth study of the mechanics of human movement including the topics of multi-linked segment analysis, individual muscle force estimation, 3-D forces and moments, fluid resistance, optimization, efficiency and power flow. The laboratory component covers the scientific method, data acquisition, instrumentation and numerical methods.

Lectures, labs (three hours); one term

**Prerequisite(s):** KINESIOL 2A03, 3AA3 and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

### KINESIOL 4AA3 - APPLIED BIOMECHANICS

A combination of lectures and problem based learning on aspects of human movement facing the modern biomechanist. Topics and problems are taken from occupational, clinical and sport biomechanics.

Lectures, tutorials (three hours); one term

**Prerequisite(s):** KINESIOL 2A03, 3AA3 and registration in Level III or above of Honours Kinesiology

**Antirequisite(s):** LIFESCI 4Y03

### KINESIOL 4B03 - CARDIOVASCULAR DISEASE: PATHOPHYSIOLOGY AND REHABILITATION

An examination of the pathophysiology of cardiovascular disease and evidence-based guidelines for its diagnosis, management, and rehabilitation.

Three lectures; one term

**Prerequisite(s):** KINESIOL 2C03, 2CC3 and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

### KINESIOL 4BB3 - ERGONOMICS II: MECHANISM OF INJURY AND PREVENTION

An investigation of injury mechanisms, injury epidemiology, and job design consideration, using advanced techniques. Insights are gained from current literature, common practices and policies. Students work in small groups to resolve ergonomic problems in the workplace.

Lectures, labs (four hours); one term

**Prerequisite(s):** KINESIOL 3N03 and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

### KINESIOL 4C03 - INTEGRATIVE PHYSIOLOGY OF HUMAN PERFORMANCE

A detailed analysis of the physiological factors that regulate human physical performance. Emphasis is placed on the body's integrative response to exercise and the influence of physical training, and altered environmental or metabolic conditions.

Lectures (two hours), lab (three hours); one term

**Prerequisite(s):** KINESIOL 2CC3 and registration in Level III or above of Honours Kinesiology; or BIOLOGY 2A03, KINESIOL 2CC3 and registration in Honours Biology (Physiology)

### KINESIOL 4CN3 - CLINICAL NEUROPHYSIOLOGY

This course will explore fundamental topics in neurophysiology that are pertinent to understanding populations with movement disorders of neurological basis.

Two hours (lectures), two hours (labs) every third week; one term

**Prerequisite(s):** KINESIOL 3E03, 3HN3 and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

### KINESIOL 4EE3 - PROFESSIONAL PLACEMENT IN KINESIOLOGY

Students take part in a supervised practical experience that links classroom knowledge to professional practice. Students may secure their own placement, subject to approval, or accept departmentally approved placements.

Placements are offered in all kinesiology sub-disciplines. Students will do an oral presentation at end of term.

Placement experience must be at least 60 hours (equivalent to one day per week); one hour (lecture/presentation); one term

**Prerequisite(s):** Registration in Level IV of Honours Kinesiology

### KINESIOL 4GG3 - CLINICAL BIOMECHANICS

Examination of current research in clinical biomechanics relating to injury mechanisms, rehabilitation and surgery, as well as analysis of normal and pathological gait.

Four hours (lectures, labs/tutorials); one term

**Prerequisite(s):** KINESIOL 2A03 and registration in Level III or above of Honours Kinesiology

### KINESIOL 4H03 - PHYSICAL ACTIVITY BEHAVIOUR CHANGE

An examination of design, delivery and evaluation of interventions to promote adoption and maintenance of physical activity in individuals, groups and communities.

Lectures/seminars (three hours); one term

**Prerequisite(s):** KINESIOL 2G03 and 3H03; and registration in Level III or above of Honours Kinesiology

### KINESIOL 4J03 - FUNCTIONAL ANATOMY

A hands-on applied study of anatomy for independent learners. The focus is on palpating the structures of the osseous, articular, muscular, and supportive systems, testing these structures, and how each structure functions to support the body as a whole.

Labs (four hours); one term

**Prerequisite(s):** KINESIOL 3K03 and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

### KINESIOL 4KK3 - FUNDAMENTALS OF REHABILITATION

Outlines the basic foundations of orthopaedic rehabilitation including pathophysiology, clinical biomechanics, and exercise prescription. Therapeutic modalities will be introduced. Laboratory activities complement lecture material and provide opportunity to develop professional skills.

Lectures, lab (four hours); one term

**Prerequisite(s):** KINESIOL 3K03 and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

*Approximately \$25.00 will be charged for supplies used in labs.*

### KINESIOL 4Q03 - PAEDIATRIC EXERCISE PHYSIOLOGY

Physiologic aspects of physical activity and exercise in children and adolescents in health and disease.

Lectures/seminars/labs (three hours); one term

**Prerequisite(s):** KINESIOL 3U03 and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

### KINESIOL 4RR6 A/B - THESIS

Independent project involving a research topic under the supervision of a faculty member in the Department of Kinesiology at McMaster University. The project involves developing a research proposal, a literature review, design of methodology, data collection and analysis, a research report appropriate to the sub-discipline, and an oral presentation.

Lecture (one hour); two terms

**Prerequisite(s):** Registration in Level IV of Honours Kinesiology with a minimum C.A. of 8.5 and permission of the instructor

**Prerequisite(s) (EFFECTIVE 2021-2022):** STATS 2B03 and registration in Level IV of Honours Kinesiology with a minimum C.A. of 8.5 and permission of the instructor

### KINESIOL 4S03 - PHYSICAL ACTIVITY IN CHRONIC HEALTH IMPAIRMENTS

Focus on specific health impairments prevalent in our society and the various benefits/risks of physical activity in these populations.

Two lectures, one seminar (three hours); one term

**Prerequisite(s):** KINESIOL 3B03 and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

### KINESIOL 4SS3 - HUMAN AGING: BIOLOGICAL AND LIFESTYLE INFLUENCES

The interrelationship between biological processes of aging and associated lifestyle factors (e.g. exercise/inactivity) will be explored in various human systems.

Lectures (three hours); one term

**Prerequisite(s):** KINESIOL 1A03, 1AA3, 2C03, 2CC3, 2G03 and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

### KINESIOL 4V03 - HUMAN FACTORS AND COGNITIVE ERGONOMICS

The abilities and limitations of human performance are examined with respect to how individuals interact with their environment.

Lectures (three hours); one term

**Prerequisite(s):** KINESIOL 1E03 and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

### KINESIOL 4W03 - EXPLORING MOVEMENT AND POSTURE

An exploration of fundamental topics such as gait, posture, and the evaluation of musculoskeletal function. The course is designed to help students further develop knowledge and professional skills relevant to health care and human performance.

Lectures, lab (four hours); one term

**Prerequisite(s):** KINESIOL 2A03, 2E03, 3K03 and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

**Antirequisite(s):** KINESIOL 3BB3

## KINESIOL 4Y03 - COGNITIVE NEUROSCIENCE OF EXERCISE

Provides a detailed understanding of the impact that physical activity has on the structure and function of the brain, with an emphasis on cognitive outcomes.

One lecture (two hours), one lab (one hour); one term

**Prerequisite(s):** KINESIOL 3H03 and registration in Level III or above of Honours Kinesiology (B.Sc.Kin.)

## Korean

Courses in Korean are administered by the Department of Linguistics and Languages.

Togo Salmon Hall, Room 629, ext. 24388

<http://linguistics.humanities.mcmaster.ca/>

### Courses

### KOREAN 1Z03 - INTRODUCTORY KOREAN I

Students will become familiar with Korean alphabet learning to read and write using Korean characters and to communicate about everyday topics through dialogues, pronunciation and vocabulary exercises, grammar quizzes and role-plays.

Three hours; one term

*Not open to native Korean speakers or to students with credit in Grade 12 U or M equivalent.*

### KOREAN 1ZZ3 - INTRODUCTORY KOREAN II

Students will expand their ability to communicate through dialogues, pronunciation and vocabulary exercises, grammar quizzes and role-plays, becoming proficient with Korean alphabet, will communicate in Korean using a growing set of expressions, and gain elementary understanding of Korean culture.

Three hours; one term

**Prerequisite(s):** Korean 1Z03

*Not open to native Korean speakers or to students with credit in Grade 12 U or M equivalent.*

### KOREAN 2X03 - KOREAN POP-CULTURE (TAUGHT IN ENGLISH)

Introduction to Korean popular culture (Hallyu) and its various forms: such as K-Pop music, graphic novels, television dramas, film, and webtoons. The course looks at Hallyu and its popularity as a global phenomenon, analyzing its role and social and political context.

Three hours; one term

## Labour Studies

Courses in Labour Studies are administered by the School of Labour Studies.

Kenneth Taylor Hall, Room 717, ext. 24692

<http://www.labourstudies.mcmaster.ca>

### Note

Some Labour Studies courses may be taken for elective credit by qualified students registered in any program, however, space for such students is limited and permission of the Director is required. Please refer to the individual courses and prerequisites.

### Courses

*If no prerequisite is listed, the course is open.*

## LABRST 1D03 - WILL ROBOTS TAKE ALL OUR JOBS?

This course explores the future of work in the face of the advances in robotics, artificial intelligence, and other technologies, and consider which jobs are most vulnerable to automation. How is technology changing the work/life balance, and how will the current 4th industrial revolution be different than the previous ones? Most importantly how can we organize to make machines enhance our lives instead of threatening our futures?

Lectures and discussions; one term

**Antirequisite(s):** LABRST 1C03, LABRST 2K03

## LABRST 1E03 - NAVIGATING THE WORLD OF WORK

Work is central to our quality of life, identities and well-being. However, finding and keeping work that is meaningful, fair, safe and sustainable is becoming more challenging. This course explores the changing nature of today's increasingly global workplaces and labour markets, the way that class, race, gender and ability shape our access to work, the laws and regulations that define workplace rights and obligations, and the strategies workers use to navigate these relationships.

Lectures and discussions; one term

## LABRST 2A03 - UNIONS IN ACTION

How do unions work? How do they go about representing their members and mobilizing workers in the workplace and beyond? How do they grapple with the main issues facing workers, and renew their movement going forward?

This course will explore the internal structure of unions, and assess what unions do well and where they are less effective. Students will also learn how unions make decisions and try to influence policy-making through participatory exercises and a simulated labour convention.

Lecture and group work/simulation; one term

**Prerequisite(s):** Registration in a Labour Studies program, or registration in any Level II program or above.

## LABRST 2G03 - LABOUR AND GLOBALIZATION

Neoliberal globalization is often associated with the rise of transnational corporations, free trade agreements, and the imposition of neoliberal policies on governments through the core international economic institutions. These processes sometimes feel far away from our everyday lives and struggles in the workplace. How have these processes impacted the lives of workers in both the Global North and Global South? How have they shaped prospects for resistance? How have workers and workers organizations responded to these challenges? In this course we will examine how globalization has shaped the lives of workers, working conditions, working class politics and democracy. We will also explore how workers have been developing strategies to challenge these processes, including forms of international labour solidarity, transnational union coordination as well as union coordination with unorganized, informal and unemployed workers and social movements.

Lectures and discussion; one term

**Prerequisite(s):** Registration in any level II program or above.

Priority is given to students registered in a Labour Studies program.

## LABRST 2H03 - SPORTS, WORK AND LABOUR

For a number of reasons - including fame and fortune - athletes are not perceived to be workers. But, most professional athletes are in highly precarious employment relationships, are member of unions, engage in collective bargaining, go on strike and get injured on the ice, on courts and playing fields. This course will explore the lives of sports workers to see if the work they do is worth the rewards they receive and the risks they take.

Lectures and discussion; one term

**Prerequisite(s):** Registration in any program Level II or above. Priority is given to students registered in a Labour Studies program.

### LABRST 2J03 - WORK AND RACISM

This course explores individual and systemic racism in the Canadian labour market through the experiences of Aboriginal peoples, immigrants, and racialized, linguistic and cultural minorities. Beginning with colonialism, the course provides historical and contemporary perspectives on racism in job allocation, work relationships, labour struggles, and social welfare systems. It also analyses public policy, employer, union and grassroots solutions to employment-related racial discrimination.

Lectures and discussion; one term

**Prerequisite(s):** Registration in any Level II program or above.

Priority is given to students registered in a Labour Studies program.

### LABRST 2M03 - POP CULTURE, MEDIA AND WORK

The “medium is the message.” If this famous quote is true, what messages are television, movies and music giving us about the types of work most of us do? This course will explore how workers are portrayed in the dominant media and how these portrayals both reflect and shape our identities and popular culture. Lectures and discussion; one term

**Prerequisite(s):** Registration in any program Level II or above. Priority is given to students registered in a Labour Studies program

### LABRST 2W03 - HUMAN RIGHTS AND SOCIAL JUSTICE

An introduction to the growing national and international discussion of human rights, exploring the value and limitations of universal rights, equality under the law and social justice.

Lectures (three hours); one term

**Prerequisite(s):** WOMENST 1A03 or 1AA3; or PEACEST 1A03, 1B03; or registration in any Labour Studies program

**Cross-list(s):** WOMENST 2A03, PEACEST 2B03

*This course is administered by Peace Studies Program.*

### LABRST 3A03 - ECONOMICS OF LABOUR MARKET ISSUES

This course applies economic analysis to issues of importance in the labour market. Topics vary and may include: women in the Canadian labour market, discrimination in hiring and promotion, unemployment, job loss and workplace closing, work sharing.

Three lectures; one term

**Prerequisite(s):** ECON 1A06, or both ECON 1B03 and 1BB3, and registration in a Labour Studies program; or permission of the Director

**Cross-list(s):** ECON 2A03

*Not open to students with credit or registration in ECON 3D03. This course is administered by the Department of Economics.*

### LABRST 3B03 - ECONOMICS OF TRADE UNIONISM AND LABOUR

Topics will include the economics of the labour market, the impact of trade unions on the labour market, economic theories of strikes, trade unions and the state.

Lectures and discussion; one term

**Prerequisite(s):** ECON 1B03, ECON 1BB3 and registration in a Labour Studies program; or permission of the Director

**Cross-list(s):** ECON 2T03

*This course is administered by the Department of Economics.*

### LABRST 3C03 - LABOUR AND EMPLOYMENT LAW

The law plays a major role in shaping almost every aspect of work, from the workers basic duties on the job, through their right to organize, to how and when unions are allowed to bargain and go on strike. But how does the law frame these workplace issues? What interests - the workers, the employers, the public - does the law try to balance, and which side does it favour?

Lectures; one term

**Prerequisite(s):** LABRST 2A03 and registration in a Labour Studies program, or registration in Level III or above in Honours Political Science Specialization in Public Law and Judicial Studies, or permission of the Director

**Cross-list(s):** COMMERCE 4BF3

### LABRST 3D03 - WORK: DANGEROUS TO YOUR HEALTH?

Working in steel factories and automobile assembly plants can be dangerous and unhealthy. But what about jobs in offices or retail or fast food or nursing or teaching? Are these jobs healthier? Are they safer? Workers in these jobs talk about high levels of stress, violence and musculoskeletal pain. This course will examine the causes and consequences of these health and safety issues. It will also examine current health and safety and workers compensation laws to find out what workers need to better protect their bodies at work.

Lectures and discussion; one term

**Prerequisite(s):** Registration in Level III or above of a Health, Aging and Society or Labour Studies program or permission of the Director

**Antirequisite(s):** HEALTHST 3C03

**Cross-list(s):** HLTHAGE 3DD3

### LABRST 3E03 - GENDER, SEXUALITY AND WORK

An examination of the historical and contemporary relations between women and work, and women and unionism. Topics will include the evolution and structure of the gender division of labour, women and the labour market, and the relationship of women to the labour movement.

Lectures and discussion; one term

**Prerequisite(s):** Registration in a Labour Studies program, or registration in any Level III program or above.

### LABRST 3K03 - ON THE MOVE: WORKERS IN A GLOBAL WORLD

In this course, we will examine the organization of work through a critical lens of mobility. We will address questions like: what sectors and people are most likely to move? What facilitates / hinders mobility? How does (im) mobility condition inequality? By considering how movement facilitates different work arrangements (across time and space), and how power shapes these processes, this course provides a foundation for developing a deeper understanding into the role of mobility in the organization of work.

Three hours (lecture and discussion); one term

**Prerequisite(s):** Registration in any level 3 program or above. Priority is given to students enrolled in a Labour Studies Program.

### LABRST 3L03 - LABOUR POLICY AND ADVOCACY

This course explores the way that governments shape and regulate the labour market, the workplace and the lives of workers, and the ways that workers organize collectively to advocate for policy change. Issues explored include unemployment insurance, social assistance, education and training, job creation and industrial policy, employment standards, immigration, pay and employment equity, child care, and retirement.

Three hours (lecture and discussion); one term

**Prerequisite(s):** Registration in any Level III program or above, preference is given to Students enrolled in the Labour Studies Program



### LABRST 3M03 - THEORETICAL APPROACHES TO LABOUR STUDIES

This course examines the political, economic and sociological approaches to understanding work and labour in capitalist societies. Key concepts explored include private property, competition, the labour market, the labour process, the state and its role, the production of social inequality (including social class, gender, race, and ability), and the nature of various forms of oppositional consciousness and social movements.

Lectures and discussion; one term

**Prerequisite(s):** Registration in a Labour Studies program or any Level III program or above, preference is given to Students enrolled in the Labour Studies Program  
**Antirequisite(s):** LABR ST 2C03

### LABRST 3P03 - WORKERS

This course explores workers struggles to protect their livelihoods, assert their rights, and gain some control over their jobs and even the economy and society in general since the beginning of the industrial age. It will examine different kinds of workers movements, protests and strikes and how employers and the state have responded. It will consider how workers organizations in Canada fit into the larger international and global picture.

**Prerequisite(s):** Registration in a Labour Studies program or any Level III program or above, preference is given to Students enrolled in the Labour Studies Program

### LABRST 3Q03 - COMMUNITY ENGAGED RESEARCH

How do we learn about our social world? How do we know if our ideas about the world are true? How do we find answers to important questions about our social world? How can our research address pressing problems in the community in practical ways? In this course, students will learn the qualitative research methods needed to address contemporary work and labour issues, exploring both the theoretical and practical considerations involved in data collection, analysis and presentation. Underlying this course is a commitment to social justice, underscoring how we can employ social science inquiry in collaboration with community partners to promote improved conditions at work and beyond.

**Prerequisite(s):** Registration in Level III or IV of a Labour Studies program or Level III or IV of a Community Engaged program  
**Antirequisite(s):** 3H03

### LABRST 3T03 - POVERTY AND HOMELESSNESS

This course will critically examine social work practices and policies in response to poverty and homelessness including causes, lived experiences, service provision, policy options and activist responses.

Discussion, exercises; one term

**Prerequisite(s):** Registration in a Social Work program, or SOCWORK 1A06 A/B and registration in Level III or above of any program. Not open to students with credit in SOCWORK 4G03 if the topic was Poverty and Homelessness. Administered by the School of Social Work.

**Cross-list(s):** SOCWORK 3T03

### LABRST 4A06 A/B - LABOUR STUDIES PRACTICUM

This course gives students experience outside of the classroom by placing them with an organization that deals with labour issues - a union, a community group, or a government agency. Students will gain valuable field experience, and do guided research at their placement which they will use to write a final report. There is also a thesis option, which allows students to choose their own

topic in Labour Studies, research it in depth, and write a major analytical paper. Enrolment in the field experience option is limited; students must apply to the Labour Studies Office by March 1.

Two terms

**Prerequisite(s):** LABRST 3H03 and registration in Level IV of an Honours Labour Studies program

### LABRST 4C03 - PUBLIC SECTOR COLLECTIVE BARGAINING

This course examines unionization and collective bargaining for employees in the public, and para-public sectors. The topics covered include the origin and growth of public sector unions, models of public sector bargaining, legal aspects of bargaining rights and impasse resolution, bargaining issues and bargaining outcomes, and empirical studies of the effectiveness of dispute resolution procedures.

Lectures and discussion; one term

**Prerequisite(s):** Registration in Level IV of an Honours Labour Studies program

### LABRST 4F03 - WORK AND THE ENVIRONMENT

Who bears the cost of environmental degradation? How does our current economic system shape possibilities for environmental justice? Is there such a thing as working class environmentalism? And how do issues of environmental justice get taken up by trade unions? Struggles for environmental justice include everything from fighting against climate change and fighting for access to clean drinking water, to battles over health and safety in the workplace. In this course we will examine how social relations under capitalism shape our interactions with nature and create patterns of work and inequality. We will also explore the varied ways workers and workers organizations have responded to issues of environmental injustice.

Lectures and seminar discussion; one term

**Prerequisite(s):** Registration in Level IV of an Honours Labour Studies program; or permission of the Director

**Cross-list(s):** ENVIRON 4LW3

*Not open to students with credit in LABRST 3F03 if the topic was Labour and the Environment (per the 2009-2010 session).*

### LABRST 4G03 - ADVANCED TOPICS IN LABOUR STUDIES

Topics of current interest to students in Labour Studies, with emphasis on current theory and research. Students should consult the Labour Studies Office concerning the topics to be examined.

Lectures and seminar discussion; one term

**Prerequisite(s):** Registration in Level IV of an Honours Labour Studies program or permission of the Director. Labour Studies 4G03 may be repeated if on a different topic, to a total of six units.

This course is not offered every year

### LABRST 4H03 - WORKING PRECARIOUSLY: LABOUR STRATEGIES, LABOUR RENEWAL

Precarious work is rising. In the Global North, these insecure, often low-waged jobs are now becoming commonplace. How did precarious work arise and how does it affect our lives? How does race, gender, location and citizenship impact who is more likely to be precarious? What processes and policies enable precarious work? What strategies have workers used to challenge precarious work? How effective are they? In this course we will explore the nature of precarious work, its effects, and the range of strategies available to workers and workers' organizations to fight precarity including new forms of unionism, innovative workplace tactics, growing linkages between labour and social movements, and new types of political initiatives.

Lectures and seminar discussion; one term.

**Prerequisite(s):** Registration in Level IV of an Honours Labour Studies program or permission of the Director

### LABRST 4J03 - INDEPENDENT STUDY

Independent study of a research problem to be arranged between student and instructor. It is incumbent on the student to secure arrangements with the supervising instructor and present a written proposal to the Director for approval prior to registration.

One term

**Prerequisite(s):** Registration in Level IV of an Honours Labour Studies program and permission of the Director

## Latin

Courses in Latin are administered by the Department of Classics.

Togo Salmon Hall, Room 706, ext. 24311

<http://classics.humanities.mcmaster.ca/>

*No language other than English is required for courses in Latin.*

### Notes

1. Students should note that the Department has classified its Latin language courses under the following categories:

**Introductory Level Language Courses:** LATIN 1Z03, 1ZZ3

**Intermediate Level Language Courses:** LATIN 2A03, 2AA3

2. The following courses are available as electives to qualified students in any program:

Latin Language and Literature LATIN 1Z03, 1ZZ3, 2A03, 2AA3, 3AA3, 3B03, 3BB3

3. Students with Grade 12 Latin U should normally register in LATIN 2A03, but with special permission, may register in either LATIN 1Z03, 1ZZ3.

### Courses

*If no prerequisite is listed, the course is open.*

### LATIN 1Z03 - BEGINNER'S INTENSIVE LATIN I

A rapid introduction to the basic grammar of Classical Latin.

Lectures and tutorials (four hours); one term

*Not open to graduates of Grade 12 Latin U, who must obtain special permission to register in the course.*

### LATIN 1ZZ3 - BEGINNER'S INTENSIVE LATIN II

This course continues the study of Latin grammar begun in LATIN 1Z03.

Four hours (lectures and tutorials); one term

**Prerequisite(s):** LATIN 1Z03. Students with Grade 12 Latin U must obtain special permission to register in the course.

This course, with a grade of at least C, is accepted as a prerequisite for admission to any Honours program in Classics, or, with a grade of at least C-, for admission to the B.A. program in Classics.

### LATIN 2A03 - INTERMEDIATE LATIN I

This course continues the study of Latin grammar begun in LATIN 1Z03 and 1ZZ3 and introduces students to the reading of simple passages from Latin authors.

Three lectures; one term

**Prerequisite(s):** Grade 12 Latin U; or LATIN 1ZZ3 with a grade of at least C-. Students using this course as a Humanities I requirement will register for LATIN 2A03 and 2AA3.

### LATIN 2AA3 - INTERMEDIATE LATIN II

A study of selected passages from Latin authors designed to further the student's proficiency in reading Latin. Attention will be given to grammar and techniques of literary criticism.

Three lectures; one term

**Prerequisite(s):** LATIN 2A03

### LATIN 3AA3 - LATIN PROSE

Selected readings in one or more Latin prose authors.

Three lectures; one term

**Prerequisite(s):** LATIN 2A03, 2AA3

*LATIN 3AA3 may be repeated, if on a different author/work, to a total of six units.*

### LATIN 3BB3 - TOPICS IN LATIN LITERATURE

Consult the Department for the topic to be offered.

Three lectures; one term

**Prerequisite(s):** LATIN 2A03, 2AA3

*LATIN 3BB3 may be repeated, if on a different topic, to a total of six units.*

### LATIN 3H03 - TOPICS IN LATIN POETRY

Consult the Department for the topic to be offered.

Three lectures; one term

**Prerequisite(s):** Six units of Level II Latin

*LATIN 3H03 may be repeated, if on a different topic, to a total of six units.*

### LATIN 4T03 - INDEPENDENT STUDY IN LATIN

Selected readings from Latin authors supervised by a member of the Department.

Tutorials; one term

**Prerequisite(s):** Six units of Level III Latin; and registration in Level III or IV of any Honours program in Classics; and permission of the Department

*LATIN 4T03 may be repeated, if on a different topic, to a total of six units.*

## Life Sciences

Courses in Life Sciences are administered by the School of Interdisciplinary Science.

General Sciences Building, Room 105, ext. 21181

Email: [sis@mcmaster.ca](mailto:sis@mcmaster.ca)

<https://www.science.mcmaster.ca/sis/undergraduate/life-sciences.html>

### Notes

1. Level IV Research Seminar topics may change from year to year. Research Seminar topics and descriptions are available on the School of Interdisciplinary Sciences (SIS) website <https://www.science.mcmaster.ca/sis/undergraduate/life-sciences.html>. Honours Life Sciences students must complete at least 3 units of *Knowledge Transfer/Seminar Experience (Course List E)*.
2. Students entering Level IV Honours Life Sciences (not including the Origins of Disease Specialization or the Sensory Motor Systems Specialization) must complete and submit a ballot, rank ordering their preference for enrolment in Level IV seminar offerings. Ballots will be sent directly to students in Honours Life Sciences during the Winter Term. Students wishing to take these courses must complete and submit a ballot by **the end of March**. Students will be informed of their ballot result by the end of May. Failure to submit a ballot by the stated deadline may compromise enrolment in preferred seminar. The Life Sciences program pre-registration ballot will include all Level IV Life Sciences research seminar courses (LIFESCI 4E03,

- 4F03, 4H03, 4I03, 4J03, 4K03, 4L03, 4M03, 4N03, 4O03, 4P03, 4Q03, 4U03, 4V03, 4W03, 4X03, 4Y03).
- LIFESCI 4CM3 is required for the Honours Life Sciences - Origins of Disease Specialization and is not included in the pre-registration ballot. Students in the Specialization are guaranteed enrolment.
  - LIFESCI 4XX3 is required for the Honours Life Sciences - Sensory Motor Systems Specialization and is not included in the pre-registration ballot. Students in the Specialization are guaranteed enrolment.
  - Course planning is extremely important. Students must review and consider the requisites on Level II, III and IV courses when enrolling in the previous Levels.

#### Courses

If no prerequisite is listed, the course is open.

### LIFESCI 1D03 - MEDICAL IMAGING PHYSICS

An introduction to the physics underlying some of the medical imaging techniques used in the diagnosis and treatment of disease. Topics include: X-ray (transmission) radiography, computed tomography, an introduction to magnetic resonance imaging (MRI), basic principles of ultrasonography, radioactivity and nuclear medicine, and a brief investigation into the biological effects of radiation.

Three lectures, one tutorial; one term

**Prerequisite(s):** Registration in Medical Radiation Sciences I; or credit or registration in one MATH 1A03, 1LS3, 1X03 and either Grade 12 Physics U or credit or registration in one of PHYSICS 1A03, 1C03, ISCI 1A24 A/B

**Antirequisite(s):** LIFESCI 1E03, MEDRADSC 1C03, MEDPHYS 1E03

### LIFESCI 2A03 - RESEARCH METHODS IN LIFE SCIENCES

An examination and application of the scientific method. Selected research problems will be explored to experience different approaches to hypothesis formulation, testing, interpretation and communication in the Life Sciences. Lectures (two hours), tutorial (two hours); one term

**Prerequisite(s):** Registration in Level II or above of a Life Sciences program

### LIFESCI 2AA3 - INTRODUCTION TO TOPICS IN LIFE SCIENCES

This course is a forum for the introduction of diverse interdisciplinary research topics within Life Sciences. Students will explore different methodologies and applications of current research in these fields to human health.

Lectures (two hours), tutorial (two hours); one term

**Prerequisite(s):** Registration in Level II or above of a Life Sciences program

### LIFESCI 2BP3 - BIOPHYSICS OF THE CELL AND LIVING ORGANISMS

Some of the most exciting breakthroughs in science are made at the interface between disciplines. Biology and physics are no different. Topics may include: elements of bioelectromagnetism, basic circuits, capacitance, impedance and potentials of cells and membranes. Waves for sound and vision, diffraction, refraction, scattering. Intracellular motion and transport: diffusion, permeability, Fick's Law and electrophoresis. Phases and equilibria: energy landscapes, protein folding, Boltzmann distribution.

Lectures (three hours); one term

**Prerequisite(s):** One of PHYSICS 1A03, 1C03, 1D03; and one of MATH 1A03, 1LS3, 1X03, 1ZA3; or ISCI 1A24

**Crosslist:** BIOPHYS 2A03

*This course is administered by the Department of Physics and Astronomy.*

### LIFESCI 2CC3 - FUNDAMENTALS OF NEUROSCIENCE

This course will cover foundational topics in neuroscience, including mechanisms of nerve cell signaling, synaptic transmission, neurotransmitter systems, synaptic plasticity, and nervous system development and repair. Topics will be explored through the lens of human and animal case studies.

Lectures (three hours), tutorial (one hour); one term

**Prerequisite(s):** BIOLOGY 1A03 and PSYCH 1FF3 or 1XX3

**Antirequisite(s):** ISCI 2A18 A/B

### LIFESCI 2D03 - BEHAVIOURAL PROCESSES

An examination of the concepts that underpin animal behaviour and an illustration of how selection pressures have operated to produce the diversity of behaviour that humans and other animals share.

Lectures (three hours); one term

**Prerequisite(s):** BIOLOGY 1A03, 1M03 and one of PSYCH 1F03, 1FF3, 1X03, 1XX3; or ISCI 1A24 A/B

**Antirequisite(s):** PNB 2XC3, PSYCH 2TT3

### LIFESCI 2G03 - GENES, GENOMES AND SOCIETY

An introduction to genetics that explores the application of genetics and genomics research in our world, from single organisms to ecological systems and from evolution to genetic engineering.

Lectures, web modules (two hours); one term

**Prerequisite(s):** One of BIOLOGY 1A03, 1M03, ISCI 1A24 A/B

*Not open to students with credit or registration in BIOLOGY 2C03, MOLBIOL 2C03. LIFE SCI 2G03 is not a prerequisite for further genetics courses in the Department of Biology.*

### LIFESCI 2L03 - LIVING SYSTEMS LABORATORY

Students will take diverse experimental approaches to studying real-world research questions in Life Sciences. Basic research using model organisms will be used to confront current issues in human health and disease.

Lectures (one hour), lab (two hours), tutorial (two hours); one term

**Prerequisite(s):** Registration in Level II or above of a Life Sciences or Medical Radiation Sciences program

### LIFESCI 2N03 - HUMAN NUTRITION FOR LIFE SCIENCES

Basic principles of human nutrition, including the interaction between nutrients and physiological processes that impact health and disease risk.

Three hours (lectures); one term

**Prerequisite(s):** Registration in Level II or above of a program in the Faculty of Science or the Faculty of Health Sciences or the Arts & Science program

**Antirequisite(s):** HTHSCI 3BB3, KINESIOL 1F03

*Priority will be given to students in an Honours Life Sciences program.*

*Not open to students registered in a Kinesiology program.*

### LIFESCI 2X03 - ENVIRONMENTAL CHANGE AND HUMAN HEALTH

An examination through case-studies of the direct and indirect links between environmental change and human health. Topics may include the impacts of climate change, stratospheric ozone depletion, and globalization.

Lectures (two hours), tutorial (one hour); one term

**Prerequisite(s):** One of BIOLOGY 1M03, ENVIRSC 1A03, 1B03, 1C03, 1G03 or ISCI 1A24 A/B

### LIFESCI 3AA3 - HUMAN PATHOPHYSIOLOGY

This course examines the normal physiology of a healthy individual through to the pathophysiological consequences of disease at the cell and tissue level, and how this can lead to greater implications between the various systems of the body. The mechanisms of drug activity and pharmaceutical design will also be explored.

Lectures (three hours), tutorial (one hour); one term

**Prerequisite(s):** One of BIOLOGY 2B03, BIOCHEM 2EE3, ISCI 2A18 A/B; and one of BIOLOGY 2A03, KINESIOL 1A03, 1Y03, 2Y03; and registration in Level III or above of any Honours program in the Faculty of Science or LIFESCI 2A03 and registration in the B.Sc. Life Sciences program

Priority will be given to students in an Honours Life Sciences program.

### LIFESCI 3BB3 - NEUROBIOLOGY OF DISEASE

Examination of the cellular, circuit and system level abnormalities that underlie nervous system diseases. Topics may include: addiction, epilepsy, spinal cord injury, neuromuscular diseases and neurodegenerative diseases.

Lectures (three hours), tutorial (one hour); one term

**Prerequisite(s):** Credit or registration in BIOLOGY 2B03 and one of LIFESCI 2CC3 or PNB 2XB3

Priority will be given to students in an Honours Life Sciences program.

### LIFESCI 3BM3 - IMPLANTED BIOMATERIALS

An introduction to the chemistry of implantable biomaterials (metals, ceramics, plastics, elastomers) and the methods used to characterize their physical properties. The wound healing response following insult by an implanted foreign body will be examined, in order to understand the need to control synthetic biomedical interfaces. The regulatory approval process will also be discussed.

Lectures (three hours); one term

**Prerequisite(s):** CHEM 1AA3 (or ISCI 1A24); and BIOLOGY 2B03 (or ISCI 2A18) or registration in an Honours Chemical Biology program; and one of CHEM 2E03, CHEM 2OB3, CHEMBIO 2OB3; or permission of the instructor

**Cross-list(s):** CHEMBIO 3BM3

*This course is administered by the Department of Chemistry & Chemical Biology.*

### LIFESCI 3BP3 - MODELLING LIFE

Introduction to simulating computational models in the life sciences, including examples from molecular and cell biology, ecology and evolution. Designing models to link to experimental questions and to test scientific hypotheses.

Lectures (three hours); one term

**Prerequisite(s):** PHYSICS 1A03 or 1C03; and one of MATH 1A03, 1LS3, 1X03, 1ZA3; or ISCI 1A24 A/B

**Crosslist:** BIOPHYS 3G03

*This course is administered by the Department of Physics and Astronomy.*

### LIFESCI 3E03 - REPRODUCTIVE ENDOCRINOLOGY

An interdisciplinary approach to the examination of human reproductive behaviour through the lens of endocrinology and evolutionary biology. Science communication and how research findings are reported in the mass media are also explored.

Lectures (three hours); one term

**Prerequisite(s):** BIOLOGY 1A03 and 1M03, or ISCI 1A24; and one of LIFESCI 2D03, PNB 2XC3, PSYCH 2GG3

Priority will be given to students in an Honours Life Sciences program.

### LIFESCI 3EP3 - LIFE SCIENCES APPLIED PLACEMENT

This placement course provides students with the opportunity to explore career options and integrate academics with a community, volunteer or professional experience. The student will complete an academic component in addition to the placement.

Students are responsible for arranging a suitable placement and supervision, and are required to submit an online application thirty days prior to the date classes begin in each term (see the Sessional Dates section of the Undergraduate Calendar). More information and the online application can be found on the School of Interdisciplinary Science (SIS) website.

Normally students will complete 60 hours of placement work through the duration of the experience.

Lectures (two hours); one term

**Prerequisite(s):** Registration in Level III or above of a Life Sciences program; and permission of the School of Interdisciplinary Science (SIS) Experiential Education Coordinator

**Prerequisite(s) (EFFECTIVE 2021-2022):** LIFESCI 2AA3 and registration in Level III or above of a Life Sciences program, or registration in Level III or above of an Honours Life Sciences specialization; and permission of the School of Interdisciplinary Science (SIS) Experiential Education Coordinator  
*LIFESCI 3EP3 cannot be taken concurrently with any other Life Sciences placement, research or thesis course.*

### LIFESCI 3G03 - INTRODUCTION TO EPIDEMIOLOGY

Basic principles of epidemiology, including clinical study design, measures of disease risk and mortality, diagnostic test characteristics and applications to public health.

Lectures (three hours); one term

**Prerequisite(s):** Registration in Level III or above of an Honours Life Sciences program

**Antirequisite(s):** HTHSCI 2G03

*Not open to students with credit in LIFESCI 3Z03, if the topic was Introduction to Epidemiology.*

### LIFESCI 3J03 - HUMAN BIOMECHANICS

An introduction to mechanical principles and concepts as applied to the human musculoskeletal system.

Lectures (three hours); one term

**Prerequisite(s):** One of PHYSICS 1A03, 1C03 (or 1B03 or 1L03); and registration in Level III or above of a program in the Faculty of Science. Credit or registration in KINESIOL 2YY3 (or 1YY3) is strongly recommended.

**Antirequisite(s):** KINESIOL 2A03

*Not open to students registered in a Kinesiology program.*

### LIFESCI 3K03 - NEURAL CONTROL OF HUMAN MOVEMENT

The control of human movement studied in detail from neurophysiological, cognitive and dynamical perspectives. Topics include basic neurophysiology, mechanisms of sensation, reflexes, voluntary movement and theories of motor control.

Three hours (lectures); one term

**Prerequisite(s):** BIOLOGY 1A03 or ISCI 1A24 A/B; and one of ISCI 2A18 A/B, LIFESCI 2CC3, PNB 2XB3, PSYCH 2F03, 2N03 (or 2D03), 2NF3; and registration in Level III or above of an Honours program in the Faculty of Science

**Antirequisite(s):** KINESIOL 3E03

*Not open to students registered in a Kinesiology program.*

*This course is administered by the Department of Kinesiology.*



### LIFESCI 3L03 - LABORATORY METHODS IN LIFE SCIENCES

Students develop advanced skills in experimental design, research methodologies, data analysis, and the communication of research information in the Life Sciences.

Lecture (one hour), two labs (two hours); one term

**Prerequisite(s):** LIFESCI 2L03 and registration in Level III or above of a Life Sciences program

### LIFESCI 3LL3 - LIVING SYSTEMS LABORATORY PRACTICUM

Provides an opportunity to explore various areas of study within the Life Sciences in a small-group learning environment in the laboratory.

Details may be found on the School of Interdisciplinary Science (SIS) website.

Lab (three hours); one term

**Prerequisite:** LIFESCI 2L03 and registration in Level III or above of an Honours Life Sciences program

LIFESCI 3LL3 may be repeated, if on a different topic.

Some offerings may have a field/experiential component and/or be offered in a condensed term.

### LIFESCI 3M03 - CELLULAR DYNAMICS

This course examines the biochemical and physical properties of single cells and progresses towards an understanding of how molecules behave and interact within a cell, as well as how a cell interacts with its microenvironment. In this course, students explore cell biology techniques and models used to explain cellular dynamics in the context of physiologic and disease states.

Lectures (three hours); one term

**Prerequisite(s):** BIOLOGY 2B03 or ISCI 2A18 A/B; and BIOLOGY 2C03, MOLBIOL 2C03, or LIFESCI 2G03; and registration in Level III or above of a program in the Faculty of Science

**Antirequisite(s):** MOLBIOL 3B03

Priority will be given to students in an Honours Life Sciences program.

### LIFESCI 3N03 - HUMAN NUTRITIONAL TOXICOLOGY

This course mainly focuses on examining metal toxicity on human systems at the genetic, cellular, biochemical, and physiological levels, as well as discusses the socio-economic and political parameters that impact metal concentrations in local and global environments. In addition, students investigate the potential toxicity of supplements and food products.

Lectures (two hours), tutorials (two hours); one term

**Prerequisite(s):** BIOLOGY 2B03

Priority will be given to students in an Honours Life Sciences program.

### LIFESCI 3P03 - SCIENCE COMMUNICATION IN LIFE SCIENCES

Science communication is the bridge between scientists and nonscientists; it allows discoveries in the lab or field to shape our world. In this course, we'll experiment with different strategies for making science accessible and engaging to diverse audiences. We'll identify barriers to effective science communication, consider the potential consequences of poor science communication, and think about ways to make conversations about science more inclusive. We'll also work in groups to address a community challenge and produce a multimedia story about research at McMaster that informs and inspires.

Lectures (three hours), online tutorials; one term

**Prerequisite(s):** Registration in Level III or above of an Honours Life Sciences program

**Prerequisite(s) (EFFECTIVE 2021-2022):** SCICOMM 2A03 and registration in

Level III or above of an Honours Life Sciences program

**Antirequisite(s):** SCICOMM 3P03

Non-Life Sciences students interested in this offering should refer to SCICOMM 3P03.

### LIFESCI 3Q03 - GLOBAL HUMAN HEALTH AND DISEASE

Global health challenges require interdisciplinary solutions: the toll of a disease in a particular community depends as much on social, political and economic factors as it does on biological ones. This course explores some of the most pressing issues in global health, from infectious disease to addiction. Students will investigate disease mechanisms as well as societal factors that threaten health and wellbeing. We will also think critically about the important role of communication between scientists, policymakers and communities.

Lectures (three hours); one term

**Prerequisite(s):** Registration in Level III or above of an Honours Science program

Priority will be given to students in an Honours Life Sciences program.

### LIFESCI 3RC3 - RADIOISOTOPES IN MEDICINE

A systematic study of the use of radioactive isotopes and radiotracers in the physical and life sciences, including: radioisotope production; elucidating biochemical pathways using radiotracers; diagnostic radiopharmaceuticals in cancer and mental health care; and therapeutic radioisotopes and radiopharmaceuticals.

Lectures (three hours); one term

**Prerequisite(s):** CHEM 1A03 (or 1E03) and 1AA3

**Cross-list(s):** CHEM 3RC3

*This course is administered by the Department of Chemistry and Chemical Biology.*

### LIFESCI 3RP3 - LIFE SCIENCES RESEARCH PRACTICUM

This placement course provides students an opportunity to explore potential research projects while volunteering in the laboratory or clinic of a faculty member at McMaster University.

Students are responsible for arranging a suitable placement and supervision, and are required to submit an online application thirty days prior to the date classes begin in each term (see the Sessional Dates section of this Calendar). More information and the online application can be found on the School of Interdisciplinary Science (SIS) website.

Normally students will complete 60 hours in the laboratory or clinic during the placement.

Lectures (two hours); one term

**Prerequisite(s):** Registration in Level III or above of a Life Sciences program; and permission of an academic supervisor and the School of Interdisciplinary Science (SIS) Experiential Education Coordinator

**Prerequisite(s) (EFFECTIVE 2021-2022):** LIFESCI 2AA3 and registration in Level III or above of a Life Sciences program, or registration in Level III or above of an Honours Life Sciences specialization; and permission of an academic supervisor and the School of Interdisciplinary Science (SIS) Experiential Education Coordinator

*LIFESCI 3RP3 cannot be taken concurrently with any other Life Sciences placement, research or thesis course.*

### LIFESCI 3XX3 - PEER MENTORING IN SCIENCE COMMUNICATION

Students in this course become mentors for Level II students enrolled in LIFESCI 2AA3. They will continue to build and refine their science communication skills, exploring different strategies for communicating to scientists

and non-scientists alike. They will also examine the importance of science communication in the context of education and identify opportunities to make conversations about science more inclusive.

Applications will be available at the beginning of March on the School of Interdisciplinary Science (SIS) website. Applications must be submitted by April 1 of the preceding academic year. Successful students will be notified by May 30.

Lectures (three hours), tutorial (two hours); one term

**Prerequisite(s):** LIFESCI 2AA3 and registration in Level III or above of an Honours Life Sciences program; or registration in Level III or above of an Honours Life Sciences specialization; and a GPA of at least 7.0; and permission of the instructor

*Not open to students with credit or registration in LIFESCI 3YY3 or PSYCH 3TT3.*

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### LIFESCI 3YY3 - PEER MENTORING IN LABORATORY SKILL DEVELOPMENT

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Students that enrol in this course become mentors for Level II students enrolled in LIFESCI 2L03. This class provides students with the opportunity to develop their mentoring and self-reflection skills as well as their abilities to evaluate and present scientific ideas, data and methodologies.

Applications will be available at the beginning of March on the School of Interdisciplinary Science (SIS) website. Applications must be submitted by April 1 of the preceding academic year. Successful students will be notified by May 30.

Lectures (three hours), tutorial (two hours), lab (one hour); one term

**Prerequisite(s):** LIFESCI 2L03 and registration in Level III or above of an Honours Life Sciences program; and a GPA of at least 7.0; and permission of the instructor

*Not open to students with credit or registration in LIFESCI 3XX3 or PSYCH 3TT3.*

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### LIFESCI 3Z03 - LIFE SCIENCES INQUIRY

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Provides an opportunity to explore various areas of study within the Life Sciences in a small-group learning environment.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level III of an Honours Life Sciences program. Some topics may have additional course requisites. Details may be found on the School of Interdisciplinary Science (SIS) website.

LIFE SCI 3Z03 may be repeated, if on a different topic.

Some offerings may have a field/experiential component and/or be offered in a condensed term.

LIFESCI 3Z03 may not be offered each academic year.

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### LIFESCI 4A03 - INDEPENDENT STUDY

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An independent study under the supervision of a McMaster University faculty member. More information and the online application can be found on the School of Interdisciplinary Science (SIS) website.

Students are responsible for arranging a suitable independent study and supervision, and are required to submit an online application thirty days prior to the date classes begin in each term (see the Sessional Dates section of this Calendar).

Normally students will complete 60 hours of independent study work through the duration of the course.

Lecture (two hours); one term

**Prerequisite(s):** Registration in Level IV or above of an Honours Life Sciences program and permission of the supervising faculty member and the School of Interdisciplinary Science (SIS) Experiential Education Coordinator. LIFESCI 3RP3

is highly recommended.

**Antirequisite(s):** LIFESCI 4B06 A/B, 4B09, 4C09 A/B, 4C12 A/B, 4D15 A/B, 4EP6

LIFESCI 4A03 cannot be taken concurrently with any other Life Sciences placement, research or thesis course.

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### LIFESCI 4B09 A/B S - INDEPENDENT PROJECT

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This course provides students an opportunity to conduct an independent research study under the supervision of a McMaster University faculty member. More information and the online application can be found on the School of Interdisciplinary Science (SIS) website.

Students are responsible for arranging a suitable independent project and supervision, and are required to submit an online application thirty days prior to the date classes begin in each term (see the Sessional Dates section of this Calendar).

Normally students will complete 120 hours of independent project work through the duration of the course.

Lectures (three hours); two terms

**Prerequisite(s):** Registration in Level IV or above of an Honours Life Sciences program with a minimum GPA of 7.0 and permission of the supervising faculty member and the School of Interdisciplinary Science (SIS) Experiential Education Coordinator. LIFESCI 3RP3 is highly recommended.

**Antirequisite(s):** LIFESCI 4A03, 4B06 A/B, 4C09 A/B, 4C12 A/B, 4D15 A/B, 4EP6 A/B

LIFESCI 4B09A/B cannot be taken concurrently with any other Life Sciences placement, research or thesis course.

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### LIFESCI 4C12 A/B S - INDEPENDENT THESIS

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An independent study under the supervision of a McMaster University faculty member. More information and the online application can be found on the School of Interdisciplinary Science (SIS) website.

Students are responsible for arranging a suitable thesis and supervision, and are required to submit an online application thirty days prior to the date classes begin (see the Sessional Dates section of this Calendar).

Normally students will complete 150 hours of independent thesis work through the duration of the course.

Lectures (three hours); two terms

**Prerequisite(s):** Registration in Level IV or above of an Honours Life Sciences program with a minimum GPA of 8.0 and permission of the supervising faculty member and the School of Interdisciplinary Science (SIS) Experiential Education Coordinator. LIFESCI 3RP3 is highly recommended.

**Antirequisite(s):** LIFESCI 4A03, 4B06 A/B, 4B09, 4C09 A/B, 4D15 A/B, 4EP6 A/B

LIFESCI 4C12 A/B cannot be taken concurrently with any other Life Sciences placement, research or thesis course.

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### LIFESCI 4CM3 - FOUNDATIONS OF DISEASE STATES INQUIRY LAB

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This is an inquiry-based lab in which students learn and apply current techniques to study the physical and chemical basis of human disease states. Lecture (one hour), one lab or workshop (four hours); one term

**Prerequisite(s):** Registration in Level IV or above of Honours Life Sciences - Origins of Disease Specialization or permission of the instructor

**Prerequisite(s) (EFFECTIVE 2021-2022):** LIFESCI 3M03 and registration in Level IV or above of Honours Life Sciences - Origins of Disease Specialization or permission of the instructor

### LIFESCI 4D15 A/B S - INDEPENDENT THESIS

An independent study under the supervision of a McMaster University faculty member. More information and the online application can be found on the School of Interdisciplinary Science (SIS) website. Students are responsible for arranging a suitable thesis and supervision, and are required to submit an online application thirty days prior to the date classes begin (see the Sessional Dates section of this Calendar). Normally students will complete 180 hours of independent thesis work through the duration of the course.

Lectures (three hours); two terms

**Prerequisite(s):** Registration in Level IV or above of an Honours Life Sciences program with a minimum GPA of 10.5 and permission of the supervising faculty member and the School of Interdisciplinary Science (SIS) Experiential Education Coordinator. LIFESCI 3RP3 is highly recommended.

**Antirequisite(s):** LIFESCI 4A03, 4B06 A/B, 4B09, 4C09 A/B, 4EP6 A/B  
LIFESCI 4D15 A/B cannot be taken concurrently with any other Life Sciences placement, research or thesis course.

### LIFESCI 4E03 - SCIENCE & STORYTELLING

Communicating science through stories can increase the visibility and impact of developments in the field. This course will explore the role of storytelling in communicating science across various cultures and to a wide range of audiences. Students will engage with and produce different types of stories and consider how they can be leveraged to make scientific knowledge more accessible.

Seminar and discussions in small groups (three hours); one term

**Prerequisite(s):** LIFESCI 3P03 and registration in Level IV or above of an Honours Life Sciences program

*Not open to students with credit in LIFESCI 4L03, if the Topic was Science & Storytelling.*

Preferential enrolment is done by pre-registration ballot (See Department Note 2 above).

### LIFESCI 4EP6 A/B S - LIFE SCIENCES ADVANCED PLACEMENT

This placement course provides students in the Life Sciences program with the opportunity to explore career options and integrate academics with a community, volunteer or professional experience. The student will complete an academic component in addition to the placement. More information and the online application can be found on the School of Interdisciplinary Science (SIS) website.

Students are responsible for arranging a suitable placement and supervision, and are required to submit an online application thirty days prior to the date classes begin in each Term (see the Sessional Dates section of this Calendar). Normally students will complete 120 hours of placement work through the duration of the experience.

Lectures (two hours); two terms

**Prerequisite(s):** Registration in Level IV or above of an Honours Life Sciences program and permission of the School of Interdisciplinary Science (SIS) Experiential Education Coordinator

LIFESCI 4EP6 A/B cannot be taken concurrently with any other Life Sciences placement, research or thesis course.

### LIFESCI 4F03 - EMERGING PARADIGMS IN ENVIRONMENTAL CHANGE AND HEALTH

Advanced seminar on selected aspects of the relation between environmental change and human health.

Seminar and discussions in small groups (two hours); one term

**Prerequisite(s):** LIFESCI 2X03 and registration in Level IV or above of an Honours Life Science program

Preferential enrolment is done by preregistration ballot (See Department Note 2 above).

### LIFESCI 4H03 - REGENERATION: WHAT CAN WE LEARN FROM ANIMAL MODELS?

Regeneration is the process by which lost body parts are replaced or restored. There is widespread variability in the ability of organisms to regenerate. In this course we will explore, through the examination of the current scientific literature, what is known about the molecular mechanisms underlying this process and the current tools employed to explore this highly sought after ability.

Seminar and discussions in small groups (three hours); one term

**Prerequisite(s):** Registration in Level IV or above of an Honours Life Science program

Preferential enrolment is done by preregistration ballot (See Department Note 2 above).

### LIFESCI 4I03 - RESEARCH SEMINAR

Advanced seminar focusing on selected topics in an area of Life Sciences. Seminar and discussion in small groups (three hours); one term

**Prerequisite(s):** Registration in Level IV or above of an Honours Life Science program

Preferential enrolment is done by preregistration ballot (See Department Note 2 above).

### LIFESCI 4J03 - SCIENCE COMMUNICATION IN THE MEDIA

Media coverage of scientific discoveries can shape the public opinion of science and influence policy decisions. In this course, students will take a critical look at how journalists portray science and examine the consequences of poor science communication. We will practice translating complex concepts for diverse audiences and create different forms of science journalism, such as articles, op-eds and podcasts.

Seminar and discussions in small groups (three hours); one term

**Prerequisite(s):** LIFESCI 3P03 and registration in Level IV or above of an Honours Life Sciences program

*Not open to students with credit in LIFESCI 4P03, if the Topic was Science Communication in the Media.*

Preferential enrolment is done by pre-registration ballot (See Department Note 2 above).

### LIFESCI 4L03 - RESEARCH SEMINAR

Advanced seminar focusing on selected topics in an area of Life Sciences.

Seminars and discussions in small groups; one term

**Prerequisite(s):** Registration in Level IV or above of an Honours Life Sciences program

Preferential enrolment is done by preregistration ballot (See Department Note 2 above).

### LIFESCI 4M03 - RESEARCH SEMINAR

Advanced seminar focusing on selected topics in an area of Life Sciences.

Seminars and discussions in small groups; one term

**Prerequisite(s):** Registration in Level IV or above of an Honours Life Sciences program

Preferential enrolment is done by preregistration ballot (See Department Note 2 above).

### LIFESCI 4N03 - RESEARCH SEMINAR

Advanced seminar focusing on selected topics in an area of Life Sciences.

Seminars and discussions in small groups; one term

**Prerequisite(s):** Registration in Level IV or above of an Honours Life Sciences program

Preferential enrolment is done by preregistration ballot (See Department Note 2 above).

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### LIFESCI 4003 - RESEARCH SEMINAR

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Advanced seminar focusing on selected topics in an area of Life Sciences.

Seminar and discussion in small groups (three hours); one term

**Prerequisite(s):** Registration in Level IV or above of an Honours Life Science program

Preferential enrolment is done by preregistration ballot (See Department Note 2 above).

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### LIFESCI 4P03 - RESEARCH SEMINAR

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Advanced seminar focusing on selected topics in an area of Life Sciences.

Seminars and discussions in small groups; one term

**Prerequisite(s):** Registration in Level IV or above of an Honours Life Sciences program

Preferential enrolment is done by preregistration ballot (See Department Note 2 above).

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### LIFESCI 4Q03 - RESEARCH SEMINAR

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Advanced seminar focusing on selected topics in an area of Life Sciences.

Seminars and discussions in small groups; one term

**Prerequisite(s):** Registration in Level IV or above of an Honours Life Sciences program

Preferential enrolment is done by preregistration ballot (See Department Note 2 above).

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### LIFESCI 4U03 - MECHANISMS OF DISEASE

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Students will analyze molecular and cellular research on disease pathogenesis, explore how cellular miscommunication results in disease, and investigate the design process behind targeted therapeutics.

Seminar and discussion in small groups (two hours), tutorial (one hour); one term

**Prerequisite(s):** LIFESCI 3M03 or MOLBIOL 3B03; and registration in Level IV or above of an Honours Life Sciences program

Preferential enrolment is done by preregistration ballot (See Department Note 2 above).

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### LIFESCI 4V03 - EXTRACELLULAR VESICLES IN HEALTH AND DISEASE

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In this course, students critically examine the emerging research on the physiological and pathological roles of extracellular vesicles as well as their potential clinical applications.

Seminar and discussion in small groups (three hours); one term

**Prerequisite(s):** BIOLOGY 2B03 and BIOLOGY 2C03 (or LIFESCI 2G03) and registration in Level IV or above of an Honours Life Science program

Preferential enrolment is done by preregistration ballot (See Department Note 2 above).

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### LIFESCI 4W03 - ADVANCED TOPICS IN NUTRITION

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This course will extend the study of nutrition beyond the examination of macro-, and micro-nutrients to investigating topics such as dietary analysis/planning, supplementation usage, and human health/disease management.

Seminar and discussion in small groups (two hours), tutorial (one hour); one term

**Prerequisite(s):** LIFESCI 2N03; and registration in Level IV or above of an Honours Life Sciences program

Preferential enrolment is done by preregistration ballot (See Department Note 2 above).

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### LIFESCI 4X03 - THE BIOPSYCHOLOGY OF SEX

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This course will explore topics in the scientific study of human sexuality from an anatomical, behavioural, and neuroendocrine perspective. Sample topics may include reproductive strategies, fertility, pregnancy and childbirth, sexual development, gender differences, and sexually transmitted diseases.

Seminar and discussion in small groups (two hours), tutorial (one hour); one term

**Prerequisite(s):** LIFESCI 3E03 (or 3C03); and registration in Level IV or above of an Honours Life Sciences program

Preferential enrolment is done by preregistration ballot (See Department Note 2 above).

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### LIFESCI 4XX3 - THE SYNAPSE

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Exploration of classical and current research on the mechanisms of synaptic transmission, with a focus on the neuromuscular junction, sensory receptors, memory formation, and the roles of synapses in disease.

Seminar and discussion in small groups (two hours), tutorial (one hour); one term

**Prerequisite(s):** LIFESCI 3BB3 and registration in Level IV or above of Honours Life Sciences Sensory-Motor Systems Specialization or permission of the instructor

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### LIFESCI 4Y03 - APPLIED BIOMECHANICS

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A combination of lectures and problem based learning on aspects of human movement facing the modern biomechanist. Topics and problems are taken from occupational, clinical and sport biomechanics.

Three hours (lectures, tutorials); one term

**Prerequisite(s):** KINESIOL 2Y03, 2YY3, LIFESCI 3J03, and registration in Level IV or above of an Honours Life Sciences program

Preferential enrolment is done by preregistration ballot (See Department Note 2 above).

## Linguistics

Courses in Linguistics are administered by the Department of Linguistics and Languages.

Togo Salmon Hall, Room 629, ext. 24388

<http://linguistics.humanities.mcmaster.ca/>

### Department Notes

1. Not all courses are offered on an annual basis. Students should consult the timetable for available courses.
2. The following are courses open as electives to students registered in Level II or above of any undergraduate program.
  - LINGUIST 2E03 - The Nature of Texts: From Slang to Formal Discourse
  - LINGUIST 2FL3 - Introduction to Forensic Linguistics
  - LINGUIST 2S03 - Language and Society
  - LINGUIST 3TT3 - Perspectives on Translation

### Courses

*If no prerequisite is listed, the course is open.*

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### LINGUIST 1A03 - INTRODUCTION TO LINGUISTICS: SOUNDS, SPEECH AND HEARING

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An introduction to the scientific study of language. The course focuses on the sounds of human languages, including how we produce and perceive them, and



how words are formed in the world's languages.

Three hours (lecture, web module); one term

LINGUIST 1A03 and 1AA3 prepare students for further study in Linguistics and Cognitive Science of Language.

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### LINGUIST 1AA3 - INTRODUCTION TO LINGUISTICS: WORDS, SENTENCES AND MEANING

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A further introduction to the scientific study of language. The course focuses on how the mind organizes words into sentences and assigns meanings to words and sentences, concentrating on elements that are universal to all human languages.

Three hours (lecture, web module); one term

LINGUIST 1A03 and 1AA3 prepare students for further study in Linguistics and Cognitive Science of Language.

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### LINGUIST 1Z03 - STRUCTURE OF MODERN ENGLISH I

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This course introduces students to the description and transcription of sounds in contemporary English, to the rules governing pronunciation, and to the study of word formation and meaning in contemporary English.

Three hours; one term

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### LINGUIST 1ZZ3 - STRUCTURE OF MODERN ENGLISH II

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This course examines the structure of contemporary English sentences, and how sentences are used to build larger meaningful units of written and spoken communication.

Three hours; one term

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### LINGUIST 2D03 - RESEARCH METHODS

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An introduction to qualitative and quantitative approaches to research in linguistics, including topics such as research ethics, principles of data gathering and analysis, and fundamentals of statistical analysis and inference, including ANOVA.

Three hours; one term

**Prerequisite(s):** Registration in Level II or III of a program in Linguistics or Cognitive Science of Language

**Antirequisite(s):** GEOG 3MA3, HLTHAGE 2A03, POLSCI 2NN3, POLSCI 3N06 A/B, SOCIOI 2Z03, SOCIOI 3H06 A/B

*Not open to students with credit in PSYCH 2RA3 or equivalent.*

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### LINGUIST 2DD3 - STATISTICS FOR LANGUAGE RESEARCH

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The course explores the use and analysis of quantitative data in empirical linguistic research using the statistical software package R. The covered techniques include descriptive and inferential statistics, ANOVA, and regression.

Three hours (lectures and tutorials); one term

**Prerequisite(s):** LINGUIST 2D03

**Antirequisite(s):** ECON 2B03, GEOG 3MB3, PNB 2XE3, POLSCI 3N06 A/B, POLSCI 3NN3, PSYCH 2RA3, SOCSCI 2J03, SOCIOI 3H06 A/B

Students registered in a Combined Honours program with a program in the Faculty of Social Sciences should consult an academic advisor to confirm which courses satisfy their statistics requirements.

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### LINGUIST 2E03 - THE NATURE OF TEXTS: FROM SLANG TO FORMAL DISCOURSE

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This course introduces students to the field of discourse analysis and investigates a variety of styles and registers from the conversational to the literary and from the journalistic to the academic.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** CMST 2E03

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### LINGUIST 2FL3 - INTRODUCTION TO FORENSIC LINGUISTICS

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An introduction to the discipline of language and the law. Through a consideration of several famous trials and cases, topics covered include: speaker/voice identification, the language of police interrogations, courtroom language, forensic document investigation, the nature of legal language, the linguist as expert witness.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above

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### LINGUIST 2L03 - PHONETICS

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A study of the sounds of language, human articulatory capabilities and speech production, human auditory and speech perception (ear and brain) and phonetic transcription.

Three hours; one term

**Prerequisite(s):** LINGUIST 1A03

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### LINGUIST 2LC3 - HISTORICAL LINGUISTICS: LANGUAGE EVOLUTION AND CHANGE

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An examination of key concepts in language change including: grammatical change (e.g. phonological change), comparative and internal reconstruction, socio-historical considerations (language contact and variation), the birth and death of languages.

Three hours; one term

**Prerequisite(s):** LINGUIST 1AA3

**Antirequisite(s):** LINGUIST 2AA3

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### LINGUIST 2LL3 - INTRODUCTION TO LINGUISTIC TYPOLOGY

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The study of diversity in the languages of the world, language universals and the parameters of cross-linguistic analysis of grammatical systems.

Three hours; one term

**Prerequisite(s):** LINGUIST 1A03 and 1AA3

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### LINGUIST 2PH3 - PHONOLOGY

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A study of the patterns of distinctive sounds in the world's languages.

Three hours; one term

**Prerequisite(s):** LINGUIST 2L03

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### LINGUIST 2PS3 - PSYCHOLINGUISTICS

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Examines evidence from behavioural experiments to study how the human mind understands sounds, words, and sentences. The class involves team-based projects; regular attendance is vital.

Three hours; one term

**Prerequisite(s):** LINGUIST 1A03 and 1AA3

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### LINGUIST 2S03 - LANGUAGE AND SOCIETY

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An introduction to sociolinguistics covering such topics as linguistic variation (regional, social, situational), language and gender, language and disadvantage/power, language choice, language change, pidgin and creole languages.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** CMST 3G03, LINGUIST 3X03, IBH 1AC3

**Cross-list(s):** PEACEST 2LS3

*This course is administered by the Department of Linguistics and Languages*

### LINGUIST 2SL3 - INTRODUCTION TO AMERICAN SIGN LANGUAGE

This course introduces students to concepts related to people, places and things within the immediate environment, as well as the basic values and norms of the Deaf culture. Students will learn how to conduct simple, everyday conversations and will gain basic numeracy skills.

Three hours; one term

*Not open to students with credit in ASL 102 from the Canadian Hearing Society or equivalent.*

### LINGUIST 2SY3 - SYNTAX

The study of sentence structure in many languages. The emphasis is on using empirical data to test theoretical proposals.

Three hours; one term

**Prerequisite(s):** LINGUIST 1AA3

### LINGUIST 3C03 - CHILD LANGUAGE ACQUISITION

Language behaviour and development in children, from birth to school age. The course examines how data from children's language acquisition can inform linguistic theory.

Three hours; one term

**Prerequisite(s):** LINGUIST 1A03; and one of LINGUIST 1AA3, PNB 2XA3 or PSYCH 2H03

**Cross-list(s):** PSYCH 3C03

*This course is administered by the Department of Linguistics and Languages.*

### LINGUIST 3F03 - ANATOMY AND PHYSIOLOGY FOR SPEECH, LANGUAGE AND HEARING

Anatomy and physiology of human speech production and hearing. Systems for speech production (lungs, glottis, vocal tract, jaw, lips) and perception (outer/middle/inner ear, auditory processing) and anatomy of brain areas for speech perception.

Three hours; one term

**Prerequisite(s):** LINGUIST 1A03

### LINGUIST 3I13 - SEMANTICS

The study of patterns of meaning in language; a critical survey of theories and issues.

Three hours; one term

**Prerequisite(s):** LINGUIST 2SY3

### LINGUIST 3LA3 - INTRODUCTION TO SECOND LANGUAGE ACQUISITION

The course introduces the students to major theories in second language acquisition through readings and problem-based assignments. The objective is to learn about theories as well as practise using them as a basis for generating ideas for both practical applications and research.

Three hours; one term

**Prerequisite(s):** LINGUIST 1AA3

### LINGUIST 3M03 - MORPHOLOGY

The study of word formation in the languages of the world; a critical survey of current theories and issues.

Three hours; one term

**Prerequisite(s):** LINGUIST 2SY3 and 2PH3

### LINGUIST 3NL3 - COGNITIVE NEUROSCIENCE OF LANGUAGE

A survey of the current scientific literature dealing with brain function related to language processes in typical and special populations.

Three hours; one term

**Prerequisite(s):** Registration in Level III or IV of a program in Linguistics, Cognitive Science of Language or Psychology

**Antirequisite(s):** LINGUIST 4F03, PSYCH 4L03

**Cross-list(s):** PSYCH 3NL3

### LINGUIST 3P03 - PRAGMATICS

A discussion of the problems confronting the linguist in the study of text and discourse at the level beyond the sentence. The course will deal with the interaction between grammar and situational factors.

Three hours; one term

**Prerequisite(s):** LINGUIST 1AA3 or FRENCH 2H03

**Antirequisite(s):** CMST 3V03

### LINGUIST 3RP3 A/B S - INDIVIDUAL RESEARCH PRACTICUM

In this Experiential Learning course, students learn hands-on linguistic research skills (e.g., running experiments, conducting interviews, reviewing literature) by collaborating in a faculty member's research project. Consult the department website for instructions on requesting permission for this course.

**Prerequisite(s):** LINGUIST 2D03 and registration in Level III or IV of Honours Linguistics or Honours Cognitive Science of Language; and permission of the Department.

### LINGUIST 3SL3 - INTERMEDIATE AMERICAN SIGN LANGUAGE

Expands students vocabulary and grammar for communication in American Sign Language. Further explores the attributes of Deaf culture.

Three hours; one term

**Prerequisite(s):** LINGUIST 2SL3 or equivalent

*Not open to students with credit in ASL 104 from the Canadian Hearing Society or equivalent.*

### LINGUIST 3TT3 - PERSPECTIVES ON TRANSLATION

This course introduces theories, concepts, and problems in Translation Studies. It examines cognitive, linguistic, computational, cultural, artistic and ethical aspects of translation using a multidisciplinary approach. Note: knowledge of a second language is not required to enroll.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above

### LINGUIST 4AA3 - SEMINAR IN APPLIED LINGUISTICS

Topics may include adult language acquisition, language disorders, linguistics in education, reading, or other applications.

Seminar (two hours); one term

**Prerequisite(s):** LINGUIST 2PH3 or 3A03; and LINGUIST 2SY3 or 3I03; and registration in Level IV of a program in Linguistics or Cognitive Science of Language

*Not open to students with credit in LINGUIST 4B03 if the topic is Adult Language Acquisition. Not open to students with credit in LINGUIST 4CS3 if the topic is Clinical Linguistics. Consult the Department for the topic each year.*

### LINGUIST 4AS3 - TOPICS IN ADVANCED SEMANTICS

This course examines advanced issues in formal semantics, seeking to evaluate the current formal semantics theory and to address the data that fall beyond the basic theory introduced in LINGUIST 3I13.

Seminar (three hours); one term

**Prerequisite(s):** LINGUIST 3I13 and registration in Level IV of a program in Linguistics or Cognitive Science of Language

### LINGUIST 4D03 - COMPUTERS AND LINGUISTIC ANALYSIS

This course studies the applications of computer technology to language processing, including corpus research, parsers and machine translation.

Lecture and lab (three hours); one term

**Prerequisite(s):** LINGUIST 2DD3 and registration in Level IV of a program in Linguistics or Cognitive Science of Language

### LINGUIST 4E03 - ENGLISH AS A SECOND LANGUAGE (ESL) TEACHING METHODS

This course will look at the phenomenon of Teaching English as a Second Language (TESL) not only in the Canadian context but also worldwide. There will also be a detailed investigation of the dominant teaching methodologies associated with TESL.

Three hours; one term

**Prerequisite(s):** Credit or registration in LINGUIST 3LA3 or LINGUIST 4B03 and registration in Level III or IV of a program in Linguistics or Cognitive Science of Language

### LINGUIST 4EL3 - LABORATORY IN EXPERIMENTAL LINGUISTICS

Students collaborate to plan, carry out, and analyze an experiment addressing a cognitive aspect of language processing or acquisition. Students write a report of their findings and present a poster at the department's Student Research Day.

Two hours plus lab work; one term

**Prerequisite(s):** LINGUIST 2D03; and one of LINGUIST 2PS3, 3C03, 3LA3, 3NL3 or 4F03 and registration in Level IV of a program in Linguistics or Cognitive Science of Language

**Antirequisite(s):** LINGUIST 3PS3

### LINGUIST 4G03 - LANGUAGE, SEX AND GENDER

This course investigates how patterns of language behaviour interact with social categories of gender and sexuality, and how speakers use language to express their gender and sexual identities.

Three hours; one term

**Prerequisite(s):** LINGUIST 2S03; and registration in Level IV of a program in Linguistics or Cognitive Science of Language, or permission of the department for students pursuing a minor in Women's Studies

### LINGUIST 4HL3 - HERITAGE LANGUAGES IN THE HAMILTON DIASPORA

In this experiential, problem-based learning course, students will engage with community partners to study linguistic aspects of identity formation among immigrants to the Hamilton region. Students will use interviews, historical archives and other ethnographic and sociolinguistic tools to explore and document linguistic and cultural diversity in Hamilton.

Seminar (two hours) plus off-campus fieldwork; one term

**Prerequisite(s):** Registration in Level IV of a program in Linguistics or Cognitive Science of Language or permission of the department

### LINGUIST 4I13 A/B S - INDEPENDENT STUDY

The student will prepare, under the supervision of a faculty member, a research paper involving independent study in an area where the student has already demonstrated competence. Consult the department website for instructions on requesting permission for this course.

**Prerequisite(s):** 18 units of Linguistics above Level I and permission of the Department

**Antirequisite(s):** LINGUIST 4Y06 A/B

### LINGUIST 4LB3 - ADVANCED PHONETICS AND PHONOLOGY

This course examines advanced issues in phonetics and phonology, seeking to evaluate current theory and to address data that fall beyond the explanatory capacities of those paradigms. The course is data oriented, with material taken from several languages.

Three hours; one term

**Prerequisite(s):** LINGUIST 2L03 and 2PH3; and registration in Level IV of a program in Linguistics or Cognitive Science of Language

### LINGUIST 4LC3 - ADVANCED MORPHOLOGY AND SYNTAX

This course examines advanced issues in morphology and syntax, seeking to evaluate current theory and to address data that fall beyond the explanatory capacities of those paradigms. The course is data oriented, with material taken from several languages.

Three hours; one term

**Prerequisite(s):** LINGUIST 2SY3 and 3M03; and registration in Level IV of a program in Linguistics or Cognitive Science of Language

### LINGUIST 4LX3 - THE STRUCTURE OF X

This course will offer the student an opportunity to examine one or more languages in detail in order to apply in a realistic setting abstract principles and techniques learned in topical courses. Methods of elicitation and recording will also be taught.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of a program in Linguistics or Cognitive Science of Language

### LINGUIST 4NN3 - COGNITIVE NEUROLINGUISTICS LABORATORY

Cognitive neuroscience methods used to study language. Hands-on experience using electrophysiological methods and EEG/ERP analysis techniques. Students write a report of their findings and present a poster at the department's Student Research Day.

Seminar (two hours) plus lab work; one term

**Prerequisite(s):** LINGUIST 2D03 and 3NL3 and registration in Level IV of a program in Linguistics or Cognitive Science of Language

**Antirequisite(s):** LINGUIST 3N03

### LINGUIST 4PL3 - PROGRAMMING FOR LINGUISTS

A practical study of a programming language/environment such as Matlab, Praat or Python and its applications for natural language processing. Topics might include word categorization and tagging, text classification, or speech analysis and synthesis.

Three hours; one term

**Prerequisite(s):** Registration in Level III or IV of a program in Linguistics or Cognitive Science of Language

**Antirequisite(s):** LINGUIST 3PL3

### LINGUIST 4R03 - CROSS-CULTURAL COMMUNICATION

Students will explore the links between language and culture and learn skills necessary to be intermediaries between cultures. Topics include: communication between genders, the cognitive role of metaphor, language and perception, emotions across cultures, culture and advertising, body language and cultural stereotyping.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of a program in Linguistics or Cognitive Science of Language

### LINGUIST 4S03 - INTERPERSONAL COMMUNICATION

This course offers an introduction to contemporary interpersonal communication theories and research. Topics include: small group communication, persuasive communication, argumentation strategies, conflict resolution and computer mediated, intercultural, international and political communication.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level IV of a program in Linguistics or Cognitive Science of Language

### LINGUIST 4SL3 - SLP PRACTICUM

In this Experiential Learning course, students complete at least 36 hours observing and working under the supervision of a registered Speech-Language Pathologist and complete a Learning Portfolio documenting their experience. Consult the department website for instructions on requesting permission for this course.

One term

**Prerequisite(s):** Registration in Level IV of the Honours Cognitive Science of Language program with a Grade Point Average of 9.0; and permission of the Department

### LINGUIST 4SS3 - SEMINAR IN SOCIOLINGUISTICS

Topics may include pidgins & creoles, language and gender, language variation & change, or others.

Seminar (two hours); one term

**Prerequisite(s):** LINGUIST 2S03, or 3X03; and registration in Level IV of a program in Linguistics or Cognitive Science of Language  
*Not open to students with credit in LINGUIST 4M03 if the topic is Pidgins & Creoles. Consult the Department for the topic each year.*

### LINGUIST 4TE3 - TESL PRACTICUM

In this Experiential Learning course, students complete at least 36 hours observing and practice teaching under the supervision of an accredited ESL instructor and complete a Learning Portfolio documenting their experience. Consult the department website for instructions on requesting permission for this course.

One term

**Prerequisite(s):** LINGUIST 4E03; registration in Level IV of a program in Linguistics with a Grade Point Average of 9.0; and permission of the Department

### LINGUIST 4XX3 - TOPICS IN LINGUISTIC THEORY

Issues in different aspects of Linguistic Theory and Advanced Philology. Consult the Department for the topic to be offered.

Seminar (two hours); one term

**Prerequisite(s):** LINGUIST 2PH3 and 2SY3; and registration in Level IV of a program in Linguistics or Cognitive Science of Language

### LINGUIST 4Y06 A/B - HONOURS THESIS

Students conduct an individual research project under the supervision of a Department of Linguistics and Languages faculty member or associate member. A written paper and a presentation at the Department's Student Research Day are required. Consult the department website for instructions on requesting permission for this course.

**Prerequisite(s):** LINGUIST 2D03; and registration in Level IV of a program in Linguistics or Cognitive Science of Language with a Grade Point Average of at least 9.0; and permission of the Department

**Antirequisite(s):** LINGUIST 4I13 A/B S

## Manufacturing Technology

Courses in Manufacturing Engineering Technology are administered by the Bachelor of Technology Program.

Engineering Technology Building (ETB), Room 121, ext. 20195

<http://mybtechdegree.ca>

### MANTECH 3LS3 - QUALITY CONTROL AND ASSURANCE METHODS

Formerly MANTECH 4LS3

Detail understanding of Six sigma, Kaizen, KANBAN, supply chain and outsourcing. Concepts on planning, measurement, control, improvement of quality, analysis of variation and sampling techniques.

Two lectures, one lab; one term

**Prerequisite(s):** ENGTECH 3MA3 and registration in Manufacturing Engineering Technology

**Antirequisite(s):** MANTECH 4ST3, GENTECH 3LS3

### MANTECH 3MF3 - MICRO MANUFACTURING AND FABRICATION

Joining, welding, casting, forming, grinding, abrasive waterjet, ultrasonic machining, grinding, laser processes, micro-scale cutting, chemical etching, polishing, electric discharge machining, lithographic process, ion beam technology, inspection.

Three lectures; one term

**Prerequisite(s):** ENGTECH 3SP3 and registration in Manufacturing Engineering Technology

**Cross-list(s):** MECHENG 3C03

*This course is administered by the Department of Mechanical Engineering.*

### MANTECH 4DA3 - DESIGN AND ADVANCED MANUFACTURING

Fundamental concepts in design and manufacturing strategies; computer aided manufacturing; non conventional machining; 3D metallic printing; rapid prototyping.

Three lectures; one term

**Prerequisite(s):** MANTECH 3MF3 and registration in Manufacturing Engineering Technology

**Antirequisite(s):** MANTECH 4DM3

### MANTECH 4FM3 - CIM AND FLEXIBLE MANUFACTURING

Facility layout; cellular manufacturing; flexible manufacturing systems; programmable logic controllers (PLCs); computer-aided process control; quality control and inspection principles; inspection technologies; coordinate measuring machines (CMM.)

Two lectures, one lab; one term

**Prerequisite(s):** MANTECH 3MF3 and registration in Manufacturing



Engineering Technology

**Antirequisite(s):** MANTECH 3FM3

### MANTECH 4MM3 - DESIGN AND MANUFACTURING OF MACHINE ELEMENTS

Theory and methodology related to conceptual design; simple design factor; variable loads; stress concentrations; bolted joints; shaft and bearing design; characterization of manufacturing in design.

Three lectures; one term

**Prerequisite(s):** ENGTECH 4FA3, and registration in Manufacturing Engineering Technology or ENGTECH 3FE3 and registration in Automotive Engineering Technology

**Antirequisite(s):** MANTECH 4MT3

### MANTECH 4PM3 - PRODUCTION MANAGEMENT

Identification of technical, economic, social, characteristics in the production system; forecasting techniques; inventory models; aggregate planning of production; materials requirements planning; scheduling; sequencing; production control.

Three lectures; one term

**Prerequisite(s):** MANTECH 3LS3 or 4LS3 and registration in Manufacturing Engineering Technology

### MANTECH 4RM3 - ROBOT MECHANICS AND MECHATRONICS

Basic robot categories; robot components; mobility/constraint analysis; workspace analysis; manipulator kinematics and motion trajectories; non-redundant and redundant sensing/actuation of manipulators; manipulator statics; singularities; manipulator dynamics.

Two lectures, one lab; one term

**Prerequisite(s):** ENGTECH 3CT3 or 4CT3 and registration in Manufacturing Engineering Technology

**Antirequisite(s):** MANTECH 4MC3

## Materials

Courses in Materials Science and Engineering are administered by the Department of Materials Science and Engineering.

John Hodgins Engineering Building, Room 357, ext. 24293

<https://www.eng.mcmaster.ca/materials>

### Courses

*If no prerequisite is listed, the course is open.*

### Department Note

All Materials Science & Engineering courses are open to students registered in a Materials Science and Engineering program, subject to prerequisite requirements. Prior permission of the department may be necessary for students from other Engineering departments and other faculties.

### MATLS 1M03 - STRUCTURE AND PROPERTIES OF MATERIALS

An introduction to the structure of both crystalline and amorphous solids; the physical and chemical basis for properties exhibited by materials; an overview of material properties including mechanical, electrical, magnetic and thermal behaviour.

Three lectures; second term

**Prerequisite(s):** Registration in any program in the Faculties of Engineering or Science

**Antirequisite(s):** ENGINEER 1P13 A/B, IBEHS 1P10 A/B

*Offered only during Spring/Summer term.*

*Departmental permission is required.*

### MATLS 2B03 - INTRODUCTION TO THE THERMODYNAMICS OF MATERIALS

First and Second Laws. Reversible and irreversible processes. State functions, variables, relations among them. The Third Law. Thermodynamics of reactions. Unary systems. Real gases. Electrochemistry.

Two lectures, one lab (two hours every other week), two tutorials; first term

**Prerequisite(s):** CHEM 1A03 or CHEM 1E03; and registration in Level II or above in Materials Engineering

**Antirequisite(s):** ENGPYHS 2H04, PHYSICS 2H04

### MATLS 2D03 - THERMODYNAMICS OF ALLOYS AND PHASE DIAGRAMS

Configurational entropy. Molar Gibbs energies. Activities, chemical potentials. Raoult's and Henry's Laws. Regular solutions. Eutectic, peritectic, other types of phase diagrams. Phase rule. Multicomponent solutions.

Two lectures, one lab (two hours every other week), two tutorials; second term

**Prerequisite(s):** CHEM 1A03 or 1E03; and MATLS 2B03; and Registration in Level II or above in Materials Engineering

### MATLS 2H04 A/B - INTEGRATED MATERIALS ENGINEERING LABORATORY

Characterization of materials by microscopy and electrical, mechanical and chemical methods. Introduction to modelling in materials engineering. Team projects involving materials characterization and synthesis. Technical communication as applied to writing lab and industrial reports.

One lecture, one lab (three hours), one tutorial; both terms

**Prerequisite(s):** Registration in Level II or above in Materials Engineering

### MATLS 2Q03 - ELECTRONIC PROPERTIES OF MATERIALS

An introduction to the electronic structure and properties of materials: electrons and their behaviour in vacuum and in a crystal lattice, electronic structure of elements, crystal bonding, free electron theory of metals and band structure of solids, electrical and thermal properties of solids.

Three lectures; one lab (three hours every other week); second term

**Prerequisite(s):** Registration in Level II or above in Materials Engineering

**Antirequisite(s):** MATLS 2Q04

### MATLS 2X03 - CRYSTALLINE STRUCTURE OF MATERIALS

Crystal geometry, point groups, space groups, x-ray diffraction analysis to determine crystalline solubility limits in structures, phase diagrams, phase identification, chemical compositions, epitaxy, nanocrystals and strain, electron and neutron diffraction, crystalline defects, properties of crystals, crystal growth, phase analysis, phase transitions, protein crystallography.

Two lectures, one lab (three hours), one tutorial (two hours); first term

**Prerequisite(s):** Registration in Level II or above in Materials Engineering

### MATLS 3B03 - MANUFACTURING ENGINEERING OF MULTIFUNCTIONAL AND BIOMEDICAL MATERIALS

Surface science and technology related to the preparation of fine particles of minerals, metals and ceramics for industrial production. Application of electrochemistry for diverse materials processing, such as electrometallurgy, thin film production and anodizing.

Three lectures; second term

**Prerequisite(s):** MATLS 2D03; and Registration in Level II or above in Materials Engineering

### MATLS 3C03 - APPLIED THERMODYNAMICS

Gaseous systems. Phase rule. Systems with gas phase and pure condensed phases. Ellingham diagram. Predominance diagrams. Systems with gas phase and condensed solutions. Pourbaix diagrams.

Two lectures, one lab (three hours every other week), two tutorials; first term

**Prerequisite(s):** MATLS 2D03; and Registration in Level II or above in Materials Engineering

### MATLS 3E04 - MASS TRANSFER

Phenomenological and mechanistic approaches to steady and non-steady state diffusion, boundary conditions, mechanisms of diffusion, Arrhenius behaviour, gas-solid reactions, precipitate growth and dissolution, plate and spherical geometries, plane front solidification, diffusion in concentrated alloys, the Kirkendall effect, the interdiffusion coefficient, diffusion couples with intermediate phases, mass transport with convection, transient diffusion in fluids, the mass transfer coefficient.

Three lectures, one tutorial (two hours); first term

**Prerequisite(s):** MATLS 2D03 and MATH 2ZZ3; and Registration in Level II or above in Materials Engineering

### MATLS 3F03 - HIGH-TEMPERATURE MATERIALS PRODUCTION

Fundamentals of processing, building on a knowledge of heat and mass transfer. High temperature processing of materials, focusing on heat sources, solid state processing of powders and liquid state processing, high temperature production routes for most important metals.

Three lectures, one tutorial; second term

**Prerequisite(s):** MATLS 2D03; and Registration in Level II or above in Materials Engineering

### MATLS 3J03 - STATISTICAL METHODS FOR MATERIALS ENGINEERS

Introduction to probability. Linear and non-linear regression analysis, multi-response estimation, design of experiments including factorial and optimal design, statistical process control. Emphasis on analysis of industrial problems.

Three lectures; first term

**Antirequisite(s):** STATS 3Y03

**Prerequisite(s):** Registration in Level III and above of Materials Engineering, or Level II and above of Chemical Engineering

### MATLS 3M03 - MECHANICAL BEHAVIOUR OF MATERIALS

Elastic and Plastic Deformation of Materials. Strengthening Methods. Fracture Mechanisms. Fatigue and Creep failure.

Three lectures, one lab (one hour) every other week; second term

**Prerequisite(s):** ENGINEER 2P04 and Registration in Materials Engineering; or MECHENG 2P04 and Registration in Mechanical Engineering; or permission of the department

### MATLS 3Q03 - MATERIALS FOR ELECTRONIC APPLICATIONS

Fundamental properties of materials used in electronic applications, operation of devices and fabrication methods of electronic circuits and packaging.

Includes description of dielectric, magnetic and optoelectronic properties.

Three lectures; one term

**Prerequisite(s):** One of MATLS 2Q03, 2Q04, ENGPYS 2QM3; or permission of the department

**Antirequisite(s):** ENGPYS 3PN4

### MATLS 3T04 - PHASE TRANSFORMATIONS

Molar Gibbs energy diagrams. Fundamentals of diffusion. Curved interfaces, Gibbs-Thomson effect. Grain growth, Zener pinning. Homogeneous and heterogeneous nucleation. Solidification. Scheil formalism. Constitutional supercooling. Eutectic growth. Coarsening. Recovery, recrystallization. Spinodal decomposition. Eutectoid, massive, order-disorder and martensitic transformations.

Three lectures, one lab (three hours); second term

**Prerequisite(s):** MATLS 2D03 and 2X03; and Registration in Level II or above of Materials Engineering

### MATLS 4B03 - BIOMATERIALS AND TISSUE ENGINEERING

Introduction to biomaterials. Includes material-tissue interactions, techniques for biomaterials testing, and characterization. Applications of biomaterials and the clinical context of their use will be introduced.

Three lectures; one term

**Prerequisite(s):** Registration in Level III or above in Materials Engineering; or Registration in Level IV or above in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program

*Offered on an irregular rotation basis.*

### MATLS 4C03 - MODERN IRON AND STEELMAKING

Theory and practice of iron making. New processes for reduced energy consumption and pollution. Thermodynamics and kinetics of steelmaking. Steel refining. Casting, including new near net shape technologies. Specialty steelmaking.

Three lectures; one term

**Prerequisite(s):** Registration in Level III or above in Materials Engineering; or permission of the department

**Co-requisite(s):** MATLS 3F03

*Offered on an irregular rotation basis.*

### MATLS 4D03 - CORROSION AND ITS CONTROL

Thermodynamics, electrochemistry, electrified interface, electrode potential, Faradays Law, Butler-Volmer equation, activation polarization, concentration polarization, mixed potential theory, passivity, rate measurement techniques, galvanic corrosion, stress corrosion cracking, intergranular corrosion, materials selection, cathodic protection, anodic protection, inhibitors/biocides.

Three lectures; one term

**Prerequisite(s):** Registration in Level III above in Materials Engineering; or permission of the department

*Offered on an irregular rotation basis.*

### MATLS 4FF3 - SYNTHESIS, APPLICATIONS AND ENVIRONMENTAL IMPACT OF NANOMATERIALS

Synthesis routes for nanomaterials, bottom-up and top-down approaches, green chemistry methods, properties of materials: carbon nanotubes, nanoparticles, quantum dots. Environmental and health impact of nanomaterials.

Three lectures; one term

**Prerequisite(s):** Registration in Level III or above in Materials Engineering, Engineering Physics or Chemistry; or permission of the department

### MATLS 4G03 - CHARACTERIZATION OF NANOMATERIALS

Interaction of electrons and photons with matter. Imaging methods with electron microscopy, scanning probe techniques, x-ray photoelectron spectroscopy and X-ray absorption analysis with high spatial resolution.

Three lectures; one term

**Prerequisite(s):** Registration in Level III or above in Materials Engineering, Chemical Engineering, Engineering Physics or Honours Chemistry; or permission of the department  
Offered on an irregular rotation basis.

### **MATLS 4H03 - THIN FILM SCIENCE AND ENGINEERING**

Deposition and fabrication techniques, surfaces, growth mechanisms, epitaxy, kinetic effects in thin films, defects and properties of thin films. Materials for packaging.

Three lectures; one term

**Prerequisite(s):** Registration in Level III or above of Materials Engineering; or permission of the department  
Offered on an irregular rotation basis.

### **MATLS 4I03 - SUSTAINABLE MANUFACTURING PROCESSES**

Sustainable development, ingenuity gap, materials cycles, Eco-Efficiency, Environmental Impact parameters, introduction and computational structure of life cycle analysis, waste treatment and recycling technologies, impact of sustainable practice, stakeholder strategies.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** Registration in Level III or above of Materials Engineering; or permission of the department

### **MATLS 4KA3 - RESEARCH PROJECT 1**

Individual experimental research problem with a selected supervisor. A written thesis is required at the end of term which will be defended orally.

Nine unscheduled hours each week; one term

**Prerequisite(s):** Registration in Level IV or above in Materials Engineering and a GPA of at least 8.0, and permission of the department

**Antirequisite(s):** MATLS 4K06 A/B, IBEHS 3I06 A/B

### **MATLS 4KB3 - RESEARCH PROJECT 2**

Individual experimental research problem with a selected supervisor. A written thesis is required at the end of term which will be defended orally.

Nine unscheduled hours each week; one term

**Prerequisite(s):** Registration in Level IV or above in Materials Engineering and a GPA of at least 8.0, and permission of the department

**Antirequisite(s):** MATLS 4K06 A/B, IBEHS 3I06 A/B

### **MATLS 4LA2 - HEAT-TREATABLE AL ALLOYS**

A sequence of experiments to simulate industrial production of an Al-Mg-Si alloy. Accompanying lectures illustrate the engineering principles that underpin the industrial process.

One lecture, one lab (three hours); one term

**Prerequisite(s):** Registration in the final level of Materials Engineering

**Antirequisite(s):** MATLS 4L02, 4L04

### **MATLS 4LB2 - SYNTHESIS AND CHARACTERIZATION OF BIOMEDICAL COATINGS**

A sequence of experiments to investigate surface modification of biomaterials involving electrodeposition of composite biopolymers and relevant biological characterization methods.

One lecture, one lab (three hours); one term

**Prerequisite(s):** Registration in the final level of Materials Engineering

**Antirequisite(s):** MATLS 4L02, 4L04

First offered 2021-2022.

### **MATLS 4LF2 - SYNTHESIS, PROPERTIES AND APPLICATION OF THIN FILMS**

A sequence of experiments to investigate and study a wide range of thin film growth methods and applications including vacuum deposition, electrodeposition, spin coating, sol gel, and sacrificial oxidation.

One lecture, one lab (three hours); one term

**Prerequisite(s):** Registration in the final Level of Materials Engineering

**Antirequisite(s):** MATLS 4L02, 4L04

### **MATLS 4LS2 - PHYSICAL METALLURGY OF STEELS**

A sequence of experiments to simulate industrial thermal-mechanical processing of low-carbon, low alloy steels. Accompanying lectures illustrate the engineering principles that underpin the industrial process.

One lecture, one lab (three hours); one term

**Prerequisite(s):** Registration in the final Level of Materials Engineering

**Antirequisite(s):** MATLS 4L02, 4L04

### **MATLS 4ML3 - APPLICATIONS OF MACHINE LEARNING TO MATERIALS AND CHEMICAL ENGINEERING**

Materials and chemical engineering applications of machine learning with topics in: Bias, neural networks, deep learning and learning theory. Classification, supervised learning, unsupervised learning, generative networks, reinforcement learning.

Three lectures; one term

**Prerequisite(s):** MATLS 3J03

Offered on an irregular rotation basis.

### **MATLS 4NN3 - COMPUTATIONAL MODELLING IN MATERIALS ENGINEERING AT THE NANO-SCALE**

Microscopic insight to the structure of functional materials used in photovoltaics, light generation, piezoelectronics and origin of their properties from atomic-scale simulations.

Three lectures; one term

**Prerequisite(s):** Registration in Level III or above in Materials Engineering or Engineering Physics; or permission of the department

Offered on an irregular rotation basis.

### **MATLS 4NP3 - COMPUTATIONAL MODELLING IN MATERIALS ENGINEERING AT THE PROCESS-SCALE**

Applications of heat transfer, mass transfer, and fluid flow conservation equations to industrial materials processes in metals and polymers; scaling analysis; finite element analysis.

Three lectures, one tutorial (one hour); one term

**Prerequisite(s):** Two of CHEM ENG 2004, CHEMENG 3A04, MATLS 3E04; or permission of the department

Offered on an irregular rotation basis.

### **MATLS 4P03 - PROPERTIES OF POLYMERIC MATERIALS**

Structure of amorphous and crystalline polymeric materials; mechanical, electrical and optical properties, and their modification through processing.

Three lectures; one term

**Prerequisite(s):** Registration in Level III or above of Materials Engineering; or permission of the department

Open to Level III and IV students registered in a program in the Faculty of Science or Engineering with permission of the department.

Offered on an irregular rotation basis.

### MATLS 4Q03 - MATERIALS FOR SENSORS IN BIG DATA AND AI SYSTEMS

Sensors and sensing materials for big data and artificial intelligence systems. Discussion of the theory, design and fabrication of chemical, thermal, electrical, magnetic and optical sensors.

Three lectures; one term

**Prerequisite(s):** MATLS 2Q03 or 2Q04 or ENGPYS 3PN4

Offered on an irregular rotation basis.

### MATLS 4T03 - PROPERTIES AND PROCESSING OF COMPOSITES

Intrinsic properties of matrix materials and fibres; mechanics and thermodynamics of interfaces; mechanical properties and fabrication of engineering composites.

Three lectures; one term

**Prerequisite(s):** MATLS 3M03; or permission of the department

Offered on an irregular rotation basis.

### MATLS 4Y03 - ADVANCED BIOMATERIALS: APPLICATIONS AND DEVICE DESIGN

Advanced applications of biomaterials including nanobiomaterials, drug delivery, regenerative medicine, microfluidics, biosensing, immunomodulatory materials.

Three lectures; one term

**Prerequisite(s):** MATLS 4B03 and registration in Level III or above in Materials Engineering; or Registration in Level IV or above in the Integrated Biomedical Engineering and Health Sciences (IBEHS) program

Offered on an irregular rotation basis.

### MATLS 4Z06 A/B - MATERIALS ENGINEERING CAPSTONE

Projects, in cooperation with either Industry or a Faculty member, focussing on materials or materials processing design, including economic and sustainability analysis. Student teams are assessed on oral and written reports.

Two lectures, two labs (three hours each); both terms

**Prerequisite(s):** Registration in the final year of Materials Engineering

## Mathematics

Courses in Mathematics are administered by the Department of Mathematics and Statistics.

Hamilton Hall, Room 218, ext. 27034

<http://www.math.mcmaster.ca/>

#### Department Notes

1. Course codes ending with \* indicate that the course is not necessarily offered every session; consult the Chair of the Department or the Associate Dean of Science (Academic).
2. Courses in Mathematics and Statistics are not open to students registered in the Bachelor of Technology (B.Tech.) program.

#### Courses

*If no prerequisite is listed, the course is open.*

See also courses in *Statistics*.

### MATH 1A03 - CALCULUS FOR SCIENCE I

For students in science: geared towards applications, with attention to underlying concepts. Functions: limits, continuity, derivatives, optimization, curve sketching. Antiderivative, definite integral, techniques of integration.

Three lectures, one tutorial; one term

**Prerequisite(s):** Grade 12 Calculus and Vectors U or MATH 1F03

**Antirequisite(s):** ARTSSCI 1D06 A/B, MATH 1LS3, 1N03, 1X03, 1Z04, 1ZA3  
*Not open to students who have achieved a grade of at least B- in MATH 1M03. Not open to students in Mathematics and Statistics I or an Engineering program or with credit or registration in ISCI 1A24 A/B.*

### MATH 1AA3 - CALCULUS FOR SCIENCE II

For students in science: additional techniques of integration, applications of definite integrals, differential equations, polar coordinates, parametrized curves. Sequences, infinite series, power series. Partial derivatives, double integrals.

Three lectures, one tutorial; one term

**Prerequisite(s):** One of MATH 1A03, 1X03, 1ZA3; or a grade of at least B- in MATH 1LS3 or 1M03

**Antirequisite(s):** ARTSSCI 1D06 A/B, MATH 1LT3, 1NN3, 1XX3, 1ZB3, 1ZZ5  
*Not open to students in Mathematics and Statistics I or with credit or registration in ISCI 1A24 A/B.*

### MATH 1B03 - LINEAR ALGEBRA I

Vector spaces given by solutions to linear systems. Linear independence, dimension. Determinants. Eigenvalues, eigenvectors and diagonalisation. Complex numbers.

Three lectures, one tutorial; one term

**Prerequisite(s):** Grade 12 Calculus and Vectors U or MATH 1F03

**Antirequisite(s):** MATH 1ZC3

*Not open to students registered in an Engineering program.*

### MATH 1C03 - INTRODUCTION TO MATHEMATICAL REASONING

Inquiry into the ideas and methods of advanced mathematics. Material will include topics selected from algebra, calculus, discrete math, geometry and number theory.

Three lectures; one term

**Prerequisite(s):** Grade 12 Calculus and Vectors U or MATH 1F03; and credit or registration in MATH 1B03

### MATH 1F03 - INTRODUCTION TO CALCULUS AND ANALYTIC GEOMETRY

A first course in the techniques of the differential calculus including exponential, logarithmic and trigonometric functions. An introduction to vector geometry.

Three lectures, one tutorial; one term

**Prerequisite(s):** Grade 12 Advanced Functions U or MATH 1K03

*Not open to students with credit in Grade 12 Calculus and Vectors U; or credit or registration in MATH 1A03, 1LS3, 1M03, 1ZA3.*

### MATH 1K03 - ADVANCED FUNCTIONS & INTRODUCTORY CALCULUS FOR HUMANITIES AND THE SOCIAL SCIENCES

Properties of polynomial, rational, exponential and logarithmic functions. Derivatives of functions with applications.

Three lectures, one tutorial; one term

**Prerequisite(s):** MCR3U (or equivalent)

Normally not open to students who have completed Grade 12 Calculus and Vectors U, Grade 12 Advanced Functions U; or credit or registration in MATH 1A03, 1F03, 1LS3, 1M03, 1ZA3.

### MATH 1LS3 - CALCULUS FOR THE LIFE SCIENCES I

Topics from differential and integral calculus, differential equations, discrete-time dynamical systems, chosen for their relevance to the life sciences.



Three lectures, one tutorial; one term

**Prerequisite(s):** Grade 12 Calculus and Vectors U or MATH 1F03

**Antirequisite(s):** MATH 1A03

*Not open to students with credit or registration in ARTSSCI 1D06 A/B, ISCI 1A24 A/B, MATH 1M03, 1N03, 1X03, 1Z04, 1ZA3.*

### MATH 1LT3 - CALCULUS FOR THE LIFE SCIENCES II

Applications of integration, autonomous differential equations, functions of several variables; probability as application of calculus. All topics chosen for their relevance to the life sciences.

Three lectures, one tutorial; one term

**Prerequisite(s):** MATH 1LS3, or a grade of at least B- in MATH 1A03 or 1M03

**Antirequisite(s):** MATH 1AA3

*Not open to students with credit or registration in ARTSSCI 1D06 A/B, ISCI 1A24 A/B, MATH 1XX3, 1ZZ5, 1ZB3.*

### MATH 1M03 - CALCULUS FOR BUSINESS, HUMANITIES AND THE SOCIAL SCIENCES

Integral calculus of polynomial, rational, exponential and logarithmic functions. Optimization problems. Applications in the Social Sciences and Business.

Three lectures, one tutorial; one term

**Prerequisite(s):** One of Grade 12 Calculus and Vectors U, MATH 1F03 or a grade of at least B- in MATH 1K03

*Students considering upper year mathematics courses should take MATH 1A03.*

*Not open to students with credit or registration in ARTSSCI 1D06 A/B, ISCI 1A24 A/B, MATH 1A03, 1LS3, 1N03, 1X03, 1Z04, 1ZA3.*

### MATH 1MP3 - INTRODUCTION TO MATHEMATICAL SCIENTIFIC COMPUTATION

Introduction to mathematical problem-solving using computational methods. Introduction to a programming language; good scientific programming practices.

Three lectures, one lab; one term

**Prerequisite(s):** Credit or registration in one of MATH 1A03, 1LS3, 1X03 (or ISCI 1A24 A/B); and registration in a program in the Faculty of Science

**Antirequisite(s):** COMPSCI 1MD3 and ENGINEER 1D04

### MATH 1X03 - CALCULUS FOR MATH AND STATS I

Algebraic, geometric and numeric approaches to calculus, development of mathematical thinking, intuition and theoretical foundations. Functions: limits, continuity, derivatives, applications. Antiderivative, definite integral, integration techniques.

Three lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level I Mathematics and Statistics

**Antirequisite(s):** ARTSSCI 1D06 A/B, MATH 1A03, MATH 1LS3, 1N03, 1Z04, 1ZA3

*Not open to students with credit or registration in ISCI 1A24 A/B.*

### MATH 1XA3 A/B - PROOFS IN CALCULUS

Looks behind the scenes of calculus, by discussing notions and ideas needed to prove the theorems encountered in MATH 1X03 and MATH 1XX3.

**Prerequisite(s):** Registration in Level I Mathematics and Statistics

**Co-requisite(s):** MATH 1X03 and 1XX3

### MATH 1XX3 - CALCULUS FOR MATH AND STATS II

For students in mathematics/statistics. Additional techniques of integration, applications of definite integrals, differential equations, polar coordinates,

parametrized curves. Sequences, infinite series, power series. Partial derivatives, double integrals.

Three lectures, one tutorial; one term

**Prerequisite(s):** MATH 1X03 and registration in Level I Mathematics and Statistics

**Antirequisite(s):** ARTSSCI 1D06 A/B, MATH 1AA3, 1LT3, 1NN3, 1ZB3, 1ZZ5  
*Not open to students with credit or registration in ISCI 1A24 A/B.*

### MATH 1ZA3 - ENGINEERING MATHEMATICS I

Functions: limits, continuity, derivatives, optimization, curve sketching. Antiderivative, definite integral, techniques of integration, with applications.

Three lectures, one tutorial, one lab; one term

**Prerequisite(s):** Registration in a program in Engineering

**Antirequisite(s):** ARTSSCI 1D06 A/B, MATH 1A03, 1LS3, 1N03, 1NN3, 1X03, 1Z04

*Not open to students with credit or registration in ISCI 1A24 A/B.*

### MATH 1ZB3 - ENGINEERING MATHEMATICS II-A

Techniques of integration, applications of definite integrals, differential equations, polar coordinates, parametrized curves. Sequences, infinite series, power series. Partial derivatives.

Three lectures, one tutorial, one lab; one term

**Prerequisite(s):** MATH 1ZA3

**Antirequisite(s):** ARTSSCI 1D06 A/B, MATH 1AA3, 1LT3, 1N03, 1NN3, 1XX3, 1ZZ5

*Not open to students with credit or registration in ISCI 1A24 A/B.*

### MATH 1ZC3 - ENGINEERING MATHEMATICS II-B

Vector spaces given by solutions to linear systems. Linear independence, dimension. Determinants. Eigenvalues, eigenvectors and diagonalisation. Complex numbers.

Three lectures, one tutorial, one lab; one term

**Prerequisite(s):** One of Grade 12 Calculus and Vectors U, MATH 1F03, or credit or registration in MATH 1ZA3

**Antirequisite(s):** MATH 1B03, 1ZZ5

### MATH 2C03 - INTRODUCTION TO DIFFERENTIAL EQUATIONS

First order ordinary differential equations and higher order linear ordinary differential equations including Laplace transforms and series solutions.

Three lectures, one tutorial; one term

**Prerequisite(s):** One of MATH 1AA3, 1LT3, 1NN3, 1XX3, 1ZB3, ARTSSCI 1D06 A/B, ISCI 1A24 A/B; and one of MATH 1B03, 1ZC3

**Antirequisite(s):** ENGINEER 2Z03, MATH 2M03, 2M06, 2P04, 2Z03

### MATH 2ET3\* - THEORY AND PRACTICE OF TEACHING MATHEMATICS

This course is designed to give a maximum of 20 students practical experience with teaching mathematics in various contexts. The course is also an introduction to mathematics writing and development of communication skills relevant to mathematics.

Applications must be submitted to the instructor by May 1 of the preceding year, with selection for placements announced by September 9.

Two lectures, one practicum; one term

**Prerequisite(s):** Six units from MATH 1A03, 1AA3, 1LS3, 1LT3, 1X03, 1XX3, 1ZA3, 1ZB3 with a grade of at least A- in each, or ARTSSCI 1D06 A/B with a grade of A-, or ISCI 1A24 A/B (with a grade of at least A- in the Math component); and permission of the course instructor

### MATH 2FM3 - INTRODUCTION TO MATHEMATICAL FINANCE

Nominal and effective rates of interest and discount, forces of interest and discount, compound interest, annuities certain; amortization, sinking funds, bonds, security evaluation, determination of yields.

Three lectures, one tutorial; one term

**Prerequisite(s):** One of MATH 1A03, 1LS3, 1M03, 1N03, 1X03, 1Z04, 1ZA3, ARTSSCI 1D06 A/B, ISCI 1A24 A/B

**Antirequisite(s):** MATH 2K03

### MATH 2L03 - MATHEMATICAL METHODS FOR BUSINESS AND SOCIAL SCIENCES

Selected topics from: linear programming, Markov chains, game theory, differential equations, and the calculus of several variables.

Three lectures; one term

**Prerequisite(s):** One of MATH 1A03, 1LS3, 1M03, 1N03, 1X03, 1Z04, 1ZA3, ARTSSCI 1D06 A/B, ISCI 1A24 A/B

*Not open to students registered in Science or Engineering programs.*

### MATH 2LA3 - APPLIED LINEAR ALGEBRA

This course focuses on applications of linear algebra. Topics include linear programming, applications of matrix decomposition theorems, examples from data science, singular value decomposition and applications to compression.

**Prerequisite(s):** One of MATH 1AA3, 1LT3, 1NN3, 1XX3, 1ZB3, ARTSSCI 1D06 A/B, ISCI 1A24 A/B; and one of MATH 1B03, 1ZC3, 1ZZ5

### MATH 2R03 - LINEAR ALGEBRA II

Abstract vector spaces. Linear transformations. Inner product spaces. Spectral theorems. Orthogonal bases, other topics.

Three lectures, one tutorial; one term

**Prerequisite(s):** One of MATH 1AA3, 1LT3, 1NN3, 1XX3, 1ZB3, ARTSSCI 1D06 A/B, ISCI 1A24 A/B; and one of MATH 1B03, 1ZC3, 1ZZ5

### MATH 2UU3 - NUMBERS FOR LIFE

Principles of quantitative reasoning, problem-solving and critical thinking, discussed in contexts related to, and relevant for, our daily lives, our society and the environment we live in. Content delivered through lecture and class discussion in an engaging and non-threatening way. Course develops core competencies often referred to as numeracy, or numeric literacy.

Three lectures; one term

*Not open to students registered in any Honours program in Mathematics and Statistics.*

### MATH 2X03 - ADVANCED CALCULUS I

Multiple integration, line and surface integrals and applications. The classical integration theorems of Green, Gauss and Stokes.

Three lectures, one tutorial; one term

**Prerequisite(s):** One of MATH 1AA3, 1LT3, 1XX3, 1ZB3, 1ZZ5, ARTSSCI 1D06 A/B, ISCI 1A24 A/B; and credit or registration in one of MATH 1B03, 1ZC3  
Students who have completed MATH 1LS3 and 1LT3 should contact the Associate Chair, in Mathematics and Statistics, to discuss the recommended independent learning needed for success in MATH 2X03.

*Not open to students with credit or registration in ISCI 2A18 A/B.*

*Not open to students with credit in MATH 2A03, 2M06, 2MM3, 2Q04, 2ZZ3.*

### MATH 2XX3 - ADVANCED CALCULUS II

Theory of functions of several variables: limits, continuity, differentiability, Inverse Function Theorem, Taylor's Theorem. Extreme values, optimization, introduction to Fourier series.

Three lectures, one tutorial; one term

**Prerequisite(s):** MATH 2X03; or credit or registration in ISCI 2A18 A/B

### MATH 2Z03 - ENGINEERING MATHEMATICS III

Ordinary differential equations, Laplace transforms, introduction to partial differential equations, applications.

Three lectures, one tutorial, one lab (two hours) every other week; one term

**Prerequisite(s):** MATH 1ZB3

**Antirequisite(s):** ENGINEER 2Z03, MATH 2C03, 2M03, 2P04

### MATH 2ZZ3 - ENGINEERING MATHEMATICS IV

Fourier series, vector calculus, line and surface integrals, integral theorems, applications.

Three lectures, one tutorial, one lab (two hours) every other week; one term

**Prerequisite(s):** MATH 1ZB3; and MATH 1ZC3 or MATH 1ZZ5

**Antirequisite(s):** ENGINEER 2ZZ3, MATH 2A03, 2MM3, 2Q04

### MATH 3A03 - REAL ANALYSIS I

Sequences of real numbers; supremum, continuity. Metric spaces. Sequences and series of functions; uniform continuity and uniform convergence.

Three lectures, one tutorial; one term

**Prerequisite(s):** MATH 1XA3 with a grade of at least B+; or MATH 1C03, 2R03, 2X03; or Math 3IA3; or registration in Level III or above of an Honours program in Mathematics and Statistics; or permission of the instructor

**Prerequisite(s) (EFFECTIVE 2021-2022):** MATH 1XA3 with a grade of at least B+ or MATH 3IA3; or permission of the instructor

### MATH 3B03 - GEOMETRY

Selected topics from: affine and projective geometry, Euclidean, spherical and hyperbolic geometry, differential geometry of curves and surfaces.

Three lectures; one term

**Prerequisite(s):** One of MATH 2A03, 2X03, ISCI 2A18 A/B; and MATH 2R03

### MATH 3C03 - MATHEMATICAL PHYSICS I

Eigenvalue problems, Fourier transforms, special functions, spherical harmonics, partial differential equations, boundary value problems.

Three lectures, one tutorial; one term

**Prerequisite(s):** One of MATH 2A03, 2MM3, 2Q04, 2X03, 2Z03, ISCI 2A18 A/B; and one of MATH 2C03, 2M03, 2P04, 2ZZ3. One of PHYSICS 2B06, 2D03, 2E03 is recommended.

*Not open to students with credit or registration in MATH 3FF3.*

### MATH 3CY3 - CRYPTOGRAPHY

Introduction to cryptosystems used in modern security systems: elementary number theory, primality testing and factorization, discrete logarithm, SRA cryptosystems, elliptic curve cryptosystems. This course includes a scientific communication component.

Three lectures; one term

**Prerequisite(s):** MATH 2LA3 or MATH 2R03

### MATH 3D03 - MATHEMATICAL PHYSICS II

Functions of a complex variable, contour integrals, probability and statistics.

Three lectures, one tutorial; one term

**Prerequisite(s):** MATH 3C03

*Not open to students with credit or registration in MATH 3X03 or to students registered in Honours Mathematics and Physics.*

**MATH 3DC3 - DISCRETE DYNAMICAL SYSTEMS AND CHAOS**

Iteration of functions: orbits, graphical analysis, fixed and periodic points, stability, bifurcations, chaos, fractals, Julia sets. This course includes a scientific communication component.

Three lectures; one term

**Prerequisite(s):** One of MATH 2A03, 2X03, ZZZ3, or ISCI 2A18 A/B

**MATH 3ET3 A/B S - MATHEMATICS TEACHING PLACEMENT**

Explore teaching as a profession and integrate academics with a community, volunteer or professional experience. The student will complete an academic component in addition to the placement. This course includes a scientific communication component.

Students are responsible to arrange a suitable placement and supervision, and are required to submit an application to the Science Career and Cooperative Education two months prior to registration.

Normally students complete 60 hours of placement work involving teaching and/or tutoring through the duration of the experience; may be completed over one or two terms

**Prerequisite(s):** Registration in Level III or above in an Honours program in Mathematics and Statistics; and permission of the Department of Mathematics and Statistics. MATH 2ET3\* is recommended.

A maximum of three units of MATH 3ET3 A/B S may be used toward the Mathematics and Statistics requirements of the degree. With permission, MATH 3ET3 A/B S may be repeated, to a total of six units, if the placement is deemed sufficiently different from the first experience.

**MATH 3F03 - ORDINARY DIFFERENTIAL EQUATIONS**

Systems of ordinary differential equations, autonomous systems in the plane, phase portraits, linear systems, stability, Lyapunov's method, Poincare-Bendixson theorem, applications.

Three lectures, one tutorial; one term

**Prerequisite(s):** MATH 1C03, 2C03; and MATH 2X03 (or MATH 2A03 or ISCI 2A18 A/B); and credit or registration in MATH 2R03

**MATH 3FF3 - PARTIAL DIFFERENTIAL EQUATIONS**

First order equations, well-posedness, characteristics, wave equation, heat equation, Laplace equation, boundary conditions, Fourier series, applications.

Three lectures; one term

**Prerequisite(s):** MATH 2C03; and 2R03; and 2XX3 (or 2A03 or ISCI 2A18 A/B)

**MATH 3FM3 - MATHEMATICS OF FINANCE**

Introduction to finance in discrete time: Options and forwards, efficient markets and the no arbitrage condition, binomial asset pricing model, portfolio strategies, stochastic processes, conditional expectation, martingales, optimal portfolio selection, exotic options.

Three lectures; one term

**Prerequisite(s):** One of ISCI 2A18 A/B, MATH 2A03, 2X03; and STATS 2D03

**Antirequisite(s):** MATH 4K03

**MATH 3G03 - PROBLEM SOLVING**

A course designed to illustrate the principles of mathematical problem solving. This course includes a scientific communication component. Maximum enrolment is 20 students.

Three lectures; one term

**Prerequisite(s):** One of MATH 2A03, MATH 2X03 or ISCI 2A18 A/B; and MATH 2LA3 or MATH 2R03

**MATH 3GR3 - ABSTRACT ALGEBRA**

An introduction to groups and rings, with an emphasis on concrete examples.

Topics include: groups, subgroups, normal subgroups, quotient groups, group homomorphisms, First Isomorphism Theorem for groups, symmetric and alternating groups, rings, subrings, ideals, quotient rings, ring homomorphisms, and the First Isomorphism for rings.

Three lectures, one tutorial (one hour); one term

**Prerequisite(s):** MATH 1C03, 2R03

**Antirequisite(s):** MATH 3E03

**MATH 3H03\* - NUMBER THEORY**

Selected topics from: congruence and residues, continued fractions, approximation of irrationals, arithmetic in selected quadratic number fields.

Diophantine equations, partitions, geometry of numbers, quadratic reciprocity.

Three lectures; one term

**Prerequisite(s):** Credit in at least 12 units of Mathematics or Statistics Level II or above

**MATH 3I03 - PARTIAL DIFFERENTIAL EQUATIONS FOR ENGINEERING**

Topics in partial differential equations of interest to mechanical, material and ceramic engineering, including the wave equation, the heat diffusion equation and Laplace equation, in various co-ordinate systems.

Three lectures, one tutorial; first term

**Prerequisite(s):** One of MATH 2M03, 2P04, ZZZ3 or registration in Level III or IV of a program in the Department of Materials Science and Engineering

**MATH 3IA3 - INTRODUCTION TO ANALYSIS**

Sequences and series of numbers. Proofs of theorems about continuity; differentiability, Riemann integration.

**Prerequisite(s):** MATH 1C03, 2X03, and one of MATH 2LA3 or 2R03; or registration in Level III or above of an Honours program in Mathematics and Statistics; or permission of the instructor

*Not open to students with credit or registration in Math 3A03.*

**MATH 3MB3 - INTRODUCTION TO MODELLING**

Introduction to computational modelling using software such as R or MATLAB. Analytical modelling using algebra and calculus. The development and analysis of models will be illustrated with examples selected from biology, medicine, chemistry, physics, economics, or other areas of natural or social sciences. This course includes a scientific communication component.

Three lectures, one lab (one hour); one term

**Prerequisite(s):** One of MATH 1AA3, 1LT3, 1XX3, ARTSSCI 1D06 A/B, ISCI 1A24 A/B; and one of MATH 1B03, 1ZC3, 1ZZ5

**Antirequisite(s):** MATH 2E03

**MATH 3NA3 - NUMERICAL LINEAR ALGEBRA**

Conditioning and numerical stability, rounding and truncation errors, convergence rates, linear and nonlinear systems of equations, eigenvalue problems, least squares, QR and singular-value decomposition, optimization.

Three lectures; one term

**Prerequisite(s):** MATH 2LA3 or MATH 2R03; and one of MATH 1MP3, COMPSCI 1MD3, PHYSICS 2G03

**Antirequisite(s):** MATH 2T03

### MATH 3QC3 - INTRODUCTION TO QUANTUM COMPUTING

Postulates of quantum mechanics for finite dimensional systems; information on quantum bits, logical operations and quantum gates; quantum parallelism and complexity theory; examples of quantum algorithms. This course includes a scientific communication component.

Three lectures; one term

**Prerequisite(s):** One of MATH 2A03, 2X03 or ISCI 2A18 A/B; and MATH 2R03

### MATH 3T03 - INQUIRY IN TOPOLOGY

Size and shape in topology and analysis, compactness, connectedness, limit sets, theory of dimension, fractals and self-similarity.

Three lectures; one term

**Prerequisite(s):** MATH 1C03, 2X03 (or ISCI 2A18 A/B)

### MATH 3TP3 - TRUTH AND PROVABILITY

The goal is to inquire into Gödel's proof of incompleteness; in any sufficiently powerful axiom system there will be statements which are true but not provable.

Three lectures; one term

**Prerequisite(s):** MATH 1C03

### MATH 3U03 - COMBINATORICS

Inversion formulae, systems of distinct representatives, block designs and other configurations; other topics. This course includes a scientific communication component.

Three lectures; one term

**Prerequisite(s):** One of MATH 2A03, 2X03 or ISCI 2A18 A/B; and MATH 2LA3 or MATH 2R03

**Antirequisite(s):** MATH 4C03

### MATH 3V03 - GRAPH THEORY

Graphs, trees, bipartite graphs, connectivity, graph colouring, matrix representations, applications. This course includes a scientific communication component.

Three lectures; one term

**Prerequisite(s):** One of MATH 2A03, 2X03 or ISCI 2A18 A/B; and MATH 2LA3 or MATH 2R03

### MATH 3X03 - COMPLEX ANALYSIS I

Analytic functions, Cauchy's theorem, Cauchy's integral formula, residues, zeroes of analytic functions; Laurent series, the maximum principle.

Three lectures, one tutorial; one term

**Prerequisite(s):** MATH 2LA3 or MATH 2R03; and MATH 2XX3

### MATH 3Z03 - INQUIRY: HISTORY OF MATHEMATICS

An introduction to the history of mathematics, including interaction with other phases of culture, with special emphasis on the past three centuries. This course includes a scientific communication component.

Three lectures; one term

**Prerequisite(s):** At least two Level II Mathematics or Statistics courses other than MATH 2K03, MATH 2L03

### MATH 4A03 - REAL ANALYSIS II

Metric spaces, compactness. Spaces of continuous functions, functions of several variables, inverse and implicit function theorems. Lebesgue integration. Fourier series.

Three lectures; one term

**Prerequisite(s):** MATH 3A03

**Antirequisite(s):** MATH 3AA3

### MATH 4AT3\* - TOPICS IN ANALYSIS

Precise topics will vary; consult the department for current information.

Possible topics include: functional analysis, measure theory, harmonic analysis, calculus of variations, theory of distributions.

Three lectures; one term

**Prerequisite(s):** Permission of the instructor

*MATH 4AT3 may be repeated, if on a different topic.*

### MATH 4B03\* - CALCULUS ON MANIFOLDS

Review of multivariable calculus, basic properties of manifolds, differential forms, Stokes' theorem, de Rham cohomology and applications.

Three lectures; one term

**Prerequisite(s):** One of MATH 3A03, 3B03, 3C03

### MATH 4BT3\* - TOPICS IN GEOMETRY

Precise topics will vary; consult the department for current information.

Possible topics include: differential geometry, riemannian metrics, connections, curvature, geodesics, topological and analytic properties of Riemannian manifolds.

Three lectures; one term

**Prerequisite(s):** Permission of the instructor

*MATH 4BT3 may be repeated, if on a different topic.*

### MATH 4E03 - GALOIS THEORY

An introduction to Galois Theory. Topics include: field extensions, splitting fields, normality and separability, Galois extensions, finite fields, solvability by radicals, cyclic extensions, cyclotomic extensions, algebraic closure, classical constructions, computations of Galois groups.

Three lectures; one term

**Prerequisite(s):** MATH 3E03 or 3GR3

### MATH 4ET3\* - TOPICS IN ALGEBRA

Precise topics will vary; consult the department for current information.

Possible topics include: algebraic geometry, algebraic number theory, computational commutative algebra.

Three lectures; one term

**Prerequisite(s):** Permission of the instructor

*MATH 4ET3 may be repeated, if on a different topic.*

### MATH 4FM3 - FINANCIAL MARKETS AND DERIVATIVES

Modelling of options, futures, interest rate securities and other financial derivatives in continuous time using Brownian motion and stochastic calculus.

Topics include risk-neutral pricing, the Black-Scholes framework, dynamic hedging, volatility and risk. This course includes a scientific communication component.

Three lectures; one term

**Prerequisite(s):** MATH 3FM3

### MATH 4FT3 - TOPICS IN DIFFERENTIAL EQUATIONS

Topics to be selected from the theory of ordinary differential equations, bifurcation and stability, and partial differential equations.

Three lectures; one term

**Prerequisite(s):** Permission of the instructor

*MATH 4FT3 may be repeated, if on a different topic.*



### MATH 4GR3 - GROUPS AND RINGS

Further topics in group theory and ring theory. Topics include: direct products, Fundamental Theorem of Finite Abelian Groups, Sylow Theorems, free groups, group presentations, fields and integral domains, special integral domains (Euclidean, principal ideal, unique factorization), fields of fractions of integral domains, polynomial rings in many variables, and additional topics at the discretion of the instructor (e.g., Groebner bases, algebraic coding theory.)

Three lectures; one term

**Prerequisite(s):** MATH 3E03 or 3GR3

### MATH 4L03\* - INTRODUCTION TO MATHEMATICAL LOGIC

First order logic, deduction systems, completeness and compactness theorems, model theory.

Three lectures; one term

**Prerequisite(s):** MATH 3E03 or 3GR3

### MATH 4LT3\* - TOPICS IN LOGIC

Precise topics will vary; consult the department for current information. Possible topics include: axiomatic set theory, computability theory, model theory or proof theory.

Three lectures; one term

**Prerequisite(s):** Permission of the instructor

*MATH 4LT3 may be repeated, if on a different topic.*

### MATH 4MB3 - MATHEMATICAL BIOLOGY

Population dynamics: models of discrete and continuous growth; competition and predation; epidemic models. Other topics selected by instructor.

Three lectures; one term

**Prerequisite(s):** MATH 3F03

**Antirequisite(s):** MATH 3N03

### MATH 4NA3 - NUMERICAL METHODS FOR DIFFERENTIAL EQUATIONS

Interpolation and approximation, numerical differentiation and integration, numerical methods for ODEs: initial-value and boundary-value problems, finite-difference methods for PDEs, selected advanced numerical methods.

Three lectures; one term

**Prerequisite(s):** MATH 2C03; and MATH 3NA3 or 3Q03

**Antirequisite(s):** MATH 3Q03

### MATH 4P06 A/B S - SENIOR RESEARCH PROJECT

A project in pure or applied mathematics to be carried out under the supervision of a faculty member from the Department of Mathematics and Statistics. A written report and oral presentation will be required. This course includes a scientific communication component.

One occasional tutorial; two terms

**Prerequisite(s):** Registration in Level IV of any Honours Mathematics and Statistics program; and a GPA of at least 9.0; and permission of the Chair of the Department

*Not open to students with credit or registration in STATS 4T06 A/B or ISCI 4A12 A/B.*

### MATH 4TT3\* - TOPICS IN TOPOLOGY

Precise topics will vary; consult the department for current information.

Possible topics include: fundamental group and covering spaces, cell complexes and homology theory, theory of knots, links, and braids.

Three lectures; one term

**Prerequisite(s):** Permission of the instructor

**Antirequisite(s):** MATH 4T03

*MATH 4TT3 may be repeated, if on a different topic.*

### MATH 4W03 - READING IN MATHEMATICS

Directed reading in areas of mathematics of interest to the student and the instructor. This course includes a scientific communication component.

**Prerequisite(s):** GPA of at least a 7.0 and permission of the Chair of the Department

MATH 4W03 may be repeated, if on a different topic.

### MATH 4WW3 - READING IN MATHEMATICS II

Directed reading in areas of mathematics of interest to the student and the instructor. This course includes a scientific communication component.

**Prerequisite(s):** GPA of at least 7.0 and permission of the Chair of the Department

MATH 4WW3 may be repeated, if on a different topic.

### MATH 4X03\* - COMPLEX ANALYSIS II

Conformal maps, analytic continuation, harmonic functions, the Riemann mapping theorem, Riemann surfaces.

Three lectures; one term

**Prerequisite(s):** MATH 3X03

### MATH 5GT3 - GRADUATE LEVEL TOPICS IN MATHEMATICS

Undergraduate students may seek permission to enrol in selected graduate level offerings. Refer to the Graduate Calendar for course information.

**Prerequisite(s):** Permission of the Department of Mathematics and Statistics. Undergraduate students will be required to meet all academic obligations of the graduate-level course offering. Not all graduate courses are offered each year.

MATH 5GT3 may be repeated, if on a different graduate level topic.

## McMaster English Language Development

Department of Linguistics and Languages (Faculty of Humanities)

(+1) 905-525-9140 Ext. 24388

Email: [meld@mcmaster.ca](mailto:meld@mcmaster.ca)

Web: <http://meld.mcmaster.ca>

#### Note

All MELD courses require enrolment in the McMaster English Language Development Diploma program.

#### Courses

### MELD 1A03 - ACADEMIC WRITING AND INTEGRITY

A writing course that focuses on the development of grammatically, lexically and stylistically appropriate English for writing summaries and short academic texts. Includes a focus on academic integrity.

Four hours; one term

**Prerequisite(s):** Registration in the McMaster English Language Development Diploma (MELD) program

### MELD 1AA3 - ADVANCED ACADEMIC WRITING

A writing course that focuses on the development of the appropriate language (grammar, vocabulary, style) and structure for essays and analysing charts/graphs. Includes a focus on documenting sources and citation styles.

Four hours; one term

**Prerequisite(s):** Registration in the McMaster English Language Development (MELD) Diploma program

### MELD 1B03 - ENGLISH PHONETICS AND PRONUNCIATION

This course offers an overview of the principal speech features of contemporary spoken English, with a focus on Canadian English. Students are given opportunities to examine and practise their spoken language skills for a variety of contexts and are introduced to academic presentations.

Four hours; one term

**Prerequisite(s):** Registration in the McMaster English Language Development Diploma (MELD) program

### MELD 1BB3 - ADVANCED SPEAKING AND PRESENTATION SKILLS

Students build appropriate speaking skills through a variety of individual and collaborative speaking and presentation exercises, based on academic content (oral reports, article summaries, audio/video recordings, formal presentations.)

Four hours; one term

**Prerequisite(s):** Registration in the McMaster English Language Development Diploma (MELD) program

### MELD 1C03 - ACADEMIC READING SKILLS

In this course students summarize and critically evaluate (both orally and in writing) a variety of texts in advanced English. The texts to be evaluated represent a range of academic disciplines.

Four hours; one term

**Prerequisite(s):** Registration in the McMaster English Language Development Diploma (MELD) program

### MELD 1CC3 - ADVANCED ACADEMIC READING SKILLS

This course further develops students' skills in academic writing. The focus in this course is on the comprehension and critical evaluation of scholarly articles and texts from a range of disciplines.

Four hours; one term

**Prerequisite(s):** Registration in the McMaster English Language Development Diploma (MELD) program

### MELD 1D03 - SOCIAL PERSPECTIVES ON LANGUAGE

Through introductory lectures on sociolinguistic aspects of English, students develop socio-pragmatic awareness of communication, and listening and note-taking strategies for university lectures. This course also covers general strategies for academic success.

Four hours; one term

**Prerequisite(s):** Registration in the McMaster English Language Development Diploma (MELD) program

### MELD 1DD3 - ADVANCED ACADEMIC LISTENING SKILLS

The focus of this course is on oral academic communication (e.g., discussions) and the development of superior listening, note-taking and studying skills, using a variety of advanced academic content.

Four hours, one term

**Prerequisite(s):** Registration in the McMaster English Language Development Diploma (MELD) program

### MELD 1L00 - LINGUISTICS LAB 1

Compulsory weekly meetings for academic support for the degree credit course in MELD. This hour is in addition to three hours (lecture) of the credit course.

One hour; one term

**Prerequisite(s):** Registration in the McMaster English Language Development Diploma (MELD) program

### MELD 1L00 - LINGUISTICS LAB 2

Compulsory weekly meetings for academic support for the degree credit course in MELD. This hour is in addition to three hours (lecture) of the credit course.

One hour; one term

**Prerequisite(s):** Registration in the McMaster English Language Development Diploma (MELD) program

### MELD 1M00 - MENTORSHIP LAB 1

Compulsory weekly mentorship meetings aimed at promoting cultural awareness.

One hour; one term

**Prerequisite(s):** Registration in the McMaster English Language Development Diploma (MELD) program

### MELD 1MM0 - MENTORSHIP LAB 2

Compulsory weekly mentorship meetings aimed at promoting cultural awareness.

One hour; one term

**Prerequisite(s):** Registration in the McMaster English Language Development Diploma (MELD) program

## Mechanical Engineering

Courses in Mechanical Engineering are administered by the Department of Mechanical Engineering.

John Hodgins Engineering Building, Room 316, ext. 24294

<http://mech.mcmaster.ca/>

### Department Note

Enrolment in Mechanical Engineering courses by students in programs other than those administered by the Department may be restricted.

### Courses

*If no prerequisite is listed, the course is open.*

### MECHENG 2A03 - DESIGN COMMUNICATION

Formal mechanical engineering drawings, views, dimensioning and tolerancing, technical illustrations and symbols and written or oral technical communication.

Three lectures, plus one tutorial or lecture (one hour) devoted to applications at the discretion of the instructor; first term

**Prerequisite(s):** Registration in Level II of any Mechanical Engineering program or Honours Art Program

### MECHENG 2B03 - MECHANICAL ENGINEERING MEASUREMENTS

Static and dynamic characteristics of instruments, statistical analysis of measurement errors, variable conversion elements and signal amplification. Metrology, measurement of strain and force, pressure, flow, temperature and power.

Two lectures, one lab (three hours every other week); second term

**Prerequisite(s):** Registration in Level II of any Mechanical Engineering program

**Antirequisite(s):** MECHENG 2BA3

### MECHENG 2BA3 - MECHANICAL ENGINEERING MEASUREMENTS

Static and dynamic characteristics of instruments, statistical analysis of measurement errors, variable conversion elements and signal amplification. Metrology, measurement of strain and force, pressure, flow, temperature and power.

Two lectures, one lab (three hours every other week); second term

**Prerequisite(s):** Registration in Level II of any Mechatronics Engineering program

**Antirequisite(s):** MECHENG 2B03

### MECHENG 2C04 - MECHANICAL ENGINEERING DESIGN I

Design/Build/Test projects involving synthesis, modelling, and analysis.

Two lectures, one lab (two hours); second term

**Prerequisite(s):** Registration in Level II of any Mechanical Engineering program

### MECHENG 2D03 - MECHANICAL ENGINEERING DESIGN ELEMENTS

Design synthesis, fundamental principles of standard design elements, mechanical and fluid power elements, component specification and optimization.

Three lectures, one tutorial; first term

**Prerequisite(s):** Registration in Level II of any Mechanical Engineering program

**Antirequisite(s):** MECHENG 2DA3

### MECHENG 2DA3 - MECHANICAL ENGINEERING DESIGN ELEMENTS

Design synthesis, fundamental principles of standard design elements, mechanical and fluid power elements, component specification and optimization.

Three lectures, one tutorial; second term

**Prerequisite(s):** Registration in Level III of any Mechatronics Engineering program

**Antirequisite(s):** MECHENG 2D03

### MECHENG 2P04 - STATICS AND MECHANICS OF MATERIALS

Principles of statics as applied to deformable solid bodies. Stress and strain, elastic behaviour of simple members under axial force, bending and torsion.

Principal stresses; statical indeterminacy.

Three lectures, plus one unit comprising tutorials or lectures devoted to applications at the discretion of the instructor; first term

**Prerequisite(s):** PHYSICS 1D03 and registration in Level II of any Mechanical Engineering program

**Antirequisite(s):** CIVENG 2P04, ENGINEER 2P04

### MECHENG 2Q04 - ENGINEERING MECHANICS: KINETICS AND DYNAMICS

Kinematics and dynamics of particles and rigid bodies. Analysis of planar mechanisms. Displacement, velocity and acceleration analysis methods. Motion with respect to a rotating frame reference. Work, energy and momentum principles.

Three lectures, plus one unit comprising tutorials or lectures devoted to applications at the discretion of the instructor; first term

**Prerequisite(s):** Registration in Level II of any Mechanical Engineering program

**Antirequisite(s):** CIVENG 2Q03, 2Q04, ENGINEER 2Q04, MECHENG 2QA4, 2QR4

### MECHENG 2QA4 - ENGINEERING MECHANICS: KINETICS AND DYNAMICS

Kinematics and dynamics of particles and rigid bodies. Analysis of planar mechanisms. Displacement, velocity and acceleration analysis methods. Motion with respect to a rotating frame reference. Work, energy and momentum principles.

Three lectures, plus one unit comprising tutorials or lectures devoted to applications at the discretion of the instructor; first term

**Prerequisite(s):** Registration in Level II of any Mechatronics Engineering program

**Antirequisite(s):** CIVENG 2Q03, 2Q04, ENGINEER 2Q04, MECHENG 2Q04, 2QR4

### MECHENG 2W04 - THERMODYNAMICS

Introduction to the principles of thermodynamics, and applications in engineering. Basic concepts: energy systems, properties of pure substances, entropy. Laws of thermodynamics, power and refrigeration cycles.

Three lectures, one tutorial (two hours); second term

**Prerequisite(s):** Registration in Level II of any Mechanical Engineering program

**Antirequisite(s):** ENGINEER 2H03, ENGPYS 2NE3

### MECHENG 3A03 - ENGINEERING MECHANICS

Singularity functions, generalized Hooke's law; shear stress, shear flow in beams; shear centre. Biaxial and unsymmetrical bending, analysis of indeterminate beams and frames using energy methods, impact loads. Buckling of compression members. Introduction to yield criteria.

Three lectures, one tutorial; second term

**Prerequisite(s):** ENGINEER 2P04 or MECHENG 2P04 and registration in any Mechanical Engineering program

**Antirequisite(s):** CIVENG 2C04

### MECHENG 3C03 - MANUFACTURING ENGINEERING

A general introduction, encompassing the wide field of activities from iron and steel making through casting, rolling, forging, to cold forming, metal cutting, welding, bonding, electrical machining, surface treatment, mechanical handling, assembly, cleaning, packaging.

Three lectures; first term

**Prerequisite(s):** Registration in any Mechanical Engineering, Chemical Engineering or Materials Science and Engineering program, or, registration in Level III or IV of the Manufacturing Engineering Technology Co-op (B.Tech.) program

**Cross-list(s):** MANTECH 3MF3

*This course is administered by the Department of Mechanical Engineering.*

### MECHENG 3E05 - MECHANICAL ENGINEERING DESIGN II

3-D stress transformation, curved beams, thick walled pressure vessels, contact stresses, fatigue, bolted and welded joints, machine elements. The laboratories feature a major design project from concept development through analysis to formal report preparation.

Four lectures, one lab (two hours); second term

**Prerequisite(s):** ENGINEER 2P04 or MECHENG 2P04; 2Q04 or, 2QA4 and 3A03

**Antirequisite(s):** MECHENG 3E04

### MECHENG 3F04 - MODELLING AND NUMERICAL SOLUTIONS

An introductory course in numerical analysis covering such topics as numerical differentiation, integration, curve-fitting and the solution of differential equations and systems of linear and non-linear equations.

Four lectures; first term

**Prerequisite(s):** Registration in any Mechanical Engineering program

### MECHENG 3M03 A/B - COMPOSITE LABORATORY

Laboratory exercises in fluid mechanics, thermodynamics, solid mechanics, and machining processes.

One lab (three hours); both terms

**Prerequisite(s):** Registration in any Mechanical Engineering program

**Antirequisite(s):** MECHENG 3M02

### MECHENG 3004 - FLUID MECHANICS

Fluid properties and statics, conservation laws, applications of the continuity, momentum and energy equations, dimensional analysis and similarity, boundary layer flow, internal and external flows.

Three lectures, one tutorial (two hours); first term

**Prerequisite(s):** Both MATH 2M03 and 2MM3 (or 2M06), or both MATH 2Z03 and MATH 2ZZ3, or both MECHENG 2P04 and 2Q04 ; and registration in any Mechanical Engineering program

**Antirequisite(s):** CIVENG 2004

### MECHENG 3R03 - HEAT TRANSFER

Application of the laws of conduction, convection and radiation to problems in heat transfer. Steady and transient conduction in solids. Laminar and turbulent convection. Radiation heat transfer processes. Boiling and condensation heat transfer.

Three lectures, one tutorial; second term

**Prerequisite(s):** MATH 2M03 (or 2M06), or MATH 2Z03; and MECHENG 2W04 or ENGPY 2NE3

### MECHENG 4AA3 - AERODYNAMICS

Forces and moments associated with flow around airfoils and bodies. Finite wings. Potential flow and introduction to panel methods. Thin airfoil theory and symmetric and cambered airfoils. Introduction to aircraft stability and aeroelasticity.

Three lectures; second term

**Prerequisite(s):** MECHENG 3004

### MECHENG 4B03 - TOPICS IN PRODUCT DEVELOPMENT

Case studies using modern product development methods, value engineering, product specification, rapid product development, lean design and continuous improvement. Product liability and robust design.

Three lectures, one tutorial; second term

**Prerequisite(s):** Registration in Level IV or above of any Mechanical Engineering or Mechatronics Engineering program

### MECHENG 4BB3 - BIOMECHANICS

Application of mechanical engineering principles to biomechanics problems including cellular biomechanics, hemodynamics, circulatory system, respiratory system, muscles and movement and skeletal biomechanics.

Three lectures, one tutorial; first term

**Prerequisite(s):** Registration in Level IV or above of any Engineering program

**Cross-list(s):** IBEHS 4B03

### MECHENG 4BF3 - BIOFLUID MECHANICS SYSTEMS

The objective is to learn blood flow mechanics through the circulatory system and its subsystems. The course examines mechanics of circulation, mechanobiology and biomechanics of different components of circulatory system, in-vivo and in-vitro techniques and their medical applications.

Three lectures, one tutorial; second term

**Prerequisite(s):** Registration in Level IV or above of any Engineering program or Integrated Biomedical Engineering and Health Sciences (IBEHS) program

### MECHENG 4C03 - PRODUCTION SYSTEMS ENGINEERING

Analytical tools to evaluate and design production systems to meet specified performance metrics. Quantitative and qualitative evaluation of production cells, flexible manufacturing systems and production lines.

Three lectures; second term

**Prerequisite(s):** Registration in Level IV or above of any Mechanical Engineering program or permission of the Department

### MECHENG 4CC3 - EXPERIMENTAL AND COMPUTATIONAL BIOMECHANICS

Introduction to experimental and computational biomechanics including biomechanical testing concepts and application of finite element methods in simulations of biomechanical structures/systems.

Three lectures; second term

**Prerequisite(s):** Registration in Level IV or above of any Mechanical Engineering or Integrated Biomedical Engineering and Health Sciences (IBEHS) program or permission of the Department

### MECHENG 4D03 - MANUFACTURING PROCESSES (METAL REMOVAL)

Fundamentals of metal removing processes, including mechanics and tribological aspects of material removal. Application of theory to the practice of machining processes such as turning, milling, drilling and grinding.

Three lectures; second term

**Prerequisite(s):** MECHENG 3C03 and registration in any Level IV or above of any Mechanical Engineering program

### MECHENG 4E03 - MICROELECTROMECHANICAL SYSTEMS (MEMS)

Introduction, microfabrication and micromachining fundamentals, scaling effects, mechanics and transduction at microscale, actuation and sensing methods - Electrostatic, piezoelectric, thermal, electromagnetic, resonant, tunneling and microfluidic techniques. Capacitive sensors, resonators, lab on chip devices, microfluidic devices, micromirrors, assembly techniques for MEMS, microsystem packaging.

Three lectures; second term

**Prerequisite(s):** Registration in Level IV or above of any Mechanical Engineering, Engineering Physics or Integrated Biomedical Engineering and Health Sciences (IBEHS) program or permission of the Department

### MECHENG 4H03 - MECHATRONICS

Integration of mechanical engineering with electronics and computer control. Sensors, actuators (including pneumatic and hydraulic), modelling using building block and state space methods, model-based control, programming of PLCs with practical demonstrations.

Three lectures; second term

**Prerequisite(s):** MECHENG 4R03, MECHTRON 3DX4, ELECENG 3CL4 or SFWRENG 3DX4 and registration in any Mechanical Engineering, Mechatronics Engineering or Electrical Engineering program



### MECHENG 4I03 - NOISE ANALYSIS AND CONTROL

Acoustic quantities; noise measurements and analysis; noise standards; sound generation, propagation, absorption, transmission; acoustic materials; noise control techniques; case studies.

Three lectures; first term

**Prerequisite(s):** MECHENG 4Q03

### MECHENG 4J03 - INTRODUCTION TO COMPUTATIONAL FLUID MECHANICS AND HEAT TRANSFER

Computational Methods for Fluid Mechanics and Heat Transfer covering: concepts of modelling and numerical analysis, governing equations of thermo-fluid problems, finite difference discretization methods. Use of commercial computational software for solving thermo-fluid problems.

Three lectures, one tutorial (one and one-half hours); second term

**Prerequisite(s):** MECHENG 3Q04 or 4S03, and MECHENG 3F04 or ENGPYHS 2CE4, or permission of the Department

### MECHENG 4K03 - ROBOTICS

Fundamental theory and practical applications of robotic manipulators and mobile robots. Equations of motion, robot dynamics and statics, motion planning, introduction to machine vision, basics of robot programming.

Three lectures; first term

**Prerequisite(s):** ENGINEER 2Q04 or MECHENG 2Q04 or 2QA4 and registration in Level IV or above of any Mechanical Engineering or Mechatronics Engineering program

### MECHENG 4L03 - INDUSTRIAL DESIGN

Introduction for engineering students to the techniques of industrial design, case studies and introduction to illustration techniques.

Three lectures; second term

**Prerequisite(s):** MECHENG 2C04 or (2C03) and registration in Level IV or above of any Mechanical Engineering program

### MECHENG 4M06 A/B - PROJECT

A major mechanical or manufacturing engineering design or experimental project to be completed under the supervision or co-supervision of a faculty member holding an appointment in the Department of Mechanical Engineering. Lectures, one capstone project; both terms

**Prerequisite(s):** Registration in Level IV Mechanical Engineering, Mechanical Engineering Co-op (B.Eng.); or Level V Mechanical Engineering and Management, Mechanical Engineering and Management Co-op (B.Eng.Mgt.) or Mechanical Engineering and Society, Mechanical Engineering and Society Co-op (B.Eng.Society)

### MECHENG 4N03 - NANOBIO ENGINEERING

Introduction to nanotechnology, nanomaterials, nanotechnology in living systems, nanotechnology in biomedical devices, nanobiomaterials, characterization of biomaterials, nano-coatings, nano-biofunctional interfaces, biosensing and diagnostics, organs-on-chips.

Three lectures; first term

**Prerequisite(s):** Registration in Level IV or above of Engineering or Integrated Biomedical Engineering and Health Sciences (IBEHS) program or permission of Department

### MECHENG 4O04 - SUSTAINABLE ENERGY SYSTEMS

Assessment of current and future energy systems, covering resources, extraction, conversion with emphasis on meeting regional and global energy

needs in a sustainable manner. Different renewable and conventional energy technologies and their attributes. Evaluation and analysis of energy technology systems in the context of political, social, economic and environmental goals.

Four lectures; second term

**Prerequisite(s):** MECHENG 2W04, 3Q04; or ENGPYHS 2NE3, 3Q04; or permission of the Department

### MECHENG 4P03 A/B - COMPOSITE LABORATORY

Laboratory exercises in vibration analysis, machine structures, controls, heat transfer, gas dynamics, fluid mechanics and thermodynamics.

Three lectures; first term

**Prerequisite(s):** ENGINEER 2Q04 or MECHENG 2Q04 or 2QA4 and registration in any Mechanical Engineering or Mechatronics program

### MECHENG 4Q03 - MECHANICAL VIBRATIONS

Transient and steady state vibration of single- and multi-degree of freedom systems. Free and forced vibrations of single and multiple degree-of-freedom mechanical systems, transient response, damping and vibration isolation.

Three lectures; first term

**Prerequisite(s):** ENGINEER 2Q04 or MECHENG 2Q04 or 2QA4 and registration in any Mechanical Engineering or Mechatronics program

### MECHENG 4R03 - CONTROL SYSTEMS

Fundamentals of linear, continuous control systems. Control system performance in both time and frequency domains. Design and analysis of controllers.

Three lectures; second term

**Prerequisite(s):** Registration in Level III Mechanical Engineering; or Level IV Mechanical Engineering and Management or Mechanical Engineering and Society

**Antirequisite(s):** ELECENG 3TP3, ELECENG 3TP4, IBEHS 4A03

### MECHENG 4S03 - INCOMPRESSIBLE FLOW

Introduction to internal and external laminar and turbulent incompressible flows. Topics include turbulent boundary layers, aerodynamics and convective heat transfer.

Three lectures; first term

**Prerequisite(s):** MECHENG 3Q04, CHEMENG 2Q04, 3Q04, or ENGPYHS 3Q04

### MECHENG 4T03 - FINITE ELEMENT APPLICATIONS

Theory of the finite element method, element derivation, solution procedures. Applications to static and dynamic mechanical systems using a finite element package.

Three lectures, one tutorial; first term

**Prerequisite(s):** Registration in Level IV or above of any Mechanical Engineering program

**Antirequisite(s):** MECHENG 4TR3

### MECHENG 4U03 - COMPRESSIBLE FLOW AND TURBOMACHINERY

Compressible flows: Fanno and Rayleigh flows, normal and oblique shocks.

Turbomachines: axial flow gas and wind turbines, axial flow compressors and fans.

Three lectures; first term

**Prerequisite(s):** MECHENG 2W04, MECHENG 3Q04; CHEMENG 2Q04, 3D04; or ENGPYHS 2NE3, 3Q04

### MECHENG 4V03 - THERMO-FLUIDS SYSTEMS DESIGN AND ANALYSIS

Design, operation and application characteristics of equipment commonly used in thermal systems. Modelling performance characteristics of piping systems, pumps, compressors, fans, heat exchangers, boilers and cooling towers.

System simulation and optimization. Selection criteria of thermal equipment. Design optimization and system performance evaluation.

Three lectures, one tutorial; first term

**Prerequisite(s):** MECHENG 2W04, 3004, 3R03

### MECHENG 4W03 - AIR CONDITIONING AND REFRIGERATION SYSTEMS

Re-examination of laws of thermodynamics, multicomponent vapour systems, psychrometry, air conditioning, mechanical vapour compression refrigeration, absorption refrigeration, heating and cooling load calculations, air quality and human thermal comfort.

Three lectures; first term

**Prerequisite(s):** MECHENG 2W04 or ENGPYHS 2NE3, and registration in Level IV or above of any Mechanical Engineering program or Engineering Physics program

### MECHENG 4X04 A/B - INDEPENDENT RESEARCH PROJECT

Individual research project over two terms to be arranged by mutual consent of a faculty supervisor and the student with approval of the Department Associate Chair (Undergraduate).

**Prerequisite(s):** A minimum GPA of 9.5, consent of a supervisor, and registration in Level IV Mechanical Engineering, Mechanical Engineering Co-op (B.Eng.) or Level V Mechanical Engineering and Management, Mechanical Engineering and Management Co-op (B.Eng.Mgt.) or Mechanical Engineering and Society, Mechanical Engineering and Society Co-op (B.Eng.Society).

**Antirequisite(s):** IBEHS 3106 A/B

### MECHENG 4Y03 - INTERNAL COMBUSTION ENGINES

This course focuses on internal combustion engines (ICE), including operations, thermodynamics, combustion, and characteristics of gasoline and diesel engines, as well as hybrid powertrains.

Three lectures, first term

**Prerequisite(s):** Registration in Level IV or above of any Mechanical Engineering program or Engineering Physics program

### MECHENG 4Z03 - CAD/CAM/CAE

Solid modelling theory, part creation, assemblies and rigid bodies, mechanism simulation, B-Splines, data exchange, CNC machining and inspection. Major project using computer laboratory facilities.

Three lectures, one lab (one hour); second term

**Prerequisite(s):** Registration in Level IV or above of any Mechanical Engineering or Mechatronics Engineering program

**Antirequisite(s):** MECHENG 4ZR3

## Mechatronics

Courses in Mechatronics Engineering are administered by the Department of Computing and Software.

Information Technology Building, Room 202, ext. 24614

<http://www.cas.mcmaster.ca/>

### Note

All Mechatronics Engineering courses are open to students registered in a Mechatronics Engineering or Software Engineering (Embedded Systems)

program, subject to prerequisite requirements. Prior permission of the Department is necessary for other students.

### MECHTRON 3DX4 - DYNAMIC MODELS AND CONTROL OF PHYSICAL SYSTEMS

Modeling of dynamic continuous physical phenomena in both continuous and discrete time. Control theory, stability analysis and feedback controller design. Application of computer control to continuous processes, system identification.

Three lectures, one lab (three hours); second term

**Prerequisite(s):** One of SFWRENG 2MX3 or SFWRENG 3MX3

**Antirequisite(s):** ELECENG 3CL4, ENGINEER 3L03, IBEHS 4A03, MECHENG 4R03, SFWRENG 3DX3, SFWRENG 3DX4

**Cross-list(s):** SFWRENG 3DX4

### MECHTRON 3K04 - SOFTWARE DEVELOPMENT

Software design process. Professional responsibility. Using specifications. Documentation. Module Specification. Module interfaces. Module internal documentation. Coding styles. Portability. Software inspection. Software testing.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** One of COMPENG 2SI4, ELEC ENG 2SI4, SFWRENG 2MD3

**Antirequisite(s):** COMPSCI 2ME3, SFWRENG 2AA4, 3K04

### MECHTRON 3MX3 - SIGNALS AND SYSTEMS

Linear systems, signals, filters; time and frequency domains; single input-single output systems; discrete and continuous time; sampling theorem; Fourier series; Fourier, Laplace, and Z-transforms; stability.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** MATH 2Z03

**Antirequisite(s):** ELECENG 3TP3, IBEHS 3A03, SFWRENG 3MX3

### MECHTRON 3TA4 - EMBEDDED SYSTEMS DESIGN I

Interfacing to digital and analog systems, sensors and actuators. Signals and conditioning: data acquisition, active and passive filtering, optical and analog isolation, pulse-width modulation, (de-)multiplexing. Architecture of micro-controllers and digital signal processors. Embedded system design and documentation.

Three lectures, one tutorial (two hours) every other week, one lab (three hours) every other week; first term

**Prerequisite(s):** ENGPYHS 2E04 or SFWRENG 2DA4; SFWRENG 2GA3 or registration in Level II or above of a Mechatronics program

### MECHTRON 3TB4 - EMBEDDED SYSTEMS DESIGN II

Models of embedded hardware (Register-transfer level abstraction, synchronous circuits, etc.). Design, verification and simulation of embedded hardware using a hardware description language. Design and implementation of embedded systems interacting with analog systems. Hardware/software trade-offs in embedded system design. Three lectures, one tutorial (two hours) every other week, one lab (three hours) every other week; second term

**Prerequisite(s):** MECHTRON 3TA4

**Antirequisite(s):** SFWRENG 2DA4

### MECHTRON 4AA4 - REAL-TIME SYSTEMS AND CONTROL APPLICATIONS

Hard and soft real-time systems. Safety classification. Fail-safe design, hazard analysis. Discrete event systems. Modes. Requirements and design specifications. Tasks and scheduling. Clock synchronization. Data acquisition.

Applications in real-time control.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** SFWRENG 3BB4 or 3SH3; and SFWRENG 3DX4 or MECHTRON 3DX4

**Antirequisite(s):** SFWRENG 4A03, 4AA3, 4AA4, 4GA3

**Cross-list(s):** SFWRENG 4AA4

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### MECHTRON 4AX3 - PREDICTIVE AND INTELLIGENT CONTROL

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This course introduces several concepts used in systems engineering, predictive control and artificial intelligence. A variety of techniques including prediction and estimation, linear models, basic optimization techniques, Monte Carlo techniques, neural networks, and clustering are introduced. The techniques are applied to predictive and smart systems by the example of model predictive control and intelligent control, classification and decision-making. The course is intended for engineering students with understanding in signals and systems and control.

Three lectures and one tutorial; one term

**Prerequisite(s):** MECHTRON 3DX4 or SFWRENG 3DX4 or IBEHS 4A03

*Offered on an irregular basis.*

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### MECHTRON 4TB6 A/B - MECHATRONICS CAPSTONE DESIGN PROJECT

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Student teams prepare the requirements, design, documentation and implementation of a Mechatronics System taking economic, health, safety, cultural, legal and marketing factors into account. Students must demonstrate a working system and convincing test results.

Three hours (lectures, discussion, group project, seminar); two terms

**Prerequisite(s):** Registration in final level of a Mechatronics Engineering program or of Software Engineering (Embedded Systems)

## Medical Physics

Courses in Medical Physics are administered by the Department of Physics and Astronomy.

A.N. Bourns Building, Room 241, ext. 24559

<http://www.physics.mcmaster.ca/>

### Courses

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#### MEDPHYS 3C03 - OPERATIONAL HEALTH PHYSICS: LABORATORY & COMMUNICATION

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Six practical Health Physics operational exercises are undertaken. These include survey instruments, surveys of radiation fields, contamination surveys, air sampling for radioactivity, radiation dosimetry and radiological incident response. Each topic is introduced, followed by laboratory work and then students report on their findings.

Two lectures/seminars, one lab; one term

**Prerequisite(s):** Registration in Level III or above of an Honours Medical and Biological Physics or Honours Medical Physics program; or permission of the instructor

**Antirequisite(s):** MED PHYS 3A03, 3AA1, 3AB2

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#### MEDPHYS 4B03 - RADIOACTIVITY AND RADIATION INTERACTIONS

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Radioactivity and radiation phenomenology: interaction of radiations with matter, dosimetry, radiation in medicine, biological effects, radiation levels and regulations, radiation protection.

Three lectures; one term

**Prerequisite(s):** One of BIOPHYS 1S03, LIFESCI 1D03, 1E03, MEDPHYS 1E03,

MEDRADSC 1C03, PHYSICS 1AA3(or 1BA3 or 1BB3 or 1E03), 1CC3, ISCI 1A24 A/B, SCIENCE 1E03; or permission of the instructor

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#### MEDPHYS 4D03 - IMAGING IN MEDICINE AND BIOLOGY

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A theoretical and practical treatment of the math and physics underlying imaging techniques in medicine and biology, such as clinical imaging with computed tomography (CT) and magnetic resonance imaging (MRI), and deconvolution microscopy. Topics include image formation, 2D and 3D reconstruction, noise, filtering, storage, manipulation, and analysis. The course includes a practical MATLAB programming component to introduce students to image processing.

Two lectures, one tutorial (two hours); one term

**Prerequisite(s):** MATH 2C03 or 2Z03

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#### MEDPHYS 4F03 - FUNDAMENTALS OF HEALTH PHYSICS

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Introduces students to the fundamentals of occupational and environmental health physics encountered in the nuclear power, medical and research fields. Concepts include principles and regulatory framework for radiation safety; key dosimetric quantities, units and models; doses from internal and external exposures to ionizing radiation; elements of a radiation safety program; and environmental exposure pathways.

Three lectures; one term

**Prerequisite(s):** Enrolment in Level IV or above of a program in the Faculty of Science, Faculty of Health Sciences, or Faculty of Engineering. MEDPHYS 4B03 or ENGPHYS 3D03 is recommended.

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#### MEDPHYS 4I03 - INTRODUCTION TO BIOPHOTONICS

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Basic principles of light interaction with biological systems and specific biomedical applications of photonics such as optical light microscopy, endoscopic imaging, spectroscopy in clinical diagnosis, flow cytometry, micro-optical sensors, etc.

Three lectures; one term

**Prerequisite(s):** One of ENGPHYS 2A04, MEDPHYS 2B03, PHYSICS 2B03 (or 2B06) and registration in Level III or above. Completion of one of ENGPHYS 3E03, 4G03 or PHYSICS 3N03 is recommended.

**Cross-list(s):** ENGPHYS 4I03

*This course is administered by the Department of Engineering Physics.*

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#### MEDPHYS 4RA3 - RADIATION AND RADIOISOTOPE METHODOLOGY I

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An introduction to radiation detection and radioisotope production with emphasis on principles of gasfilled radiation detectors, scintillation detectors and gamma-ray spectrometry.

Two lectures every week, one lab (three hours) every other week

**Prerequisite(s):** ENGPHYS 3D03 or MEDPHYS 4B03

**Antirequisite(s):** MEDPHYS 4R06 A/B

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#### MEDPHYS 4RB3 - RADIATION AND RADIOISOTOPE METHODOLOGY II

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Radiation detector signal processing theory, semiconductor radiation detectors, neutron detection methods.

Two lectures every week, one lab (three hours) every other week

**Prerequisite(s):** ENGPHYS 3D03 or MEDPHYS 4B03

**Antirequisite(s):** MEDPHYS 4R06 A/B

### MEDPHYS 4T03 - CLINICAL APPLICATIONS OF PHYSICS IN MEDICINE

Basic physical concepts underlying medical imaging, nuclear medicine, physiological measurement, radiation therapy and biomedical laser applications with an overview of their technical implementation.

Three lectures; one term

**Prerequisite(s):** One of MATH 2A03, 2Q04, 2X03 (or ISCI 2A18 A/B); and MATH 2C03 or 2P04; and one of ENGPYS 3D03, or credit or registration in MEDPHYS 4B03

### MEDPHYS 4U03 - RADIATION BIOLOGY

The effects of radiation on biological material at the molecular, cellular, tissue and whole organism level.

Three lectures, one tutorial (three hours); one term

**Prerequisite(s):** One of BIOLOGY 2B03, 2C03, ISCI 2A18 A/B; or registration in Honours Medical and Biological Physics

### MEDPHYS 4Y06 A/B - SENIOR THESIS

An experimental or theoretical project carried out under the supervision of a faculty member in the field of Medical Physics. A thesis report will be required. One occasional tutorial (two hours); two terms

**Prerequisite(s):** Registration in Level IV of an Honours Medical Physics program or Honours Medical and Biological Physics program; and a GPA of at least 9.0; and permission of the Chair of the Department

**Antirequisite(s):** BIOPHYS 4P06 A/B, PHYSICS 4P06 A/B

*Not open to students with credit or registration in ISCI 4A12 A/B.*

## Medical Radiation Sciences

Courses in Medical Radiation Sciences are administered by the School of Interdisciplinary Science.

General Sciences Building, Room 105, ext. 21181

<https://www.science.mcmaster.ca/sis/undergraduate/medical-radiation-sciences.html>

#### Department Notes

1. Courses for Levels I, II, III and IV Medical Radiation Sciences, Radiography, Ultrasonography or Radiation Therapy specialization are available only to students registered in the Medical Radiation Sciences program unless otherwise stated.
2. Lab courses may be held at learning settings external to the University.
3. Students are responsible for arranging their own travel to and from or accommodation in learning settings external to the University and for covering any costs incurred. All students enrolled in the Medical Radiation Sciences program are expected to be able to travel to any learning setting in Ontario. The final assignment of learning settings for any clinical practicum course is constrained by the availability of the requested setting and resources. Students may, therefore, be required to complete a clinical practicum course in a learning setting that is not of their choosing.
4. For all clinical practicum courses, the prerequisite skills and patient care courses must have been completed within the previous twelve months; otherwise the student must complete a skills reassessment course during that twelve-month period.

### MEDRADSC 1B03 - INTRODUCTION TO PATHOLOGY

Processes of disease and trauma, from damage and repair processes at the cellular level to tissues and systems. Disease development and recovery, immunity and heredity are examined.

Lectures (three hours); one term

**Prerequisite(s):** Credit or registration in KINESIOL 1Y03 and registration in

Medical Radiation Sciences (Level I)

### MEDRADSC 1E03 - INQUIRY IN MEDICAL RADIATION SCIENCES

An introduction to the process of Inquiry. Library and research tools are used to identify literature and evaluate evidence related to a variety of topics.

Lectures or seminars (three hours); one term

**Prerequisite(s):** Registration in Medical Radiation Sciences (Level I)

### MEDRADSC 1F03 - PROFESSIONS IN MEDICAL RADIATION SCIENCES

The professions and subspecialties within medical radiation sciences are introduced, including legislative and regulatory frameworks, the Canadian health care system, professionalism and reflective practice.

Lectures (three hours), tutorial (one hour); one term

**Prerequisite(s):** Registration in Medical Radiation Sciences I

**Antirequisite(s):** MEDRADSC 1A03, 1D03

### MEDRADSC 2A03 - PATIENT CARE

Theoretical foundation and skills development to enable the student to meet the physical and emotional needs of patients in the clinical setting while utilizing self-care concepts and safe practices. Communication (verbal and non-verbal) skills are emphasized.

Lecture (two hours), lab (two hours); one term

**Prerequisite(s):** MEDRADSC 1F03; and one of MEDRADSC 2G03, 2N03; and registration in Level II of a Medical Radiation Sciences specialization

### MEDRADSC 2AA3 - IMAGING PROCEDURES IN HEALTH CARE

An examination of the various imaging modalities and procedures involved in a patient's diagnostic work-up and treatment.

Three hours (lectures); one term

**Prerequisite(s):** Registration in Level II Medical Radiation Sciences Specialization

### MEDRADSC 2D03 - RELATIONAL ANATOMY I

This course examines spatial relationships of anatomical structures (appendicular and axial skeleton, excepting skull, plus structures of the pelvic and thoracic cavities) using projection, sectional and volume-rendered images.

Lecture (two hours), lab (one hour); one term

**Prerequisite(s):** Registration in Level II of the Radiography Specialization

### MEDRADSC 2G03 - RADIOGRAPHIC SKILLS I

Emphasis is on professional behaviours and fundamental radiographic techniques and basic radiography of the appendicular skeleton through image production using anatomical phantoms and performance of simulated examinations on peers. Communication (verbal and non-verbal) skills are emphasized.

*This course is evaluated on a Pass/Fail basis.*

Lecture (two hours), lab (four hours); one term

**Prerequisite(s):** MEDRADSC 1F03; and credit or registration in MEDRADSC 2D03, 2Y03; and registration in Level II of the Radiography Specialization

### MEDRADSC 2H03 - RADIOGRAPHIC SKILLS II

Emphasis is on professional behaviours and fundamental radiographic techniques and basic radiography of the axial skeleton, chest and abdomen through image production using anatomical phantoms and performance of



simulated examinations on peers. Communication (verbal and non-verbal) skills are emphasized.

*This course is evaluated on a Pass/Fail basis.*

Lecture (two hours), lab (four hours); one term

**Prerequisite(s):** MEDRADSC 2D03, 2G03 and registration in Level II of the Radiography Specialization

### MEDRADSC 2I03 - PATHOLOGY AND PROCEDURES I

Radiological procedures and associated pathologies of the skeletal, digestive, respiratory and urinary systems. Physiological properties of contrast media and their use in radiological procedures are studied.

Lectures (three hours), online component (one hour); one term

**Prerequisite(s):** Registration in Level II of the Radiography Specialization

### MEDRADSC 2J15 - RADIOGRAPHY CLINICAL PRACTICUM I

Four month placement in a Diagnostic Imaging department. Students develop clinical and professional skills by participating in radiological procedures under direct supervision of a qualified professional. (See *Department Note 4* above.)

*This course is evaluated on a Pass/Fail basis.*

One term (Offered in Spring/Summer Term only)

**Prerequisite(s):** MEDRADSC 2A03, 2G03, 2H03, 2I03, 2RA3, 2X03, 2Y03, and registration in Level II of the Radiography Specialization

### MEDRADSC 2K03 - APPLIED SONOGRAPHIC PHYSICS AND INSTRUMENTATION I

A comprehensive applied examination of sound wave principles, sound and tissue interaction, pulsed wave ultrasound, transducers, instrumentation, Doppler ultrasound, and diagnostic imaging ultrasound artifacts.

Lectures (three hours), lab (one hour); one term

**Prerequisite(s):** Registration in Level II of the Ultrasonography Specialization

### MEDRADSC 2L03 - ABDOMINAL ULTRASONOGRAPHY I

A comprehensive study of the relational anatomy, sonographic technique/appearances of normal major abdominal organs and vasculature; pathology, sonographic correlation, clinical presentation and diagnostic tests of the vascular and reticulo-endothelial systems.

Lectures (three hours), tutorial (one hour); one term

**Prerequisite(s):** Registration in Level II of the Ultrasonography Specialization

### MEDRADSC 2M03 - OBSTETRICAL AND GYNECOLOGIC ULTRASONOGRAPHY I

A comprehensive study of the anatomy, physiology of the normal female pelvis including pregnancy. Sonographic technique, normal appearances, patient care and ethical issues will be examined.

Lectures (three hours); one term

**Prerequisite(s):** Registration in Level II of the Ultrasonography Specialization

### MEDRADSC 2N03 - SONOGRAPHIC SKILLS I

Emphasis is on professional behaviours, patient care, communication skills (verbal and non-verbal), ergonomics, image recognition, image critique and performance of sonography of the abdominal vasculature, liver and biliary systems on peers, including routine and alternative techniques.

*This course is evaluated on a Pass/Fail basis.*

Lectures (one hour), lab (four hours); one term

**Prerequisite(s):** Credit or registration in MEDRADSC 2K03, 2L03 and registration in Level II of the Ultrasonography Specialization

### MEDRADSC 2003 - ABDOMINAL ULTRASONOGRAPHY II

A comprehensive study of pathology and sonographic correlation, clinical presentation and diagnostic tests of hepatic, biliary, pancreatic, urinary tract; relational anatomy, sonographic technique/appearances of normal thyroid.

Lectures (three hours), tutorial (one hour); one term

**Prerequisite(s):** MEDRADSC 2K03, 2L03, 2N03 and registration in Level II of the Ultrasonography Specialization

### MEDRADSC 2P03 - OBSTETRICAL AND GYNECOLOGICAL ULTRASONOGRAPHY II

A comprehensive study of gynecological pathologies and abnormal sonographic appearances of the female pelvis. Pathologies of the obstetrical patient will be examined.

Lectures (three hours), tutorial (one hour); one term

**Prerequisite(s):** MEDRADSC 2M03 and registration in Level II of the Ultrasonography Specialization

**Antirequisite(s):** MEDRADSC 3PA3

### MEDRADSC 2Q03 - SONOGRAPHIC SKILLS II

Emphasis is on professional behaviours, patient care, communication skills (verbal and non-verbal), ergonomics, image recognition, image critique and performance of sonography of the pancreas, urinary system, complete abdomen and female pelvis on peers, including routine and alternative techniques.

*This course is evaluated on a Pass/Fail basis.*

Lectures (two hours), lab (four hours); one term

**Prerequisite(s):** MEDRADSC 2K03, MEDRADSC 2L03, 2M03, MEDRADSC 2N03; and registration in Level II of the Ultrasonography Specialization

### MEDRADSC 2R15 - ULTRASONOGRAPHY CLINICAL PRACTICUM I

Four month placement in a Diagnostic Imaging department. Students develop clinical and professional skills by participating in sonographic procedures under direct supervision of a qualified professional. Communication skills (verbal and non-verbal) are emphasized. (See *Department Note 4* above.)

*This course is evaluated on a Pass/Fail basis.*

One term (Offered in Spring/Summer Term only)

**Prerequisite(s):** MEDRADSC 2A03, 2K03, 2N03, 2O03, 2P03, 2Q03 and registration in Level II of the Ultrasonography Specialization

### MEDRADSC 2RA3 - RELATIONAL ANATOMY II

This course examines the spatial relationships of anatomical structures (contents of cranium, neck and abdominal cavity) using projection, sectional and volume-rendered images.

Lectures (three hours), lab (one hour); one term

**Prerequisite(s):** MEDRADSC 2D03 and registration in Level II of the Radiography or the Radiation Therapy Specialization

**Antirequisite(s):** MEDRADSC 3I03

### MEDRADSC 2S03 - CLINICAL ONCOLOGY I

This course introduces the oncologic concepts that characterize all malignancies. Topics include epidemiology, etiology, signs and symptoms, routes of spread, staging and management. An in-depth study of some of the more common disease sites is also undertaken.

Three hours (lectures); one term

**Prerequisite(s):** Registration in Level II of the Radiation Therapy Specialization

### MEDRADSC 2T03 - CLINICAL ONCOLOGY II

This course builds on MEDRADSC 2S03 (Clinical Oncology I) through continued in-depth study of prevalent malignancies.

Three hours (lectures); one term

**Prerequisite(s):** MEDRADSC 2S03 and registration in Level II of the Radiation Therapy Specialization

### MEDRADSC 2U03 - RADIATION THERAPY SKILLS I

Emphasis is on professional behaviours, patient care, communication skills (verbal and non-verbal), and basic radiation therapy treatment techniques are taught and evaluated through simulated labs.

*This course is evaluated on a Pass/Fail basis.*

Lectures (two hours), lab (four hours); one term

**Prerequisite(s):** Registration in Level II of the Radiation Therapy Specialization

### MEDRADSC 2V15 - RADIATION THERAPY CLINICAL PRACTICUM I

Four month placement in a Radiation Therapy department. Students develop clinical skills by participating in various areas of a Radiation Therapy Department under the direct supervision of a qualified professional. Communication skills (verbal and non-verbal) are emphasized. (See Department Note 4 above.)

*This course is evaluated on a Pass/Fail basis.*

One term (Offered in Spring/Summer Term only)

**Prerequisite(s):** MEDRADSC 2A03, 2AA3, 2D03, 2T03, 2U03, 2W03, 2X03, and registration in Level II of the Radiation Therapy Specialization

### MEDRADSC 2W03 - PHYSICS AND INSTRUMENTATION FOR RADIATION THERAPY

Photon production, interaction processes, measurement of exposure and absorption characteristics are presented, followed by the calculation of doses and treatment times prescribed in radiation therapy.

Lectures (two hours), lab/tutorial (two hours); one term

**Prerequisite(s):** Registration in Level II of the Radiation Therapy Specialization

### MEDRADSC 2X03 - RADIOBIOLOGY AND PROTECTION

Radiation effects on cells, tissues and organs and bodies are covered with emphasis on clinical radiation hazards. Dose minimization and protective practices guidelines and regulations are examined.

Lectures (three hours); one term

**Prerequisite(s):** MEDRADSC 2U03 or 2Y03; and registration in Level II of the Radiography or the Radiation Therapy Specialization

### MEDRADSC 2Y03 - RADIOGRAPHIC IMAGING AND INSTRUMENTATION I

Production of x-rays, interactions with matter, image production, display and quality; control of beam quality /quantity related to image quality and dose optimization are covered.

Lectures (two hours), lab (one hour), tutorial (one hour); one term

**Prerequisite(s):** Registration in Level II of the Radiography Specialization

**Antirequisite(s):** MEDRADSC 2E03, 2F03

### MEDRADSC 2ZZ0 - PRE-CLINICAL PROFESSIONAL SKILLS REASSESSMENT I

Practice and reassessment of skills performance prior to Clinical Practicum 1. Specific skills and performance criteria will be detailed in a learning contract.

*This course is evaluated on a Pass/Fail basis.*

**Prerequisite(s):** One of MEDRADSC 2H03, 2Q03, 2U03; and permission of the Department

### MEDRADSC 3AA3 - INTERDISCIPLINARY ROUNDS IN MEDICAL RADIATION SCIENCES

An integration of patient signs and symptoms, clinical data, pathophysiology, medical imaging and relevant interventional procedures including treatments/therapies among numerous body systems mostly presented in a case study based format.

Lectures (three hours); offered in Spring/Summer term only

**Prerequisite(s):** One of MEDRADSC 2J15, 2R15 or 2V15 and registration in Level III of a Medical Radiation Sciences specialization

*Not open to students with credit or registration in MEDRADSC 3C03.*

### MEDRADSC 3B03 - QUALITY MANAGEMENT IN MEDICAL RADIATION SCIENCES

Examination of various quality management methodologies in health care facilities, external accreditation processes and legislation associated with quality in Medical Radiation Sciences.

Lectures (two hours), tutorial (two hours); one term (offered in Spring/Summer Term only)

**Prerequisite(s):** One of MEDRADSC 2J15, 2R15 or 2V15; and registration in Level III of a Medical Radiation Sciences specialization

### MEDRADSC 3BB3 - RADIATION THERAPY SKILLS III

This course provides an in depth understanding of management of side-effects associated with Radiation Therapy, working with complex PTS and an awareness of pharmacology.

Lecture (two hours), lab (two hours); one term

**Prerequisite(s):** MEDRADSC 3W03

### MEDRADSC 3DA3 - SUBSPECIALTIES IN MEDICAL RADIATION SCIENCES - ADVANCED STUDIES IN COMPUTED TOMOGRAPHY

A study of clinical use of CT in diagnosis, including clinical indications, pathophysiology, imaging appearances, imaging protocols and post-processing tools.

Lectures (three hours), lab (one hour); one term

**Prerequisite(s):** MEDRADSC 3K03 and registration in Level III of the Radiography or Radiation Therapy Specialization

### MEDRADSC 3DD3 - SUBSPECIALTIES IN MEDICAL RADIATION SCIENCES: MAMMOGRAPHY

A comprehensive overview of breast tissue patterns, pathologies and their appearances (includes correlation to other imaging modalities), treatment interventions and surgical options.

Lectures (three hours); one term

**Prerequisite(s):** Registration in Level III of the Radiography Specialization

### MEDRADSC 3DE3 - SUBSPECIALTIES IN MEDICAL RADIATION SCIENCES: INTRODUCTION TO MAGNETIC RESONANCE IMAGING

Of magnetic resonance imaging, including instrumentation, image production, selection and control of magnetic fields, pulse sequences, safety and clinical application.

Lectures and web modules (three hours); offered in Spring/Summer term only

**Prerequisite(s):** Registration in Level III of a Medical Radiation Sciences specialization

### MEDRADSC 3DI3 - SUBSPECIALTIES IN MEDICAL RADIATION SCIENCES: IMAGE GUIDANCE IN RADIATION THERAPY

An in-depth study of image guidance principles used in modern day radiation therapy practice. Practical implications and future directions are examined in detail.

Lectures (three hours); offered in Spring/Summer term only

**Prerequisite(s):** Registration in Level III of the Radiation Therapy Specialization

### MEDRADSC 3DJ3 - SUBSPECIALTIES IN MEDICAL RADIATION SCIENCES: PEDIATRIC SONOGRAPHY

This course offers a comprehensive overview of pediatric normal and abnormal anatomy including the vascular system, spinal and intracranial structures along with scanning protocols.

Lectures (three hours); offered in Spring/Summer Term only

**Prerequisite(s):** Registration in Level III of the Ultrasonography Specialization

### MEDRADSC 3G03 - RADIOGRAPHIC IMAGING AND INSTRUMENTATION II

The main operations of radiographic and fluorographic equipment, from underlying physical principles to clinical application.

Lectures (three hours), lab or tutorial (one hour); one term

**Prerequisite(s):** MEDRADSC 2J15, MEDRADSC 2Y03 and registration in Level III of the Radiography Specialization

### MEDRADSC 3H03 - QUALITY CONTROL IN RADIOGRAPHY

Students perform quality control testing procedures on both analogue and digital radiographic equipment, comparing equipment performance to legislated standards and best practices concepts.

Lecture (one hour), lab (two hours), tutorial (one hour); one term

**Prerequisite(s):** MEDRADSC 2J15, 3G03 and registration in Level III of the Radiography Specialization

### MEDRADSC 3J03 - PATHOLOGY AND PROCEDURES II

Radiological procedures and image appearances of associated pathologies of the cardiovascular, endocrine, nervous and reproductive systems.

Lectures (three hours); one term

**Prerequisite(s):** MEDRADSC 2I03, 2RA3 and 2J15; and registration in Level III of the Radiography Specialization

### MEDRADSC 3K03 - COMPUTED TOMOGRAPHY

Processes of data acquisition, image reconstruction and post-processing are discussed. Scan protocol optimization in terms of image quality, demonstrated structures and patient dose are examined. Labs include scanning of anatomical phantoms.

Lectures (three hours), lab (one hour); one term

**Prerequisite(s):** MEDRADSC 2RA3 and registration in Level III of the Radiation Therapy or the Radiography Specialization

### MEDRADSC 3L03 - RADIOGRAPHIC SKILLS III

Emphasis is on professional behaviours and radiography of cranio-facial structures and development of case management and adaptation skills in modifying standard radiographic procedures to the special needs patient. Communication skills (verbal and non-verbal) are emphasized.

*This course is evaluated on a Pass/Fail basis.*

Lecture (one hour), lab (four hours); one term (offered in Spring/Summer Term only)

**Prerequisite(s):** MEDRADSC 2H03, 2J15 and registration in Level III of the Radiography Specialization

### MEDRADSC 3M03 - ABDOMINAL ULTRASONOGRAPHY III

A comprehensive overview with sonographic correlation of the relational anatomy, normal, anomalous and pathologic conditions of the adrenal glands, abdominopelvic and thoracic cavities, GI tract and specific superficial structures.

Lectures (three hours), tutorial (one hour); one term (offered in Spring/Summer Term only)

**Prerequisite(s):** MEDRADSC 2O03, 2R15 and registration in Level III of the Ultrasonography Specialization

### MEDRADSC 3N03 - VASCULAR ULTRASONOGRAPHY

A comprehensive study of vascular anatomy, physiology, hemodynamics, sonographic interpretation of normal and pathologic conditions in the assessment of the vasculature of the head, neck, abdomen and extremities.

Lectures (three hours), tutorial (one hour); one term

**Prerequisite(s):** MEDRADSC 2K03, 2R15 and registration in Level III of the Ultrasonography Specialization

### MEDRADSC 3O03 - SONOGRAPHIC SKILLS III

Emphasis is on professional behaviours, patient care, communication skills (verbal and non-verbal), ergonomics, image recognition, image critique and performance of the extracranial arteries, abdominal and peripheral vasculature on peers, including routine and alternative techniques.

*This course is evaluated on a Pass/Fail basis.*

Lecture (one hour), lab (four hours); one term

**Prerequisite(s):** MEDRADSC 2R15, 3N03 and registration in Level III of the Ultrasonography Specialization

### MEDRADSC 3P03 - OBSTETRICAL AND GYNECOLOGIC ULTRASONOGRAPHY III

A comprehensive study of obstetric anomalies and abnormal sonographic appearances of amniotic fluid, fetal growth, fetal syndromes, Doppler studies of the gravid patient and fetal anomalies of each system.

Lectures (three hours), tutorial (one hour); one term

**Prerequisite(s):** MEDRADSC 2P03 and registration in Level III of the Ultrasonography Specialization

### MEDRADSC 3Q03 - APPLIED SONOGRAPHIC PHYSICS AND INSTRUMENTATION II

Recent and emerging technological advances in ultrasound instrumentation/imaging such as advanced signal processing, elastography, contrast ultrasound imaging and 3D/4D imaging. Bioeffects and quality assurance associated with diagnostic ultrasound will also be covered.

Lectures (three hours), tutorial (one hour); one term

**Prerequisite(s):** MEDRADSC 2K03, 2R15 and registration in Level III of the Ultrasonography Specialization

### MEDRADSC 3R03 - MUSCULOSKELETAL ULTRASONOGRAPHY

Sonographic correlation of upper/lower extremity joint anatomy; normal and pathologic musculoskeletal structures using standard scanning techniques and protocols.

Lectures (three hours), lab (one hour); one term

**Prerequisite(s):** MEDRADSC 2R15 and registration in Level III of the Ultrasonography Specialization

### MEDRADSC 3S03 - TREATMENT PLANNING I

Students gain the knowledge and skills required to independently plan and calculate radiation therapy treatments for a variety of sites under variable conditions.

Lectures (two hours), lab (two hours); one term

**Prerequisite(s):** MEDRADSC 2V15, 2W03 and registration in Level III of the Radiation Therapy Specialization

### MEDRADSC 3V03 - TREATMENT PLANNING II

This course further develops problem-solving skills related to dosimetry. Photon and electron beams, brachytherapy, conformal therapy and Intensity Modulated Radiation Therapy principles are emphasized.

Lectures (two hours), lab (two hours); one term

**Prerequisite(s):** MEDRADSC 3S03 and registration in Level III of the Radiation Therapy Specialization

### MEDRADSC 3W03 - RADIATION THERAPY SKILLS II

Students develop critical thinking, psychomotor and problem-solving skills that are required in the simulation and treatment of radiation therapy patients. Communication (verbal and non-verbal) are emphasized. The student will practice through simulated labs on radiation therapy units.

*This course is evaluated on a Pass/Fail basis.*

Lectures (two hours), lab (two hours), tutorial (two hours); one term

**Prerequisite(s):** MEDRADSC 2U03, 2V15 and registration in Level III of the Radiation Therapy Specialization

### MEDRADSC 3X03 - RESEARCH METHODS IN MEDICAL RADIATION SCIENCES

Prepares students for applied clinical research in Medical Radiation Sciences. Topics include systematic description of observations, testing hypotheses, distinctives of quantitative and qualitative research and critical review of published literature.

Lectures (three hours), tutorials (two hours); one term

**Prerequisite(s):** STATS 2B03; and registration in Level III of a Medical Radiation Sciences specialization or Level III or above a Life Sciences program

### MEDRADSC 3Y03 - ETHICS FOR MEDICAL RADIATION SCIENCES

An overview of the major areas of clinical biomedical ethics. Extensive use of case discussion and analysis will help to develop the students ethical problem-solving skills.

Lectures and web modules (three hours); one term

**Prerequisite(s):** Registration in Level III of a Medical Radiation Sciences specialization; or Level III or above of an Honours Medical Physics program

### MEDRADSC 3Z06 - RESEARCH PROJECT

Students conduct an individual research project under the supervision of a faculty member. Students wishing to enroll in this course should contact the Department for further information. Students are expected to have a C.A. of at least 7.0.

**Prerequisite(s):** Permission of the Department

*Not open to students with credit or registration in ISCI 4A12 A/B.*

### MEDRADSC 3Z20 - CLINICAL SKILL DEVELOPMENT FOR PROFESSIONALS

Practice and assessment of skill performance by professional medical radiation technologists. Specific skills and performance criteria will be detailed in a learning contract.

**Prerequisite(s):** Permission of the Director, School of Interdisciplinary Science (or delegate).

*This course is evaluated on a Pass/Fail basis.*

### MEDRADSC 4A15 - RADIOGRAPHY CLINICAL PRACTICUM II

Four month placement in a Diagnostic Imaging department. Students further develop clinical and professional skills, integrating theory, developing independent decision-making capacity in the management of cases, working towards competence in general radiography, fluoroscopy and computed tomography. (*See Department Note 4 above.*)

*This course is evaluated on a Pass/Fail basis.*

One term

**Prerequisite(s):** MEDRADSC 3G03, 3H03, 3J03, 3K03, 3L03 and registration in Level IV of the Radiography Specialization

### MEDRADSC 4B15 - RADIOGRAPHY CLINICAL PRACTICUM III

Four month placement in a Diagnostic Imaging department. Students further develop clinical skill and professional skills, integrating theory, developing independent decision-making capacity in the management of cases, attaining competence in general radiography, fluoroscopy and computed tomography.

*This course is evaluated on a Pass/Fail basis.*

One term

**Prerequisite(s):** MEDRADSC 4A15 and registration in Level IV of the Radiography Specialization

### MEDRADSC 4C15 - ULTRASONOGRAPHY CLINICAL PRACTICUM II

Four month placement in the Sonography department. Students further develop clinical and professional skills, integrating theory, developing independent decision-making capacity in the management of cases, working towards competence in the generalist sonographic specializations. (*See Department Note 4 above.*)

*This course is evaluated on a Pass/Fail basis.*

One term

**Prerequisite(s):** MEDRADSC 2R15, 3M03, 3N03, 3O03, 3P03 and registration in Level IV of the Ultrasonography Specialization

### MEDRADSC 4D15 - ULTRASONOGRAPHY CLINICAL PRACTICUM III

Four month placement in the Sonography department. Students further develop clinical and professional skills, integrating theory, developing independent decision-making capacity in the management of cases, attaining competence in the generalist sonographic specializations. Communication skills (verbal and non-verbal) are emphasized.



*This course is evaluated on a Pass/Fail basis.*

One term

**Prerequisite(s):** MEDRADSC 4C15 and registration in Level IV of the Ultrasonography Specialization

### **MEDRADSC 4E15 - RADIATION THERAPY CLINICAL PRACTICUM II**

Four month placement in a Radiation Therapy department. Students further develop clinical and professional skills, integrating theory, developing independent decision-making capacity in the management of cases, working towards competence in radiation therapy. Communication skills (verbal and non-verbal) are emphasized. (See Department Note 4 above.)

*This course is evaluated on a Pass/Fail basis.*

One term

**Prerequisite(s):** MEDRADSC 3K03, 3BB3, 3V03, 3W03 and registration in Level IV of the Radiation Therapy Specialization

### **MEDRADSC 4F15 - RADIATION THERAPY CLINICAL PRACTICUM III**

Four month placement in a Radiation Therapy department. Students further develop clinical and professional skills, integrating theory, developing independent decision-making capacity in the management of cases, attaining competence in radiation therapy.

*This course is evaluated on a Pass/Fail basis.*

One term

**Prerequisite(s):** MEDRADSC 4E15 and registration in Level IV of the Radiation Therapy Specialization

### **MEDRADSC 4ZZ0 - PRE-CLINICAL PROFESSIONAL SKILLS REASSESSMENT II**

Practice and reassessment of skills performance prior to Clinical Practicum 2 or 3. Specific skills and performance criteria will be detailed in a learning contract.

*This course is evaluated on a Pass/Fail basis.*

**Prerequisite(s):** Permission of the Department

## **Midwifery**

Courses in Midwifery are administered by the B.H.Sc. Midwifery Education Program.

Health Sciences Centre (HSC), Room 4H24, ext. 26654

<http://www.fhs.mcmaster.ca/midwifery>

[midwifery@mcmaster.ca](mailto:midwifery@mcmaster.ca)

### **MIDWIF 1D03 - MIDWIFERY THE PROFESSION I**

Seminar presentations, discussion and arranged experiences to introduce students to the history, philosophy of care, and role of the midwife in Canada and elsewhere.

Seminar (three hours); first term

**Prerequisite(s):** Registration in the Midwifery Education Program

**Antirequisite(s):** MIDWIF 1A06

### **MIDWIF 1F03 - INTRODUCTION TO RESEARCH METHODS AND CRITICAL APPRAISAL**

Introduction to the principles of clinical research and statistical inference, with particular emphasis on critical assessment of research evidence (both qualitative and quantitative) as presented in the health sciences literature related to midwifery care.

Lectures/tutorials (three hours); second term

**Prerequisite(s):** Registration in the Midwifery Program (B.H.Sc.)

**Antirequisite(s):** HTHSCI 3C04

### **MIDWIF 1G03 - MIDWIFERY THE PROFESSION II**

Seminar presentations, discussions, and laboratory practice to introduce students to communication theory and strategies, equity, diversity and inclusion in the provision of midwifery care.

Seminar (3 hours); second term

**Prerequisite(s):** Registration in the Midwifery Education Program

**Antirequisite(s):** MIDWIF 2G06

### **MIDWIF 2F03 - PHARMACOTHERAPY**

This course is an overview of basic concepts in pharmacy, pharmacology and therapeutics relevant to the practice of midwifery in Ontario. Content areas include pharmacokinetics, toxicology, adverse drug reactions during pregnancy and lactation and pharmacology in the neonate.

One lecture (three hours); first term

**Prerequisite(s):** HTHSCI 1D06 A/B

### **MIDWIF 2G06 - CLINICAL SKILLS FOR MIDWIFERY PRACTICE**

Lecture, demonstration and laboratory practice of fundamental skills for midwifery practice. This course combines theoretical aspects with clinical lab as well as including short placement components in which students attend births and midwifery clinics. One Lecture (three hours), Lab (three hours); first term

**Prerequisite(s):** MIDWIF1D03

**Antirequisite(s):** MIDWIF 2G03

*May be taken concurrently with MIDWIF 1D03 with permission of the Program Director.*

### **MIDWIF 2H15 - NORMAL CHILDBEARING**

First clinical placement under the supervision of a registered midwife (18 weeks): students focus on beginning level skills for the care of women experiencing normal childbearing. Weekly problem-based tutorials include normal antepartum, intrapartum, postpartum and newborn care situations.

Second term

**Prerequisite(s):** HTHSCI 2M03, MIDWIF 1D03, 2F03, 2G06 (or 1A06 or 2G03).

A minimum GPA of 6.0 in first term is required.

**Antirequisite(s):** MIDWIF 2E12

### **MIDWIF 3A09 - INTERPROFESSIONAL PRACTICE I**

Students will be placed in clinical settings and supervised by physicians, nurses, social workers and other health and social service providers. Some placements may be hospital or community-based while others involve a combination of clinic and hospital on call work. Through these varied experiences, students will gain insight into the roles of other health and social service professionals, develop communication skills and learn how to function in an interprofessional team. Students will be given an option to arrange one placement out of province or out of country pending approval.

**Prerequisite(s):** MIDWIF 2H15

**Co-requisite(s):** MIDWIF 3F03

### **MIDWIF 3F03 - MIDWIFERY ISSUES**

This course addresses the theoretical basis for inter-professional collaboration and explores related professional issues such as global midwifery, ethics and risk management. The course includes critical analysis of issues in

asynchronous online discussion and submission of a major paper.

**Prerequisite(s):** MIDWIF 2H15

**Co-requisite(s):** MIDWIF 3A09

### MIDWIF 3H15 - COMPLICATIONS AND CONSULTATION

Second placement in a midwifery practice: students extend skills to more complex childbearing situations. Problem-based tutorials focus on expanding the knowledge base of maternal-newborn complications, for consultation and referral, and relationships with other health care providers.

Summer term

**Prerequisite(s):** MIDWIF 2H15, 3A09, 3F03, 3I03, 3J06, 3K06, 3L03

### MIDWIF 3I03 - ADVANCED CLINICAL SKILLS I

A five day intensive course using workshop format to focus on emergency interventions, evidence based management of prenatal and intrapartum situations and communication. Students receive instruction from midwifery faculty and interdisciplinary experts in preparation for community placements and senior midwifery clinical placements.

First term

**Prerequisite(s):** MIDWIF 2H15

### MIDWIF 3J06 - PREPARATION FOR PRIMARY MATERNITY CARE

Web-tutorial and lecture format are utilized to provide a greater theoretical understanding of progressively complex midwifery scenarios. The course will also focus on situations where midwives consult and or work collaboratively with other care providers in the provision of care.

**Prerequisite(s):** MIDWIF 2H15

**Co-requisite(s):** MIDWIF 3K06

### MIDWIF 3K06 - INTERPROFESSIONAL PRACTICE II

Students will be placed in clinical settings and supervised by physicians, nurses, social workers and other health and social service providers. Some placements may be hospital or community-based while others involve a combination of clinic and hospital on call work. Through these varied experiences, students will gain insight into the roles of other health and social service professionals, develop communication skills and learn how to function in an interprofessional team. Students will be given an option to arrange one placement out of province or out of country pending approval.

**Prerequisite(s):** MIDWIF 2H15

**Co-requisite(s):** MIDWIF 3J06

### MIDWIF 3L03 - ADVANCED CLINICAL SKILLS II

Short intensive course of five to six days. The course builds on the skills introduced in MIDWIF 3I03 and focuses on preparing the student for recognizing situations where consultation and transfer of care is required, as well as in being able to initiate and facilitate such consultation.

Second term

**Prerequisite(s):** MIDWIF 3I03

### MIDWIF 4A15 - MATERNAL AND NEWBORN PATHOLOGY

Third placement in a midwifery practice. In defined situations, supervision is indirect. Students care for an assigned caseload, including situations with complications. Problem-based tutorials focus on midwifery roles and responsibilities in highly complex and urgent situations.

First term

**Prerequisite(s):** MIDWIF 3H15

### MIDWIF 4B15 - MIDWIFERY CLERKSHIP

Final placement in a midwifery practice. Supervision is increasingly indirect. Students formulate and provide care to an entire caseload of women. Tutorials and workshops include case review, preparation for registration and establishing a practice in Ontario. Second term

**Prerequisite(s):** MIDWIF 4A15

## Molecular Biology

Courses in Molecular Biology are administered by the Department of Biology, Life Sciences Building, Room 118, ext. 23049

<http://www.biology.mcmaster.ca>

#### Courses

*If no prerequisite is listed, the course is open.*

### MOLBIOL 2C03 - GENETICS

Structure, function and transmission of genes; chromosomal basis of inheritance; mono- and dihybrid crosses; sequential steps in gene function; linkage maps; sex chromosome inheritance.

Lectures, web modules (three hours), one lab or tutorial (two hours); one term

**Prerequisite(s):** BIOLOGY 1A03, 1M03 (or ISCI 1A24 A/B) and registration in Honours Molecular Biology and Genetics (B.Sc.) or Honours Arts & Science (B.Arts Sc.) and Molecular Biology and Genetics

**Antirequisite(s):** BIOLOGY 2C03

*Students not registered in an Honours Molecular Biology and Genetics program should register in BIOLOGY 2C03.*

### MOLBIOL 3A03 - CURRENT TOPICS IN MOLECULAR BIOLOGY AND GENETICS

A review of current literature in molecular biology and genetics. A combination of lectures and student presentations on selected topics.

One lecture (three hours); one term

**Prerequisite(s):** Registration in Honours Biology (B.Sc.), Honours Molecular Biology and Genetics (B.Sc.) or Honours Molecular Biology and Genetics Co-op (B.Sc.)

### MOLBIOL 3B03 - ADVANCED CELL BIOLOGY

The molecular organisation and function of eukaryotic cells are examined, with a focus on information transfer from the cell surface and from the nucleus. Emphasis is placed upon interpretation of the research literature.

Three lectures, one tutorial; one term

**Prerequisite(s):** BIOLOGY 2B03 (or ISCI 2A18 A/B); and one of BIOLOGY 2C03 or MOLBIOL 2C03

**Antirequisite(s):** LIFESCI 3M03

### MOLBIOL 3CC3 - GENOMICS AND SYSTEMS BIOLOGY

Formerly MOLBIOL 4CC3

Exploration of genomic, proteomic, metabolomic approaches to study biological systems on small and large scale. Integration of knowledge to understand cell dynamics and regulatory networks.

Three lectures; one term

**Prerequisite(s):** MOLBIOL 3003

**Antirequisite(s):** MOLBIOL 4CC3

### MOLBIOL 3D03 - EXPERIMENTAL APPROACHES IN CELL BIOLOGY

Intensive laboratory based inquiry course focused on cell biological research. Cell biology techniques from various disciplines will be used to investigate

the structure and function of organisms at the cellular and molecular level. Techniques employed may include light and immune fluorescent microscopy, time lapse, tissue culture, biochemistry, genetics and molecular biology. This course will also provide opportunity to develop scientific literacy skills.

One lecture, two labs (three hours); one term

**Prerequisite(s):** BIOLOGY 2B03 (or ISCI 2A18 A/B); and BIOLOGY 2C03 or MOLBIOL 2C03 or LIFESCI 2G03. Completion of BIOLOGY 2C03 or MOLBIOL 2C03 is recommended. If not already completed, BIOSAFE 1BS0 (or HTHSCI 1BS0) must be done prior to the first lab

**Prerequisite(s) (EFFECTIVE 2021-2022):** BIOLOGY 2B03 (or ISCI 2A18 A/B); and BIOLOGY 2C03 or MOLBIOL 2C03. If not already completed, BIOSAFE 1BS0 (or HTHSCI 1BS0) must be done prior to the first lab

### MOLBIOL 3I03 A/B S - INDEPENDENT RESEARCH PROJECT

Students will conduct an independent research study in a faculty member's laboratory.

For further information, please refer to <http://www.biology.mcmaster.ca/undergraduate-programs/courses.html> and click on MOL BIOL 3I03.

8-10 hours per week (scheduling to be arranged by supervisor); one or two term(s)

**Prerequisite(s):** Registration in Honours Molecular Biology and Genetics or Honours Molecular Biology and Genetics Co-op. BIOLOGY 2L06 A/B (or 2L03) is recommended preparation. Permission of the department is required. Students are expected to have a GPA of at least 9.0.

**Antirequisite(s):** BIOLOGY 3IR3 A/B S

### MOLBIOL 3I13 - MOLECULAR GENETICS OF EUKARYOTES

Study of the eukaryotic genome and control mechanisms of gene expression; the emphasis will be on transcriptional control, RNA surveillance and the study of epigenetic mechanisms in several model systems (yeast, nematodes, insects, plants and vertebrates). The histone code and several mechanisms of epigenetic trans-generational inheritance will be discussed.

Three lectures, one tutorial; one term

**Prerequisite(s):** MOLBIOL 3B03 or 3C03

### MOLBIOL 3M03 - FUNDAMENTAL CONCEPTS OF DEVELOPMENT

Recent advances using genetic and molecular approaches will be discussed in the context of classical experiments. Various model systems (mice, fruitflies, worms) will be examined.

Two lectures, one tutorial or lab (three hours); one term

**Prerequisite(s):** BIOLOGY 2B03 (or ISCI 2A18 A/B), BIOLOGY 2C03 or MOLBIOL 2C03

### MOLBIOL 3O03 - MICROBIAL GENETICS

Molecular genetics of bacteria and bacteriophage. Special emphasis will be placed on relationships between microbial genetics and general problems in genetics and gene regulation.

Three lectures, one tutorial; one term

**Prerequisite(s):** BIOLOGY 2C03 or MOLBIOL 2C03; and credit or registration in BIOLOGY 2EE3

### MOLBIOL 3V03 - TECHNIQUES IN MOLECULAR GENETICS

A laboratory course providing hands-on experience in experimental design and molecular biology and molecular genetic techniques.

One lecture, two labs (three hours each); one term

**Prerequisite(s):** BIOLOGY 2EE3; and credit or registration in MOLBIOL 3O03; and registration in Level III or above of an Honours program in Biology or

Molecular Biology and Genetics. If not already completed, BIOSAFE 1BS0 (or HTHSCI 1BS0) and WHMIS 1A00 must be done prior to the first lab.

**Antirequisite(s):** BIOLOGY 3VV3

### MOLBIOL 3Y03 - PLANT RESPONSES TO THE ENVIRONMENT

How plants respond at the genetic, molecular, biochemical and phenotypic levels to environmental stress. Manipulation of these responses to improve crops will be explored.

Three lectures; one term

**Prerequisite(s):** BIOLOGY 2B03 (or ISCI 2A18 A/B); and BIOLOGY 2C03 (or MOLBIOL 2C03); and BIOLOGY 2D03

### MOLBIOL 4BB3 - PLANT METABOLISM AND MOLECULAR BIOLOGY

Formerly *BIOLOGY 4B03*

Analysis of plant cell metabolism and the regulation of metabolism at the biochemical and molecular genetic level.

Three lectures; one term

**Prerequisite(s):** BIOLOGY 2B03 (or ISCI 2A18 A/B) and BIOLOGY 2C03 (or MOLBIOL 2C03); or one of BIOLOGY 3B03, MOLBIOL 3Y03; or ISCI 2A18 A/B; and registration in Level III or above of any Honours program. MOLBIOL 3B03 is recommended.

### MOLBIOL 4DD3 - MOLECULAR EVOLUTION

The study of how molecules change over time within and between species. The experimental data, techniques and theories will be examined.

Two lectures, one tutorial; one term

**Prerequisite(s):** ANTHROP 2D03 or BIOLOGY 3FF3 or BIOLOGY 3S03; and registration in Level III or above of any Honours program

**Antirequisite(s):** BIOCHEM 4Y03

### MOLBIOL 4G12 A/B S - SENIOR THESIS

A thesis based upon a research project in an area of molecular biology and genetics. Arrangements to take MOL BIOL 4G12, including the agreement of the supervisory committee, should be made according to Departmental Guidelines before the end of March in Level III. For information on Departmental Guidelines, please refer to the Biology web site at <http://www.biology.mcmaster.ca/undergraduate-programs/courses.html>.

**Prerequisite(s):** Registration in Level IV of any Honours Molecular Biology and Genetics program; and permission of the Course Administrator, Life Sciences Building, Room 118

*Not open to students with credit or registration in any Level IV department- or program-based thesis or independent study/project course.*

### MOLBIOL 4H03 - MOLECULAR BIOLOGY OF CANCER

Cancer at the cellular and molecular level. Topics include: properties of cancer cells, activation of proto-oncogenes, function of oncoproteins, transgenic mouse models, and tumour viruses, tumour suppressor genes.

Three lectures, one tutorial; one term

**Prerequisite(s):** BIOLOGY 2C03 (or MOLBIOL 2C03); and MOLBIOL 3B03; and registration in Level III or above of any Honours program

### MOLBIOL 4K03 - RESEARCH ADVANCES IN BIOLOGY OF AGING

A critical analysis of the biology of aging in model organisms and age-related human disorders. Emphasis is on the molecular pathways that regulate the process of aging at the cellular and organismal levels.

One lecture (two hours), one lecture (one hour); one term

**Prerequisite(s):** BIOLOGY 2B03 and BIOLOGY 2C03 (or MOLBIOL 2C03) and registration in Level IV or above of any Honours program

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### MOLBIOL 4P03 - MEDICAL MICROBIOLOGY

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Infectious diseases: identification, epidemiology and treatment.

One lecture (two hours), one tutorial (three hours); one term

**Prerequisite(s):** BIOLOGY 2EE3 and registration in Level III or above of any Honours program. Credit or registration in MOLBIOL 3003 is strongly recommended.

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### MOLBIOL 4RR3 - HUMAN GENETICS

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Topics include genetic disorders, advanced recombinant DNA technologies, the human genome, physical and genetic mapping of Mendelian characters, linkage, transgenic animals and gene therapy.

Two lectures, one tutorial (one hour); one term

**Prerequisite(s):** BIOLOGY 2C03 or MOLBIOL 2C03 and registration in Level III or above of any Honours program

## Mohawk

Courses in Mohawk are administered by the Indigenous Studies Program.

Hamilton Hall, Room 103, ext. 27426

<http://www.mcmaster.ca/indigenous>

### Courses

*If no prerequisite is listed, the course is open.*

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### MOHAWK 1Z03 - INTRODUCTION TO MOHAWK LANGUAGE AND CULTURE

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This course will study the Mohawk language, in its spoken and written forms, in the context of Iroquoian cultural traditions, values, beliefs and customs.

Lecture and seminars (three hours); one term

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### MOHAWK 2Z03 - INTERMEDIATE MOHAWK

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This course expands on the vocabulary and the oral skills for the Mohawk language. In addition, the course reviews the written component of the language.

Lecture and seminars (three hours); one term

**Prerequisite(s):** MOHAWK 1Z03

## Multimedia

Courses in Multimedia are administered by the Department of Communication Studies and Multimedia.

Togo Salmon Hall, Room 331, ext. 23488

<http://csmm.humanities.mcmaster.ca/>

### Courses

*If no prerequisite is listed, the course is open. See also courses in Communication Studies.*

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### MMEDIA 1A03 - MULTIMEDIA AND DIGITAL SOCIETY

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This course examines the impact of digital technologies on contemporary life. Lectures, readings, discussions, and multimedia projects will enable students to both reflect upon and participate in today's digital society.

One lecture (two hours), one tutorial; one term

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### MMEDIA 2A06 - DESIGN & CODE

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This course explores both design and code strategies for multimedia projects, including web applications. Students will create original works using design principles and programming languages, and participate in group projects.

Lecture and lab (six hours); one term

**Prerequisite(s):** Registration in Level II of a Multimedia program

**Antirequisite(s):** MMEDIA 2A03, 2M03

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### MMEDIA 2B06 - TIME-BASED MEDIA I

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An exploration of time-based media through video and animation. Students will complete projects to develop conceptual, production, and post-production skills while readings and discussions address contemporary time-based media practices.

Lecture and lab (six hours); one term

**Prerequisite(s):** Registration in Level II of a Multimedia program

**Antirequisite(s):** MMEDIA 2B03, 2H03

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### MMEDIA 2G03 - INTRODUCTION TO DIGITAL AUDIO

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Introduction to audio capture, synthesis, transformation and delivery across diverse contexts, including field recording, studio and performance settings.

Discussions, demonstrations and assignments support the growth of aural awareness, skills and vocabulary.

Lecture, web module, tutorial (three hours); one term

**Prerequisite(s):** Registration in Level II of a Multimedia program; or registration in Level II or above of a Music, Theatre & Film, Art History, Studio Art or Communication Studies program

**Antirequisite(s):** ART 2Z03, MUSIC 2Z03, THTRFLM 2Z03

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### MMEDIA 3AN3 - ANIMATION

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This class is an introduction to the history, types and basic principles of animation. Students are expected to create a significant work of animation in which they display a variety of techniques. The class will view and discuss the history of animation, independent animation, commercial animation and interactive media. In the context of these lectures, projects and screenings, students will develop a firm grasp of animation fundamentals.

Lecture and lab (three hours); one term

**Prerequisite(s):** Registration in Level III or above of a Multimedia program

*First offered 2021/2022*

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### MMEDIA 3B03 - DIGITAL CULTURES

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This course explores current contests over access to the production, distribution, and consumption of digital culture across a range of technologies and practices. Assignments will include digital production.

Three hours, one term

**Prerequisite(s):** Registration in Level III or above of a Multimedia or Communication Studies program

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### MMEDIA 3BB3 - NEW MEDIA ART PRACTICES

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This course offers a critical perspective on theories and practices of contemporary media art through screenings, production-based projects and field trip engagement with new media work.

Three hours, one term

**Prerequisite(s):** Registration in Level III or above of a Multimedia or Communication Studies program

**Antirequisite(s):** CMST 3BA3, MMEDIA 2PA3



### MMEDIA 3C03 - INTERACTIVE AND SPATIAL AUDIO

This course covers the creation and delivery of interactive and spatial audio. Projects explore surround and multichannel sound, interactive sound design, software synthesis, and other advanced electroacoustic techniques.

Three hours (lecture and lab); one term

**Prerequisite(s):** Registration in Level III or above of a Multimedia program or MMEDIA 2G03 (or, if previously taken, MUSIC 2Z03, ART 2Z03 or THTRFLM 2Z03)

**Antirequisite(s):** MUSIC 3Z03

### MMEDIA 3EE3 - GRAPHIC DESIGN

A technical and conceptual exploration of graphic design using computer drawing and illustration tools to solve problems posed within the context of contemporary media design practices.

Three hours (lecture and lab); one tutorial; one term

**Prerequisite(s):** Registration in Level III or above of a Multimedia program

**Antirequisite(s):** MMEDIA 2E03

### MMEDIA 3H03 - TIME-BASED MEDIA II

Theories and practices of time-based media, including traditional, experimental, and interactive formats of video, animation, motion graphics, and sound. Students will theorize, propose, design and produce projects in selected time-based media.

Three hours (lecture and lab); one term

**Prerequisite(s):** Registration in Level III or above of a Multimedia program

### MMEDIA 3I03 - NARRATIVE STRATEGIES

Students will consider how meaning is structured and perceived through narrative approaches to time-based media such as video and animation. Concepts include structure, plot, theme, genre, characterization, and point of view.

Three hours (lecture and lab); one tutorial; one term

**Prerequisite(s):** Registration in Level III or above of a Multimedia program

### MMEDIA 3K03 - GAME STUDIES

A study of the form, content, and playing of digital games. Topics include: form, genre, and technology; time and space; representation and narrative; and participatory play. Assignments include digital production.

One lecture (two hours), one tutorial; one term

**Prerequisite(s):** Registration in Level III or above of a Multimedia program, a program in Communication Studies, or the Software Engineering (Game Design) program

### MMEDIA 3L03 - GAME DESIGN

Students will develop designs and multimedia assets for digital games, informed by readings and discussions of game design theory.

Lecture and lab (three hours); one term

**Prerequisite(s):** Registration in Level III or above of a Multimedia program

### MMEDIA 3MU3 - MUSICS, TECHNOLOGIES AND AUDIO CULTURES

What effects have broadcasting, mechanical and digital reproduction technologies had upon our experience of music? What are the differences between live performances, broadcasting and audio objects? This course addresses these questions by examining diverse musical and sound art genres as reflected in readings, sound recordings, videos and live performances.

Three lectures; one term

**Prerequisite(s):** Registration in Level III or above of a Communication Studies or Multimedia program

**Antirequisite(s):** CMST 3MU3

### MMEDIA 3PC3 - PHOTOGRAPHIC COLLAGE AND COMPOSITE IMAGES

Studio course exploring theory and practice of collage and composite image-making (both analog and digital). Students will develop a series of creative projects, and will learn strategies of camera control, lighting, and digital compositing. No previous technical background required, but basic familiarity with Photoshop and digital photography is recommended.

Three hours (lecture and lab); one term

**Prerequisite(s):** Registration in Level III or above of a Multimedia or Studio Art program

**Antirequisite(s):** ART 3PC3

### MMEDIA 3Q03 - EMERGING MEDIA

This course unites student multimedia learning with the research and media creation activities of multimedia faculty. Students critically engage with emerging practices and formats of digital media culture.

Three hours (lecture and lab); one term

**Prerequisite(s):** Registration in Level III or above of a Multimedia program

### MMEDIA 3S03 - SOUND AND IMAGE

A study of contemporary research and creative practices that explore combined audiovisual perception and digital translations between sound and image.

Students will discuss theoretical readings and complete creative projects.

Three hours (lecture and lab); one term

**Prerequisite(s):** Registration in Level III or above of a Multimedia program

### MMEDIA 3VA3 - VIDEO ART AND DIGITAL CINEMA

Explores intersections between contemporary art and the moving image, with an emphasis on current movements in Digital Cinema and Video Art. Students will explore the boundaries of conventional filmic production: challenging and expanding on existing skill sets to develop unique and engaging aesthetic sensibilities. Topics will include understanding Digital Cinema, anti-narrative approaches, composite and hybrid/multi-channel video, HD and UHD work flows, audio/video output for the professional sphere, and professional practices (i.e. festivals, residencies, film school, grants, graduate programs, etc).

Lecture and lab (three hours); one term

**Prerequisite(s):** Registration in Level III or above of a Multimedia program; or ART 2DP3 and registration in Level III or above in the Studio Art program

**Cross-list(s):** ART 3VA3

### MMEDIA 3X03 A/B - PRESENTATION AND CRITIQUE

Students will refine and evolve their current media production concepts, practices, and works through a cycle of presentation and review, critical analysis and troubleshooting.

Lecture/seminar (three hours); two terms

**Prerequisite(s):** Registration in Level III of a Multimedia program

### MMEDIA 4F03 - TOPICS IN MULTIMEDIA PRODUCTION

Advanced multimedia production in a topic to be determined by instructor. Students will complete production projects exploring assigned themes or media formats.

Three hours (lecture and lab); one term

**Prerequisite(s):** Registration in Level IV of a Multimedia program.  
*MMEDIA 4F03 may be repeated, if on a different topic, to a total of six units.*

## MMEDIA 4ST6 A/B - SENIOR THESIS RESEARCH AND PRODUCTION

Students will complete multimedia thesis projects under faculty supervision. Working alone, or collaboratively, students will conduct scholarly research into the formal issues and subject matters indicated by their creative projects. Emphasis will be placed upon the integration of research outcomes throughout a sustained production cycle to realize advanced and informed multimedia works.

Lecture and lab (three hours); two terms

**Prerequisite(s):** Registration in Level IV of a Multimedia Program

## Music

Courses in Music are administered by the School of the Arts.

Togo Salmon Hall, Room 414, ext. 27671

<http://sota.humanities.mcmaster.ca/>

### Notes

1. Applicants to Music 1 must book an audition with the School of the Arts to take place usually in February and March.
2. The following courses are open as electives to students not registered in a Music program. Check course descriptions to see other requirements (such as qualifying tests, auditions, specific course, or level prerequisites, etc.).
  - MUSIC 1A03 - Introduction to the History of Music I
  - MUSIC 1AA3 - Introduction to the History of Music II
  - MUSIC 1CR3 - Rudiments of Music
  - MUSIC 2A03 - Music of the World's Cultures
  - MUSIC 2CG3
  - MUSIC 2F03 - Music for Film and Television
  - MUSIC 2H3 - Popular Music in North America and the United Kingdom: Post-World War II
  - MUSIC 2MT3 - Introduction to the Practice of Music Therapy
  - MUSIC 2MU3 - Introduction to Music Therapy Research
  - MUSIC 2TT3 - Broadway and the Popular Song
  - MUSIC 2U03 - Jazz
  - MUSIC 3AA3 - Elementary Music Education
  - MUSIC \_EE3/\_EE6 (levels 1-4) - Solo Performance
  - MUSIC \_GB3,\_GC3,\_GF3,\_GJ3,\_GP3,\_GR3,\_GW3 (levels 1-4) - Ensemble Performance in one of the following: Concert Band, Choir, Flute, Jazz Band, Percussion, Orchestra, Cantemus Vocal Ensemble.

### Courses

*If no prerequisite is listed, the course is open.*

## MUSIC 1A03 - INTRODUCTION TO THE HISTORY OF MUSIC I

An introductory survey of Western music, from Gregorian chant to the time of Bach and Handel. Emphasis is on important composers and their works in relation to their society and culture. No previous knowledge of music required.

Three lectures; one term

*Not open to students registered in any Music program.*

## MUSIC 1AA3 - INTRODUCTION TO THE HISTORY OF MUSIC II

An introductory survey of Western music, from the time of Mozart to the present. Composers studied include Beethoven, Schubert, Chopin, Verdi, Wagner, Debussy, and Stravinsky. No previous knowledge of music required.

Three lectures; one term

*Not open to students registered in any Music program.*

## MUSIC 1CB3 - THEORY AND ANALYSIS I

The analysis and writing of functional harmony. Includes study of music by J.S. Bach and others.

Three lectures; one term

**Prerequisite(s):** Music 1CA3 or 1CR3, or permission of the program.

## MUSIC 1CR3 - RUDIMENTS OF MUSIC

Introduction to rudiments of music through to study of functional harmony (equivalent to Level 8 Theory RCM).

Three lectures; one term

**Antirequisite(s):** MUSIC 1CA3

## MUSIC 1DA3 - PRACTICAL MUSICIANSHIP I

Sight-singing, dictation, and keyboard harmony.

One lecture, one lab, one tutorial; one term

**Prerequisite(s):** Registration in a Music program, or permission of the instructor if space permits.

**Antirequisite(s):** Music 1D03 A/B

## MUSIC 1DB3 - PRACTICAL MUSICIANSHIP II

*Continuation of MUSIC 1DA3.*

Sight-singing, dictation, and keyboard harmony.

One lecture, one lab, one tutorial; one term

**Prerequisite(s):** Music 1D03 or 1DA3, and registration in a Music program or permission of the instructor if space permits

## MUSIC 1E06 A/B - SOLO PERFORMANCE

Intensive study of the technique and repertoire of any orchestral instrument, piano, organ, harpsichord, voice, recorder, saxophone, or guitar.

12 one-hour meetings per term; two terms

**Prerequisite(s):** Registration in a Music program

## MUSIC 1EE6 A/B - SOLO PERFORMANCE

Intensive study of the technique and repertoire of any orchestral instrument, piano, organ, harpsichord, voice, recorder, saxophone or guitar. Must be taken on a different instrument from MUSIC 1E06.

12 one-hour meetings per term; two terms

**Prerequisite(s):** Successful audition at a minimum level of Honours Grade 8 RCM or equivalent and permission of the School of the Arts.

**Antirequisite(s):** MUSIC 1E06 A/B

This course is intended for students who are not in a Music program. Lesson fees are charged to students taking MUSIC 1EE6. Lesson fees must be paid by September 1.

## MUSIC 1GB3 A/B - ENSEMBLE PERFORMANCE: MCMASTER CONCERT BAND

**Prerequisite(s):** Successful audition required. Auditions are held in the first week of classes in September. Students in Level II and above may have the antirequisite for this course waived if they complete a successful audition. Only 12 units of Ensemble Performance courses will count towards a Music degree.

**Antirequisite(s):** MUSIC 1GC3 A/B, 1GF3 A/B, 1GJ3 A/B, 1GP3 A/B, 1GR3 A/B, or 1GW3 A/B

## MUSIC 1GC3 A/B - ENSEMBLE PERFORMANCE: MCMASTER UNIVERSITY CHOIR

**Prerequisite(s):** Successful audition required. Auditions are held in the first week of classes in September. Students in Level II and above may have the

antirequisite for this course waived if they complete a successful audition. Only 12 units of Ensemble Performance courses will count towards a Music degree.

**Antirequisite(s):** MUSIC 1GB3 A/B, 1GF3 A/B, 1GJ3 A/B, 1GP3 A/B, 1GR3 A/B or MUSIC 1GW3 A/B

### **MUSIC 1GF3 A/B - ENSEMBLE PERFORMANCE: DAVID GERRY FLUTE ENSEMBLE**

**Prerequisite(s):** Successful audition required. Auditions are held in the first week of classes in September. Students in Level II and above may have the antirequisite for this course waived if they complete a successful audition. Only 12 units of Ensemble Performance courses will count towards a Music degree.

**Antirequisite(s):** MUSIC 1GB3 A/B, 1GC3 A/B, 1GJ3 A/B, 1GP3 A/B, 1GR3 A/B, 1GW3 A/B

### **MUSIC 1GJ3 A/B - ENSEMBLE PERFORMANCE: MCMASTER JAZZ BAND**

**Prerequisite(s):** Successful audition required. Auditions are held in the first week of classes in September. Students in Level II and above may have the antirequisite for this course waived if they complete a successful audition. Only 12 units of Ensemble Performance courses will count towards a Music degree.

**Antirequisite(s):** MUSIC 1GB3 A/B, 1GC3 A/B, 1GF3 A/B, 1GP3 A/B, 1GR3 A/B or 1GW3 A/B

### **MUSIC 1GP3 A/B - ENSEMBLE PERFORMANCE: MCMASTER PERCUSSION ENSEMBLE**

**Prerequisite(s):** Successful audition required. Auditions are held in the first week of classes in September. Students in Level II and above may have the antirequisite for this course waived if they complete a successful audition. Only 12 units of Ensemble Performance courses will count towards a Music degree.

**Antirequisite(s):** MUSIC 1GB3 A/B, 1GC3 A/B, 1GF3 A/B, 1GJ3 A/B, 1GR3 A/B or 1GW3 A/B

### **MUSIC 1GR3 A/B - ENSEMBLE PERFORMANCE: MCMASTER CHAMBER ORCHESTRA**

**Prerequisite(s):** Successful audition required. Auditions are held in the first week of classes in September. Students in Level II and above may have the antirequisite for this course waived if they complete a successful audition. Only 12 units of Ensemble Performance courses will count towards a Music degree.

**Antirequisite(s):** MUSIC 1GB3 A/B, 1GC3 A/B, 1GF3 A/B, 1GJ3 A/B, 1GP3 A/B, or 1GR3 A/B

### **MUSIC 1GW3 A/B - ENSEMBLE PERFORMANCE: MCMASTER CANTEMUS VOCAL ENSEMBLE**

**Prerequisite(s):** Successful audition required. Auditions are held in the first week of classes in September. Students in Level II and above may have the antirequisite for this course waived if they complete a successful audition. Only 12 units of Ensemble Performance courses will count towards a Music degree.

**Antirequisite(s):** MUSIC 1GB3 A/B, MUSIC 1GC3 A/B, MUSIC 1GF3 A/B, MUSIC 1GJ3 A/B, MUSIC 1GP3 A/B, or MUSIC 1GR3 A/B  
This choir ensemble will include soprano and alto voices.

### **MUSIC 1MH3 - MUSIC HISTORY I: MUSIC AND CULTURE**

An introduction to thinking, researching and writing about music as a product of the culture in which it is practiced. Both Western and non-Western examples will be considered.

Three lectures; one term

**Prerequisite(s):** Registration in a Music program

**Antirequisite(s):** Music 1B03 and 1BB3

### **MUSIC 2A03 - MUSIC OF THE WORLD'S CULTURES**

A survey of music traditions of non-European cultures, e.g., far Eastern, Indian, African.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** CMST 2Q03

### **MUSIC 2B03 - MUSIC HISTORY: MUSIC IN WESTERN CULTURE FROM C. 1750 TO THE PRESENT**

A survey of Western music from c. 1750 to the present. Includes consideration of performance practices, influences of the other arts and socio-political developments. In addition, musicological research and writing skills will be cultivated.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of a Music program

### **MUSIC 2CA3 - THEORY AND ANALYSIS II**

Continuation of Music 1CB3. Chromatic Harmony and the completed major minor system.

Three lectures; one term

**Prerequisite(s):** Music 1CC3 or 1CB3. Registration in a Music program; or registration in Honours B.Sc. (Music Cognition Specialization) or Honours B.A. (Music Cognition Specialization), or permission of the instructor if space permits.

**Antirequisite(s):** Music 2CC3 A/B

### **MUSIC 2CB3 - THEORY AND ANALYSIS III**

Continuation of Music 2CA3. Chromatic Harmony and the completed major minor system.

Three lectures; one term

**Prerequisite(s):** Music 2CA3 and registration in a Music program; or registration in Honours B.Sc. (Music Cognition Specialization) or Honours B.A. (Music Cognition Specialization), or permission of the instructor if space permits.

### **MUSIC 2DA3 - PRACTICAL MUSICIANSHIP III**

Continuation of MUSIC 1DB3. Sight-singing, dictation, and keyboard harmony. One lecture, one lab, one tutorial; one term

**Prerequisite(s):** MUSIC 1DB3 and registration in a Music program or permission of the instructor if space permits.

**Antirequisite(s):** MUSIC 2D03 A/B

### **MUSIC 2E06 A/B - SOLO PERFORMANCE**

*A continuation of MUSIC 1E06 A/B on the same instrument.*

12 one-hour meetings per term; two terms

**Prerequisite(s):** MUSIC 1E06 A/B and registration in Level II of any program in Music

### **MUSIC 2EE6 A/B - SOLO PERFORMANCE**

*A continuation of MUSIC 1EE6 A/B.*

12 one-hour meetings per term; two terms

**Prerequisite(s):** MUSIC 1EE6 A/B

**Antirequisite(s):** MUSIC 2E06 A/B

*Lesson fees are charged to students taking MUSIC 2EE6. Lesson fees must be paid by September 1. Not open to students in any Music program.*

### MUSIC 2F03 - MUSIC FOR FILM AND TELEVISION

An examination of how music functions to help create meanings in film and television programs. Examples will be drawn from throughout the history of film and television.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** CMST 2T03, THTRFLM 2T03

### MUSIC 2GB3 A/B - ENSEMBLE PERFORMANCE: MCMaster CONCERT BAND

**Prerequisite(s):** Registration in Level II or above, MUSIC 1GB3 A/B, and successful audition

*Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

### MUSIC 2GC3 A/B - ENSEMBLE PERFORMANCE: MCMaster UNIVERSITY CHOIR

**Prerequisite(s):** Registration in Level II or above, MUSIC 1GC3 A/B or 1GW3 A/B, and successful audition

*Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

### MUSIC 2GF3 A/B - ENSEMBLE PERFORMANCE: DAVID GERRY FLUTE ENSEMBLE

**Prerequisite(s):** Registration in Level II or above, MUSIC 1GF3 A/B, and successful audition.

*Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

### MUSIC 2GJ3 A/B - ENSEMBLE PERFORMANCE: MCMaster JAZZ BAND

**Prerequisite(s):** Registration in Level II or above, MUSIC 1GJ3 A/B, and successful audition

*Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

### MUSIC 2GP3 A/B - ENSEMBLE PERFORMANCE: MCMaster PERCUSSION ENSEMBLE

**Prerequisite(s):** Registration in Level II or above, MUSIC 1GP3 A/B, and successful audition

*Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

### MUSIC 2GR3 A/B - ENSEMBLE PERFORMANCE: MCMaster CHAMBER ORCHESTRA

**Prerequisite(s):** Registration in Level II or above, MUSIC 1GR3 A/B, and successful audition

*Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

### MUSIC 2GW3 A/B - ENSEMBLE PERFORMANCE: MCMaster CANTEMUS VOCAL ENSEMBLE

**Prerequisite(s):** Registration in Level II or above, MUSIC 1GW3 A/B or MUSIC 1GC3 A/B, and successful audition.

*Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

This choir ensemble will include soprano and alto voices.

### MUSIC 2II3 - POPULAR MUSIC IN NORTH AMERICA AND THE UNITED KINGDOM: POST-WORLD WAR II

Popular music, its social meanings, and media and technology interactions, from rock-and-roll to now. Topics include rhythm and blues (Chuck Berry), pop (Madonna), metal (Led Zeppelin.)

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** CMST 2R03

### MUSIC 2MC3 - PSYCHOLOGY OF MUSIC

Overview of the psychological roots of the musical experience. Sample topics to include the perception of pitch, timbre, meter, and tonality as well as the communication of emotion. There will be a particular emphasis on the practical implications of basic principles of perception and cognition, with a focus on improving the quality and efficiency of music performance, learning, and education.

Three lectures, one term

**Prerequisite(s):** Registration in Level II or above of a Music program

**Antirequisite(s):** MUSICCOG 2MA3, 2MP3, PSYCH 2MA3, 2MP3

### MUSIC 2MH3 - MUSIC HISTORY: MUSIC IN WESTERN CULTURE FROM ANTIQUITY TO C. 1750

An examination, through selected examples, of Western musical practice and its contexts, from Antiquity to approximately 1750. A significant portion of the course will be devoted to the cultivation of writing and research skills.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above of a Music program

**Antirequisite(s):** Music 2BB3

### MUSIC 2MT3 - INTRODUCTION TO THE PRACTICE OF MUSIC THERAPY

An introduction to the practice of music therapy, with an emphasis on the diversity of music therapy applications such as: bio-medical, psychoanalytical, behavioural and rehabilitation.

Three hours (lecture, web module); one term

**Prerequisite(s):** Registration in Level II or above

### MUSIC 2MU3 - INTRODUCTION TO MUSIC THERAPY RESEARCH

Current research papers will be explored in the fields of education, rehabilitation, neurology and mental health.

Three hours (lecture, web module); one term

**Prerequisite(s):** Registration in Level II or above. Completion of MUSIC 2MT3 is strongly recommended, but not required.

**Antirequisite(s):** MUSIC 3MT3

### MUSIC 2TT3 - BROADWAY AND THE POPULAR SONG

An historical examination of the development of English-language musical theatre in the twentieth century. Attention will be paid to the history of American popular song and its impact on the genre.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** THTRFLM 2TT3

### MUSIC 2U03 - JAZZ

An historical survey of jazz, focusing on selected performers and arrangers.

Three hours; one term



**Prerequisite(s):** Registration in Level II or above

### MUSIC 3AA3 - ELEMENTARY MUSIC EDUCATION

A survey of elementary music education methods such as those of Kodály, Orff and Suzuki. Students in this course will be expected to read music at a basic level.

Three lectures; one term

**Prerequisite(s):** 18 units of Music

### MUSIC 3CM3 - MODAL COUNTERPOINT

The writing and analysis of modal counterpoint in the style of the late renaissance. Includes study of music by composers such as Palestrina and Lasso.

Seminar (two hours); one term

**Prerequisite(s):** MUSIC 2CB3 or MUSIC 2CC3 A/B and registration in Honours Music

**Antirequisite(s):** MUSIC 2C03

*Offered in alternate years.*

### MUSIC 3CT3 - TONAL COUNTERPOINT

The writing and analysis of tonal counterpoint in Baroque style. Includes study of music by major composers of the 17th and early 18th centuries.

Seminar (two hours); one term

**Prerequisite(s):** MUSIC 2CB3 or 2CC3 A/B and registration in Honours Music

**Antirequisite(s):** MUSIC 3C03

*Offered in alternate years.*

### MUSIC 3E03 - SOLO PERFORMANCE

The technique and repertoire of any orchestral instrument, piano, organ, harpsichord, voice, recorder, saxophone or guitar.

12 one-hour meetings; one term

**Prerequisite(s):** MUSIC 2E06 A/B on the same instrument and registration in a program in Music

**Antirequisite(s):** MUSIC 3E06 A/B

### MUSIC 3E06 A/B - SOLO PERFORMANCE

*A continuation of MUSIC 2E06 A/B on the same instrument.*

12 one-hour meetings per term; two terms

**Prerequisite(s):** MUSIC 2E06 A/B and registration in a program in Music

**Antirequisite(s):** MUSIC 3E03

### MUSIC 3EE3 - SOLO PERFORMANCE

The technique and repertoire of any orchestral instrument, piano, organ, harpsichord, voice, recorder, saxophone or guitar.

12 one-hour meetings; one term

**Prerequisite(s):** MUSIC 2EE6 A/B

**Antirequisite(s):** MUSIC 3E03, 3EE6 A/B

*Lesson fees are charged to students taking MUSIC 3EE3. Lesson fees must be paid by September 1 for Term 1 and by January 1 for Term 2. Not open to students in any Music Program.*

### MUSIC 3EE6 A/B - SOLO PERFORMANCE

*A continuation of MUSIC 2EE6 A/B.*

12 one-hour meetings per term; two terms

**Prerequisite(s):** MUSIC 2EE6 A/B

**Antirequisite(s):** MUSIC 3EE3, 3E03, 3E06 A/B

*Lesson fees are charged to students taking MUSIC 3EE6. Lesson fees must be*

*paid by September 1. Not open to students in any Music Program.*

### MUSIC 3GA3 A/B - ENSEMBLE PERFORMANCE: ACCOMPANYING

Accompanying a student in a solo performance course. Weekly attendance at the soloist's lesson is required.

**Prerequisite(s):** Registration in Level III or IV of a Music program and permission of the School of the Arts

*Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

### MUSIC 3GB3 A/B - ENSEMBLE PERFORMANCE: MCMaster CONCERT BAND

**Prerequisite(s):** MUSIC 2GB3 A/B and successful audition

*Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

### MUSIC 3GC3 A/B - ENSEMBLE PERFORMANCE: MCMaster UNIVERSITY CHOIR

**Prerequisite(s):** MUSIC 2GC3 A/B or 2GW3 A/B, and successful audition

*Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

### MUSIC 3GF3 A/B - ENSEMBLE PERFORMANCE: DAVID GERRY FLUTE ENSEMBLE

**Prerequisite(s):** MUSIC 2GF3 A/B, and successful audition.

*Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

### MUSIC 3GJ3 A/B - ENSEMBLE PERFORMANCE: MCMaster JAZZ BAND

**Prerequisite(s):** MUSIC 2GJ3 A/B and successful audition

*Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

### MUSIC 3GP3 A/B - ENSEMBLE PERFORMANCE: MCMaster PERCUSSION ENSEMBLE

**Prerequisite(s):** MUSIC 2GP3 A/B and successful audition

*Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

### MUSIC 3GR3 A/B - ENSEMBLE PERFORMANCE: MCMaster CHAMBER ORCHESTRA

**Prerequisite(s):** MUSIC 2GR3 A/B, and successful audition.

*Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

### MUSIC 3GW3 A/B - ENSEMBLE PERFORMANCE: MCMaster CANTEMUS VOCAL ENSEMBLE

**Prerequisite(s):** MUSIC 2GW3 A/B or MUSIC 2GC3 A/B, and successful audition.

*Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

*This choir ensemble will include soprano and alto voices.*

### MUSIC 3H03 - ANALYSIS

Techniques of analysis applied to selected works of the 20th century. Seminar (two hours); one term

**Prerequisite(s):** MUSIC 2CB3 or 2CC3 A/B and 2H03, and registration in Honours Music

*Offered in alternate years.*

### MUSIC 3J03 - ORCHESTRATION AND ARRANGING

A study of the orchestral/band instruments; scoring of music for various ensembles.

Three lectures; one term

**Prerequisite(s):** MUSIC 2CB3 or 2CC3 A/B and MUSIC 2H03, and registration in a Music program

*Offered in alternate years.*

### MUSIC 3JJ3 - TOPICS IN MUSIC HISTORY: MUSIC BEFORE C. 1750

Advanced study of selected music prior to c. 1750 in its historical, socio-political and artistic contexts. Possible topics include: medieval music, Renaissance music, the music of J.S. Bach etc.

Three hours; one term

**Prerequisite(s):** Registration in Level III or IV of an Honours Music program

**Antirequisite(s):** Music 3Y03

Music 3JJ3 may be repeated, if on a different topic, to a total of six units.

Alternates with MUSIC 3KK3.

### MUSIC 3K03 - BRASS METHODS

Basic techniques of playing brass instruments. Brass literature for various educational levels. The instruments studied differ from those studied in MUSIC 4K03.

Two lectures, one lab; one term

**Prerequisite(s):** Registration in Honours Music, or permission of the department

Offered on rotational basis

### MUSIC 3KK3 - TOPICS IN MUSIC HISTORY: MUSIC FROM C. 1750-C. 1900

Advanced study of selected music in its historical, socio-political and artistic contexts. Possible topics include: Mozart's operas, nineteenth-century piano music, Viennese Classicism, Lieder, etc.

Three hours; one term

**Prerequisite(s):** Registration in Level III or IV of an Honours Music program

**Antirequisite(s):** MUSIC 3YY3

Music 3KK3 may be repeated, if on a different topic, to a total of six units.

Alternates with MUSIC 3JJ3.

### MUSIC 3L03 - WOODWIND METHODS

Basic techniques of playing woodwind instruments. Woodwind literature for various educational levels. The instruments studied differ from those studied in MUSIC 4L03.

Two lectures, one lab; one term

**Prerequisite(s):** Registration in Honours Music, or permission of the department

Offered on rotational basis

### MUSIC 3M03 A/B - STRING METHODS

Basic techniques of playing string instruments. String literature for various educational levels. The instruments studied differ from those studied in MUSIC 4M03 A/B.

Two lectures, term 1; one lecture, term 2; two terms

**Prerequisite(s):** Registration in Honours Music, or permission of the department

Offered on rotational basis

### MUSIC 3N03 - VOCAL METHODS

The fundamentals of singing, including breath control, tone production, diction, and repertoire are introduced in a group setting. Solo and small ensemble performing assignments are made according to individual vocal need and level of ability.

Two lectures, one lab; one term

**Prerequisite(s):** Registration in Honours Music, or permission of the department

Offered on rotational basis

### MUSIC 3O03 - CONDUCTING

Fundamental conducting techniques applied to works selected from the standard repertoire.

Three lectures; one term

**Prerequisite(s):** MUSIC 2CB3, 2CC3 A/B or 2H03 and registration in Honours Music

### MUSIC 3P03 - PERCUSSION METHODS

Basic techniques of playing percussion instruments. Percussion literature for various educational levels.

Two lectures, one lab; one term

**Prerequisite(s):** Registration in Honours Music, or permission of the department

Offered on rotational basis

### MUSIC 3SS3 - SPECIAL STUDIES IN CHAMBER MUSIC OR ACCOMPANYING I

Advanced supervised studies in chamber music performance or vocal or instrumental accompanying.

Times to be arranged between the students and instructor; one term

**Prerequisite(s):** A grade of at least A- in MUSIC 2E06 A/B or MUSIC 2EE6 A/B; and registration in Level III or IV of a Music program; and permission of the School of the Arts. Students requesting this course must submit a written proposal to the School of the Arts by April 15. This course is primarily for students pursuing the Diploma in Music Performance.

**Antirequisite(s):** MUSIC 3S03

*This course cannot be repeated.*

*Students taking MUSIC 3SS3 must pay additional lesson fees to the School of the Arts by September 1 for Term 1 and by January 1 for Term 2.*

### MUSIC 3V03 - FOUNDATIONS OF MUSIC EDUCATION

A study of the philosophical, psychological and sociological foundations of music education, leading to the formation of a personal philosophy of music education.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of an Honours Music program

*Offered in alternate years.*

### MUSIC 3X03 - INDEPENDENT STUDY

Supervised study in any area offered and approved by the School of the Arts. Times to be arranged between the student and instructor; one term

**Prerequisite(s):** Registration in Level III or IV of an Honours Music program and permission of the School of the Arts. Students requesting this course must submit a written proposal to the School of the Arts by April 15th.

### MUSIC 4C03 - ADVANCED STUDIES IN HARMONY AND COUNTERPOINT

Advanced harmonic and/or contrapuntal study focusing on a post-Baroque style or genre selected by the instructor. Possible topics include: sonatas, songs, jazz arranging and scoring.

Seminar (two hours); one term

**Prerequisite(s):** MUSIC 2CB3 or 2CC3 A/B and registration in Honours Music Offered in alternate years.

### MUSIC 4E03 - SOLO PERFORMANCE

*A continuation of MUSIC 3E03 or MUSIC 3E06 A/B on the same instrument.*

12 one-hour meetings; one term

**Prerequisite(s):** MUSIC 3E03 or 3E06 A/B; and registration in a program in Music

**Antirequisite(s):** MUSIC 4E06 A/B, 4E09 A/B

### MUSIC 4E06 A/B - SOLO PERFORMANCE

*A continuation of MUSIC 3E03 or 3E06 A/B on the same instrument.*

12 one-hour meetings per term; two terms

**Prerequisite(s):** MUSIC 3E03 or 3E06 A/B; and registration in a Music Program

**Antirequisite(s):** MUSIC 4E03, 4E09 A/B

### MUSIC 4E09 A/B - SOLO PERFORMANCE, DIPLOMA

*A continuation of MUSIC 3E06 A/B on the same instrument.*

Advanced technique and repertoire, leading to a final examination in a recital presentation of approximately forty minutes in duration. This course is for students who have demonstrated excellence in musical performance. May not be used for degree credit.

Individual instruction; two terms

**Prerequisite(s):** MUSIC 3E06 A/B or 3EE6 A/B with a grade of at least A-; a Grade Point Average of at least 8.0; registration in a program in Music, and permission of the School of the Arts

**Antirequisite(s):** MUSIC 4E03, 4E06 A/B or 4EE6 A/B

*Open only to students pursuing the Diploma in Music Performance. May not be used for degree credit. Students requesting this course must apply in writing to the School of the Arts by April 15.*

### MUSIC 4EE3 - SOLO PERFORMANCE

*A continuation of MUSIC 3EE3 or 3EE6 A/B.*

12 one-hour meetings; one term

**Prerequisite(s):** MUSIC 3EE3 or 3EE6 A/B

**Antirequisite(s):** MUSIC 4E03, 4E09 A/B, 4EE6 A/B

*Lesson fees are charged to students taking MUSIC 4EE3. Lesson fees must be paid by September 1 for Term One and by January 1 for Term Two. Not open to students in any Music Program.*

### MUSIC 4EE6 A/B - SOLO PERFORMANCE

*A continuation of MUSIC 3EE3 or 3EE6 A/B.*

12 one-hour meetings per term; two terms

**Prerequisite(s):** MUSIC 3EE3 or 3EE6 A/B

**Antirequisite(s):** MUSIC 4E06 A/B, 4E09 A/B, 4EE3

*Lesson fees are charged to students taking MUSIC 4EE6. Lesson fees must be paid by September 1. Not open to students in any Music Program.*

### MUSIC 4EE9 A/B - SOLO PERFORMANCE, DIPLOMA

*A continuation of MUSIC 3EE6 A/B on the same instrument.*

Advanced technique and repertoire, leading to a final examination in a recital presentation of approximately forty minutes in duration. This course is for students who have demonstrated excellence in musical performance. May not be used for degree credit.

Individual instruction; two terms

**Prerequisite(s):** MUSIC 3EE6 A/B with a grade of at least A-; a Grade Point Average of at least 8.0; and permission of the School of the Arts

**Antirequisite(s):** MUSIC 4E03, 4E06 A/B, 4E09, 4EE3 or 4EE6 A/B

*Open only to students pursuing the Diploma in Music Performance. May not be used for degree credit. Students requesting this course must apply in writing to the School of the Arts by April 15*

*Students taking MUSIC 4EE9 A/B must pay additional lesson fees to the School of the Arts by September 1.*

### MUSIC 4GA3 A/B - ENSEMBLE PERFORMANCE: ACCOMPANYING

Accompanying a student in a solo performance course. Weekly attendance at the soloist's lesson is required.

**Prerequisite(s):** MUSIC 3GA3 A/B; registration in Level III or IV of a Music program; and permission of the School of the Arts

*Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

### MUSIC 4GB3 A/B - ENSEMBLE PERFORMANCE: MCMaster CONCERT BAND

**Prerequisite(s):** MUSIC 3GB3 A/B and successful audition

*Those students registered in the diploma program must, where possible, perform in this course in the same medium as they do in their other diploma courses. Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

### MUSIC 4GC3 A/B - ENSEMBLE PERFORMANCE: MCMaster UNIVERSITY CHOIR

**Prerequisite(s):** MUSIC 3GC3 A/B and successful audition

*Those students registered in the diploma program must, where possible, perform in this course in the same medium as they do in their other diploma courses. Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

### MUSIC 4GF3 A/B - ENSEMBLE PERFORMANCE: DAVID GERRY FLUTE ENSEMBLE

**Prerequisite(s):** MUSIC 3GF3 A/B and successful audition

*Those students registered in the diploma program must, where possible, perform in this course in the same medium as they do in their other diploma courses. Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

### MUSIC 4GJ3 A/B - ENSEMBLE PERFORMANCE: MCMaster JAZZ BAND

**Prerequisite(s):** MUSIC 3GJ3 A/B and successful audition

*Those students registered in the diploma program must, where possible, perform in this course in the same medium as they do in their other diploma courses. Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

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### **MUSIC 4GP3 A/B - ENSEMBLE PERFORMANCE: MCMaster Percussion Ensemble**

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**Prerequisite(s):** MUSIC 3GP3 A/B and successful audition

*Those students registered in the diploma program must, where possible, perform in this course in the same medium as they do in their other diploma courses. Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

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### **MUSIC 4GR3 A/B - ENSEMBLE PERFORMANCE: MCMaster Chamber Orchestra**

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**Prerequisite(s):** MUSIC 3GR3 A/B and successful audition

*Those students registered in the diploma program must, where possible, perform in this course in the same medium as they do in their other diploma courses. Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree.*

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### **MUSIC 4GW3 A/B - ENSEMBLE PERFORMANCE: MCMaster Cantemus Vocal Ensemble**

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**Prerequisite(s):** MUSIC 3GW3 A/B and successful audition

Those students registered in the diploma program must, where possible, perform in this course in the same medium as they do in their other diploma courses. Auditions are held in the first week of classes in September. Only 12 units of Ensemble Performance courses will count towards a Music degree. This choir ensemble will include soprano and alto voices.

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### **MUSIC 4H03 - ADVANCED STUDIES IN ANALYSIS**

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Advanced studies in analysis. Possible topics include: Schenkerian analysis, song cycles of Schubert, advanced set theory.

Seminar (two hours); one term

**Prerequisite(s):** MUSIC 2CB3 or 2CC3 A/B, MUSIC 3H03 and registration in Honours Music

*Offered in alternate years.*

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### **MUSIC 4K03 - BRASS METHODS**

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A study of the basic techniques of playing brass instruments. Brass literature for various educational levels. The instruments studied differ from those studied in MUSIC 3K03.

Two lectures, one lab; one term

**Prerequisite(s):** Registration in Honours Music, or permission of the department

Offered on rotational basis

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### **MUSIC 4L03 - WOODWIND METHODS**

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A study of the basic techniques of playing woodwind instruments. Woodwind literature for various educational levels. The instruments studied differ from those studied in MUSIC 3L03.

Two lectures, one lab; one term

**Prerequisite(s):** Registration in Honours Music, or permission of the department

Offered on rotational basis

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### **MUSIC 4M03 A/B - STRING METHODS**

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A study of the basic techniques of playing string instruments. String literature for various educational levels. The instruments studied differ from those studied in MUSIC 3M03 A/B.

Two lectures, term 1; one lecture, term 2; two terms

**Prerequisite(s):** Registration in Honours Music, or permission of the department

Offered on rotational basis

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### **MUSIC 4N03 - CHORAL METHODS**

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Basic techniques of how to teach singing are presented as well as choral rehearsal techniques and choral literature for K-12 and community choirs.

Two lectures, one lab; one term

**Prerequisite(s):** Registration in Honours Music, or permission of the department

Offered on rotational basis

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### **MUSIC 4OC3 - ADVANCED CONDUCTING: CHORAL**

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Rehearsal and conducting techniques, including warm-up exercises, tone, intonation, balance, attack, sustain, cueing, repertoire, score reading, and score preparation.

Three lectures; one term

**Prerequisite(s):** MUSIC 3O03 and registration in Honours Music  
*Alternates with MUSIC 4O13.*

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### **MUSIC 4O13 - ADVANCED CONDUCTING: INSTRUMENTAL**

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*A continuation of MUSIC 3O03.*

Refinement and development of conducting techniques. Exploration of in-depth score preparation, rehearsal techniques, odd and shifting meters, subdivision.

Three lectures; one term

**Prerequisite(s):** MUSIC 3O03 and registration in Honours Music  
*Alternates with MUSIC 4OC3.*

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### **MUSIC 4SS3 - SPECIAL STUDIES IN CHAMBER MUSIC OR ACCOMPANYING II**

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Advanced supervised studies in chamber music performance or instrumental accompanying.

Times to be arranged between the students and instructor; one term

**Prerequisite(s):** MUSIC 3SS3; and registration in Level III or IV of a Music program, and permission of the School of the Arts. Students requesting this course must submit a written proposal to the School of the Arts by April 15th. This course is primarily for students pursuing the Diploma in Music Performance.

*This course cannot be repeated.*

*Students taking MUSIC 4SS3 must pay additional lesson fees to the School of the Arts by September 1 for Term One and by January 1 for Term Two.*

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### **MUSIC 4V03 - CURRENT ISSUES IN MUSIC EDUCATION**

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An investigation of new political initiatives, philosophical views, developing research, and curricular and administrative changes that are currently influencing the practice of music in the schools.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of an Honours program in Music  
*Alternates with MUSIC 3V03.*



### MUSIC 4X03 - ADVANCED INDEPENDENT STUDY

Advanced supervised study in any area offered and approved by the School of the Arts.

Times to be arranged between the student and instructor; one term

**Prerequisite(s):** Registration in Level III or IV of an Honours Music program and permission of the School of the Arts. Students requesting this course must submit a written proposal to the School of the Arts by April 15th.

### MUSIC 4Y03 - TOPICS IN MUSIC HISTORY: ADVANCED MUSICOLOGY SEMINAR

An intensive examination of a composer, period, genre, or issue from the style areas of 'classical' music, film music, popular music, or jazz.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of an Honours Music program *MUSIC 4Y03 may be repeated, if on a different topic, to a total of six units.*

### MUSIC 4Z03 - COMPOSITION

The composition of various instrumental or vocal works.

Times to be arranged between the student and instructor; one term

**Prerequisite(s):** Registration in Level III or IV of an Honours Music program and a grade of at least B+ in MUSIC 2CC3 A/B or MUSIC 2CB3; or permission of the instructor.

### MUSIC 4ZZ3 - ADVANCED COMPOSITION

The composition of various instrumental or vocal works.

Times to be arranged between the student and instructor; one term

**Prerequisite(s):** MUSIC 4Z03; and registration in an Honours Music program; and permission of the instructor

## Music Cognition

Courses in Music Cognition are administered by the School of the Arts and the Department of Psychology, Neuroscience & Behaviour.

Togo Salmon Hall, Room 414, ext. 27671

<http://sota.humanities.mcmaster.ca/>

#### Courses

*If no prerequisite is listed, the course is open.*

### MUSICCOG 2MP3 - INTRODUCTION TO MUSIC COGNITION

This course presents an overview of music cognition, covering such topics as musical acoustics, perception of melody, harmony and rhythm, social and emotional responses to music, and the evolution of music. In addition a basic introduction to music theory is included.

Three lectures; one term

**Prerequisite(s):** One of PSYCH 1F03, 1X03, 1XX3 and registration in Level II or above; or registration in Level II or above of an Arts & Science program, a Bachelor of Health Sciences (Honours) program, or an Honours Music Cognition program (B.A., B.Arts&Sc., B.Mus., B.Sc.); or ISCI 1A24 A/B; or permission of the instructor

**Antirequisite(s):** MUSIC 2MC3, MUSICCOG 2MA3, PSYCH 2MA3

**Cross-list(s):** PSYCH 2MP3

*This course is administered by the School of the Arts.*

### MUSICCOG 3QQ3 A/B S - EXPERIMENTAL LABORATORY IN MUSIC COGNITION I

Students will be trained in the process of designing experiments, collecting data, performing statistical analyses and reporting on an experiment addressing an aspect of music perception and cognition. This course is

intended for students with background in Music Cognition (such as MUSICCOG 2MA3, 2MP3 or 2MC3).

Two hours plus lab work; one term, or, one hour plus lab work; two terms

**Prerequisite(s):** Permission of the instructor

### MUSICCOG 3SP3 - THE SCIENCE OF PERFORMANCE

This course explores empirical, methodological and cultural aspects of the study of performance, with a principal focus on the performing arts (music, dance, and theatre).

Three lectures; one term

**Prerequisite(s):** MUSICCOG 2MP3(or MUSICCOG 2MA3) or PSYCH 2MP3(or PSYCH 2MA3); and registration in a Music Cognition program (B.A., B.Arts.Sc., B.Mus. B.Sc.) or PNB 2XA3or PSYCH 2E03 and registration in an Honours program, or ISCI2A18; or permission of the instructor. Completion of one of ARTSSCI 2R03, HTHSCI 2A03, LINGUIST 2DD3, PNB 2XE3, 3XE3, SOCSCI 2J03, STATS 2B03, 2D03is recommended.

**Prerequisite(s) (EFFECTIVE 2019-2020):** PNB 2XA3or PSYCH 2H03; and one of ARTSSCI 2R03, HTHSCI 2A03, LINGUIST 2DD3, PNB 2XE3, 3XE3, SOCSCI 2J03, STATS 2B03, 2D03; and registration in Level III or IV of an Honours program; or ISCI 2A18 A/B. PSYCH/MUSICCOG 2MP3is recommended.

**Antirequisite(s):** MUSICCOG 3MP3, 3MB3, PSYCH 3MP3, 3MB3

**Cross-list(s):** PSYCH 3SP3

*This course is administered by the Department of Psychology, Neuroscience, and Behaviour.*

### MUSICCOG 4D06 A/B - THESIS IN MUSIC COGNITION

Students conduct an individual research project under the supervision of a faculty member in Psychology or Music.

**Prerequisite(s):** Registration in Level IV of Honours Music or any Music Cognition program (B.A., B.Mus., B.Sc.) with a Grade Point Average of at least 8.0 and permission of the instructor

### MUSICCOG 4MP3 - NEUROSCIENCE OF MUSIC

This seminar explores theories on how and why music evolved, and how the perception, development, performance and emotional experience of music are mediated by the brain. Primary source materials are discussed in class and experimental designs developed to address critical questions.

Three hours (lecture/seminar); one term

**Prerequisite(s):** MUSICCOG 2MP3 (or MUSICCOG 2MA3) or PSYCH 2MP3 (or PSYCH 2MA3) or PSYCH 3H03; and registration in a Music Cognition program (B.A., B.Arts.Sc., B.Mus., B.Sc.), or PNB 2XA3 or PSYCH 2E03 and registration in an Honours program, or ISCI 2A18 A/B; or permission of the instructor. PSYCH 2E03 is recommended.

**Cross-list(s):** PSYCH 4MP3

*This course is administered by the Department of Psychology, Neuroscience & Behaviour.*

### MUSICCOG 4QQ3 A/B S - EXPERIMENTAL LABORATORY IN MUSIC COGNITION II

Students will receive advanced training in the process of designing experiments, collecting data, performing statistical analyses and reporting on an experiment addressing an aspect of music perception and cognition.

Two hours plus lab work; one term, or, one hour plus lab work; two terms

**Prerequisite(s):** MUSICCOG 3QQ3 A/B S and permission of the instructor

## Neuroscience

Courses in NEUROSCI are administered by the Department of Psychology, Neuroscience & Behaviour.

Psychology Building, Room 102, ext. 23000  
<http://www.science.mcmaster.ca/pnb/>

### Courses

*If no prerequisite is listed, the course is open.*

See also courses in *PSYCH* and *PNB*.

### NEUROSCI 2BB3 A/B S - RESEARCH PRACTICUM IN CELLULAR/MOLECULAR NEUROSCIENCE

Independent research practicum in cellular/molecular neuroscience, conducted in a faculty member's laboratory that may be extended over both terms.

**Prerequisite(s):** Registration in Level II Honours Neuroscience and permission of faculty supervisor and program director

### NEUROSCI 2CC3 A/B S - RESEARCH PRACTICUM IN SYSTEMS/CIRCUITS NEUROSCIENCE

Independent research practicum in systems/circuits neuroscience, conducted in a faculty member's laboratory that may be extended over both terms.

**Prerequisite(s):** Registration in Level II Honours Neuroscience and permission of faculty supervisor and program director

### NEUROSCI 2DD3 A/B S - RESEARCH PRACTICUM IN BEHAVIOURAL/COGNITIVE NEUROSCIENCE

Independent research practicum in behavioural/cognitive neuroscience, conducted in a faculty member's laboratory that may be extended over both terms.

**Prerequisite(s):** Registration in Level II Honours B.Sc. Neuroscience and permission of Faculty Supervisor and Program Director

### NEUROSCI 2XN0 A/B - NEUROSCIENCE TUTORIAL

Tutorial supplementing the Honours B.Sc. Neuroscience program. Must be completed prior to enrolment in Level III.

*This tutorial is evaluated on a Pass/Fail basis.*

One lecture (one hour); two terms

**Prerequisite(s):** Registration in Level II Honours Neuroscience

### NEUROSCI 3BB3 A/B S - INDIVIDUAL LAB STUDY IN CELLULAR/MOLECULAR NEUROSCIENCE

Independent laboratory project in cellular/molecular neuroscience, conducted in a faculty member's laboratory that may be extended over both terms.

**Prerequisite(s):** Registration in Level III or IV Honours Neuroscience and permission of faculty supervisor and program director

*If NEUROSCI 3BB3 A/B S is taken concurrently with NEUROSCI 4L09 A/B or 4L12 A/B, a different faculty member must supervise each course.*

### NEUROSCI 3CC3 A/B S - INDIVIDUAL LAB STUDY IN SYSTEMS/CIRCUITS NEUROSCIENCE

Independent laboratory project in systems/circuits neuroscience, conducted in a faculty member's laboratory that may be extended over both terms.

**Prerequisite(s):** Registration in Level III or IV Honours Neuroscience and permission of faculty supervisor and program director

*If NEUROSCI 3CC3 A/B S is taken concurrently with or NEUROSCI 4L09 A/B or 4L12 A/B, a different faculty member must supervise each course.*

### NEUROSCI 3DD3 A/B S - INDIVIDUAL LAB STUDY IN BEHAVIOURAL/COGNITIVE NEUROSCIENCE

Independent laboratory project in behavioural/cognitive neuroscience, conducted in a faculty member's laboratory that may be extended over both

terms.

**Prerequisite(s):** Registration in Level III or IV Honours Neuroscience and permission of faculty supervisor and program director

*If NEUROSCI 3DD3 A/B S is taken concurrently with NEUROSCI 4L09 A/B or 4L12 A/B, a different faculty member must supervise each course.*

### NEUROSCI 3E03 - NEUROSCIENCE LAB

Practical techniques in neuroanatomy and neurophysiology, including brightfield and fluorescence microscopy, neuronal visualization via staining, and invertebrate neurophysiological recording.

One lecture, one lab (three hours); one term

**Prerequisite(s):** PNB 2XB3 and registration in Level III or above of Honours Neuroscience

### NEUROSCI 3J03 - VISUAL NEUROSCIENCE

Using human clinical cases, students will explore how genes and the environment affect the cells and circuits of the visual system. Cases will be investigated through the lenses of basic animal research and optometry.

Three lectures; one term

**Prerequisite(s):** One of PNB 2XB3, PSYCH 2E03, ISCI 2A18 A/B, or LIFESCI 2CC3; and registration in Level III or above of an Honours program

**Antirequisite(s):** PSYCH 3J03

### NEUROSCI 3SN3 - NEURAL CIRCUITS

Principles of circuit and systems neuroscience, emphasizing techniques, synaptic function, and neural circuit development, together with skills for thinking and communicating about science.

Three lectures, one tutorial; one term

**Prerequisite(s):** BIOLOGY 2A03, 2B03 and one of LIFESCI 2CC3, PNB 2XB3; or ISCI 2A18 A/B; or BIOLOGY 3P03

### NEUROSCI 4L09 A/B - NEUROSCIENCE THESIS

A research project conducted under the supervision of a faculty member affiliated with the Honours Neuroscience program.

**Prerequisite(s):** Registration in Level IV of Honours Neuroscience with a GPA of at least 8.5 and permission of faculty supervisor and program director

**Antirequisite(s):** BIOLOGY 4C09 A/B S, 4C12 A/B, 4F06 A/B S, NEUROSCI 4L12 A/B, PNB 4D06 A/B, 4D09 A/B, 4DD6 A/B

Cannot be taken concurrently with PNB 4SC6 A/B.

### NEUROSCI 4L12 A/B - NEUROSCIENCE SENIOR THESIS

A research project conducted under the supervision of a faculty member affiliated with the Honours Neuroscience program.

**Prerequisite(s):** Registration in Level IV of Honours Neuroscience with a GPA of at least 9.0 and permission of faculty supervisor and program director

**Antirequisite(s):** BIOLOGY 4C09 A/B S, 4C12 A/B, 4F06 A/B S, NEUROSCI 4L09 A/B, PNB 4D06 A/B, 4D09 A/B, 4DD6 A/B

Cannot be taken concurrently with PNB 4SC6 A/B.

### NEUROSCI 4S03 A/B - NEUROSCIENCE SEMINAR

An advanced seminar focussing on original research articles in cellular/molecular, systems/circuits, and behavioural/cognitive neuroscience.

One seminar (one and one-half hours); two terms

**Prerequisite(s):** NEUROSCI 3E03, 3SN3 and registration in Level IV of Honours Neuroscience program or permission of the instructor

## Nursing

Courses in Nursing are administered by the School of Nursing.  
Health Sciences Centre, Room 2J16, ext. 22407  
<http://www.fhs.mcmaster.ca/nursing/>

### Courses

See also courses in *COLLAB (Nursing Consortium (A) Stream)*.

### NURSING 1F03 - INTRODUCTION TO NURSING AND HEALTH I FOR BASIC STREAM

This introductory course will familiarize students with ways of knowing in nursing. Students will learn self-directed and person-based learning within a problem-based learning approach to facilitate their learning throughout the B.Sc.N. program.

Tutorial (three hours); one term

**Prerequisite(s):** Registration in the B.Sc.N. Basic (A) Stream

**Co-requisite(s):** NURSING 1I02

### NURSING 1G03 - INTRODUCTION TO NURSING AND HEALTH II FOR BASIC STREAM

Students will be introduced to concepts of health and healing and will explore group process theory. They will learn to define clinical questions relevant to nursing and to use evidence-based approach to address these questions.

Tutorial (three hours); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 1F03, 1I02 and registration in the B.Sc.N. Basic (A) Stream

**Co-requisite(s):** NURSING 1J02

### NURSING 1I02 - INTRODUCTION TO NURSING PRACTICE FOR BASIC STREAM

This course introduces students to the scope of professional practice and the meaning of caring in nursing. Students will learn beginning assessment, communication, and intervention skills in the clinical laboratory.

Tutorial and clinical lab (four hours); one term

**Prerequisite(s):** Registration in the B.Sc.N. Basic (A) Stream

**Co-requisite(s):** NURSING 1F03 and WHMIS 1A00

### NURSING 1J02 - PROFESSIONAL NURSING PRACTICE I FOR BASIC STREAM

Students will extend their knowledge of professional practice in the clinical laboratory focusing on healthy adults. Students will apply knowledge of growth and development, professional relationships and narrative enquiry to healthy persons across the lifespan. Tutorial and clinical lab (four hours); one term

**Prerequisite(s):** WHMIS 1A00 and a minimum grade of C- in NURSING 1F03, 1I02 and registration in the B.Sc.N. Basic (A) Stream

**Co-requisite(s):** NURSING 1G03

### NURSING 1K02 A/B - COMMUNITY ENGAGEMENT AND CITIZENSHIP FOR BASIC STREAM

Health and well-being are explored from multiple perspectives. Students will explore professional responsibilities of civic engagement.

32 hours service learning, twelve seminars (one hour each); two terms

**Prerequisite(s):** Registration in the B.Sc.N. Basic (A) Stream

*This course is evaluated on a Pass/Fail basis.*

### NURSING 1RP0 - REINTEGRATION COURSE

The purpose of the reintegration course is to re-familiarize the student with nursing and science

course concepts and refresh their professional practice skills to ensure the students return to practice is safe and successful.

Independent study

**Prerequisite(s):** Registration in the BScN Basic (A) Stream, Accelerated (F) Stream or Post

Diploma R.P.N.(E) Stream.

### NURSING 2A04 - INTRODUCTION TO PROFESSIONAL RN PRACTICE I FOR POST DIPLOMA RPN STREAM

Students are introduced to self-directed, person-based learning in a problem-based learning approach. Role differences between R.P.N. and R.N. are explored. Biological, physical, psychological, social science and nursing theories/ concepts are integrated and applied to health care problems and clinical practice.

Tutorials (three hours); guided self-study (one hour); one term

**Prerequisite(s):** Registration in the B.Sc.N. Post Diploma R.P.N. (E) Stream

**Co-requisite(s):** WHMIS 1A00

### NURSING 2AA3 - PROFESSIONAL RN PRACTICE II FOR POST DIPLOMA RPN STREAM

Theories/concepts from a variety of disciplines are integrated and applied to complex health care scenarios. Nursing concepts related to health and illness across the continuum of individual and family growth and development are examined.

Tutorial (three hours); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 2A04 and registration in the B.Sc.N. Post Diploma R.P.N. (E) Stream

**Antirequisite(s):** NURSING 2AA4

### NURSING 2I04 - INTRODUCTION TO PROFESSIONAL NURSING AND HEALTH FOR ACCELERATED STREAM

Students will be introduced to core concepts related to nursing and health through problem-based tutorials. Biological, physical, psychological, social science and nursing theories/concepts are integrated and applied to health care problems.

Tutorial (four hours); one term

**Prerequisite(s):** Registration in the B.Sc.N. Accelerated (F) Stream

**Co-requisite(s):** NURSING 2PF3 A/B or HTHSCI 2PF3 A/B

### NURSING 2J04 - PROFESSIONAL NURSING PRACTICE II FOR ACCELERATED STREAM

Nursing concepts basic to health and illness are examined across the continuum of individual and family growth and development. Planned and guided experiences are provided in the clinical laboratory and acute care institutions.

Clinical lab and professional practice (12 hours); one term

**Prerequisite(s):** WHMIS 1A00, and minimum grade of C- in NURSING 2U04 and registration in the B.Sc.N. Accelerated (F) Stream

**Co-requisite(s):** NURSING 2V04

*This course is evaluated on a Pass/Fail basis.*

### NURSING 2L03 - PROFESSIONAL NURSING PRACTICE II FOR BASIC STREAM

This course is an applied professional practice course. Students will begin to apply their knowledge and skills to the care of ill clients and families, under supervision. Students will expand their understanding of internal and external influences on the health of individuals and families at the micro and macro

level.

Professional practice and clinical lab (eight hours); one term

**Prerequisite(s):** WHMIS 1A00 and a minimum grade of C- in NURSING 1G03, 1J02, HTHSCI 1H06 A/B, 1LL3 and a Pass in NURSING 1K02 A/B and registration in the B.Sc.N. Basic (A) Stream

**Co-requisite(s):** NURSING 2MM3

*This course is evaluated on a Pass/Fail basis.*

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### NURSING 2MM3 - NURSING CONCEPTS IN HEALTH AND ILLNESS I FOR BASIC STREAM

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This course uses a person-based learning within problem-based approach in which students will expand their knowledge of core nursing concepts and will enhance their ability to critique that knowledge.

Tutorial (three hours); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 1G03, 1J02. HTHSCI 1H06 A/B, 1LL3 and a Pass in NURSING 1K02 A/B and registration in the B.Sc.N. Basic (A) Stream

**Co-requisite(s):** NURSING 2L03

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### NURSING 2NN3 - NURSING CONCEPTS IN HEALTH AND ILLNESS II FOR BASIC STREAM

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An extension of NURSING 2MM3, students will deepen their understanding and application of relevant nursing concepts.

Tutorial (three hours); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 2MM3 and a Pass in NURSING 2L03 and registration in the B.Sc.N. Basic (A) Stream

**Co-requisite(s):** NURSING 2P03, and NURSING 2LA2 A/B or HTHSCI 2LA2 A/B

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### NURSING 2P03 - PROFESSIONAL NURSING PRACTICE III FOR BASIC STREAM

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A continuation of NURSING 2L03 with applied professional practice in institutional settings.

Professional practice and clinical lab (eight hours); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 2MM3 and a Pass in NURSING 2L03 and registration in the B.Sc.N. Basic (A) Stream

**Co-requisite(s):** NURSING 2NN3

*This course is evaluated on a Pass/Fail basis.*

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### NURSING 2U04 - INTRODUCTION TO NURSING PRACTICE I FOR ACCELERATED STREAM

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This course focuses on the acquisition of foundational clinical and reasoning skills. History taking, nurse patient relationship, physical assessment and clinical reasoning are introduced.

Problem-based tutorials and clinical lab (four hours); one term

**Prerequisite(s):** Registration in the B.Sc.N. Accelerated (F) Stream

**Co-requisite(s):** WHMIS 1A00

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### NURSING 2V04 - NURSING CONCEPTS IN HEALTH & ILLNESS FOR ACCELERATED STREAM

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In this people-based learning within problem-based learning course students will apply knowledge of core nursing and interprofessional healthcare content to individuals, families and communities in increasingly complex situations.

Through independent learning and group learning, students will analyze professional practice situations from a variety of perspectives, and apply principles of evidence-based /best practice guidelines in their plan of care.

Tutorial (four hours); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 2I04 and registration in

the B.Sc.N. Accelerated (F) Stream

**Co-requisite(s):** NURSING 2J04

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### NURSING 3A04 - CLINICAL REASONING IN RN PRACTICE FOR POST DIPLOMA RPN STREAM

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This course focuses on the development of clinical reasoning and clinical judgment for RN practice. Clinical assessment and evidence informed decisions making skills are applied to simulated patients, virtual clinical scenarios and clinical simulation experiences.

Seminar activities supported by clinical lab as applicable (four hours); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 2AA3, HTHSCI 2C06, 2RR3, 3C04, Pass in NURSING 3Q03, and registration in the B.Sc.N. Post Diploma R.P.N. (E) Stream

**Antirequisite(s):** NURSING 2T04

**Co-requisite(s):** NURSING 3RS3 or 3RT3

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### NURSING 3Q03 - PROFESSIONAL COMMUNITY NURSING PRACTICE

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A professional practice course in which students learn about community as client by promoting health of communities.

Professional practice (six hours); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 2NN3, HTHSCI 2H03, 2HH3, 2RR3, and a minimum grade of C- in NURSING 2LA2 A/B or HTHSCI 2LA2 A/B and HTHSCI 2S03 and a Pass in NURSING 2K02 A/B, 2P03, and registration in the B.Sc.N. Basic (A) Stream; or HTHSCI 2S03 and registration in the B.Sc.N. Post Diploma R.P.N. (E) Stream; or minimum grade of C- in NURSING 2V04, HTHSCI 2H03, 2HH3, 2RR3, 3C04, and a minimum grade of C- in NURSING 2PF3 A/B or HTHSCI 2PF3 A/B, and a Pass in NURSING 2J04, and registration in the B.Sc.N. Accelerated (F) Stream

**Co-requisite(s):** NURSING 2A04 or 2AA3 or 3SS3 or 3TT3 or 3V03

*This course is evaluated on a Pass/Fail basis.*

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### NURSING 3RS3 - NURSING CONCEPTS IN HEALTH AND ILLNESS III FOR POST DIPLOMA RPN STREAM

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Knowledge of core nursing and interprofessional health care content to individuals, families and communities in increasingly complex situations, analyzing professional practice situations from a variety of perspectives.

Tutorial (three hours); one term

**Prerequisite(s):** minimum grade of C- in NURSING 2AA3, 2RR3, 3Q03, HTHSCI 2C06, 3C04 and registration in the B.Sc.N. Post Diploma R.P.N. (E) Stream

**Co-requisite(s):** NURSING 3PA2 A/B or HTHSCI 3PA2 A/B, and either NURSING 3YR4 or 3Q03 for the B.Sc.N. Post Diploma R.P.N. (E) Stream

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### NURSING 3RT3 - NURSING CONCEPTS IN HEALTH AND ILLNESS IV FOR POST DIPLOMA RPN STREAM

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An extension of NURSING 3RS3, students will expand their knowledge of core nursing and interprofessional health care content to individuals, families and communities in increasingly complex situations, analyzing professional practice situations from a variety of perspectives.

Tutorial (three hours); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 3RS3, and a Pass in NURSING 3Y04 or minimum grade of C- in NURSING 3A04, and registration in the B.Sc.N. Post Diploma R.P.N. (E) Stream

**Co-requisite(s):** NURSING 3PA2 A/B or HTHSCI 3PA2 A/B, and either NURSING 3A04 or 3RY4 for the B.Sc.N. Post Diploma R.P.N. (E) Stream



### NURSING 3RY4 - PROFESSIONAL NURSING PRACTICE V FOR POST DIPLOMA RPN STREAM

This is an applied professional practice course in which students gain confidence in their emerging professional practice through a guided clinical practice in increasingly complex and diverse settings.

Professional practice (twelve hours); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 2AA3, 3QQ3, HTHSCI 3C04, HTHSCI 2C06, 2RR3 and registration in the B.Sc.N. Post Diploma R.P.N. (E) Stream

**Co-requisite(s):** NURSING 3RS3 or NURSING 3RT3 for the B.Sc.N. Post Diploma R.P.N. (E) Stream

*This course is evaluated on a Pass/Fail basis.*

### NURSING 3SS3 - NURSING CONCEPTS IN HEALTH AND ILLNESS III FOR BASIC STREAM

A continuation of NURSING 2NN3, students will apply deepening knowledge of core nursing and interprofessional health care content to individuals, families and communities in increasingly complex situations, analyzing professional practice situations from a variety of perspectives.

Tutorial (three hours); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 2NN3, HTHSCI 2H03, 2HH3, 2RR3, and a minimum grade of C- in NURSING 2LA2 A/B or HTHSCI 2LA2 A/B, and a Pass in NURSING 2K02 A/B, 2P03, and registration in the B.Sc.N. Basic (A) Stream;

**Co-requisite(s):** NURSING 3X04 and either NURSING 3PA2 A/B or HTHSCI 3PA2 A/B for the B.Sc.N. Basic (A) Stream

### NURSING 3TT3 - NURSING CONCEPTS IN HEALTH AND ILLNESS IV FOR BASIC STREAM

An extension of NURSING 3SS3, students will apply deepening knowledge of core nursing and interprofessional health care content to individuals, families and communities in increasingly complex situations, analyzing professional practice situations from a variety of perspectives.

Tutorial (three hours); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 3SS3, and a Pass in NURSING 3X04, and registration in the B.Sc.N. Basic (A) Stream

**Co-requisite(s):** NURSING 3Y04 and either NURSING 3PA2 A/B or HTHSCI 3PA2 A/B for the B.Sc.N. Basic (A) Stream; or either NURSING 3PA2 A/B or HTHSCI 3PA2 A/B, and either NURSING 3QQ3 or 3Y04 for the B.Sc.N. Post Diploma R.P.N. (E) Stream

### NURSING 3V03 - NURSING CONCEPTS IN HEALTH & ILLNESS FOR ACCELERATED STREAM II

An extension of NURSING 2V04, students will apply deepening knowledge of core nursing and inter-professional health care content to individuals, families and communities in increasingly complex situations. Through independent and group learning students will analyze professional practice situations from a variety of perspectives, and apply principles of evidence-based /best practice guidelines in their plan of care.

Tutorial (three hours); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 2V04, HTHSCI 2H03, HTHSCI 2HH3, 2RR3, 3C04 and a minimum grade of C- in NURSING 2PF3 A/B or HTHSCI 2PF3 A/B, and a Pass in NURSING 2J04 and registration in the B.Sc.N. Accelerated (F) Stream

**Antirequisite(s):** NURSING 3SS3, 3TT3

**Co-requisite(s):** NURSING 3ZA3, 3ZB3, 3ZB3, and either NURSING 3PF1 or HTHSCI 3PF1

### NURSING 3X04 - PROFESSIONAL NURSING PRACTICE IV

This is an applied professional practice course in which students gain confidence in their emerging professional practice through a guided clinical practice in increasingly complex and diverse settings.

Professional practice and clinical lab (twelve hours); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 2NN3, HTHSCI 2H03, 2HH3, 2RR3, and a minimum grade of C- in NURSING 2LA2 A/B or 2LA2 A/B, and a Pass in NURSING 2K02 A/B, 2P03, and registration in the B.Sc.N. Basic (A) Stream

**Co-requisite(s):** NURSING 3SS3

*This course is evaluated on a Pass/Fail basis.*

### NURSING 3Y04 - PROFESSIONAL NURSING PRACTICE V

This is an applied professional practice course in which students gain confidence in their emerging professional practice through a guided clinical practice in increasingly complex and diverse settings.

Professional practice (twelve hours); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 3SS3, and a Pass in NURSING 3X04 and registration in the B.Sc.N. Basic (A) Stream

**Co-requisite(s):** NURSING 3TT3 the B.Sc.N. Basic (A) Stream; or NURSING 3SS3

*This course is evaluated on a Pass/Fail basis.*

### NURSING 3ZA3 - PROFESSIONAL NURSING PRACTICE III FOR ACCELERATED STREAM

This is an applied professional practice course in which students gain confidence in their emerging professional practice through a guided clinical practice in increasingly complex and diverse settings.

Professional practice and clinical lab (eighteen hours); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 2V04, HTHSCI 2H03, 2HH3, 2RR3, 3C04 and a minimum grade of C- in NURSING 2PF3 A/B or HTHSCI 2PF3 A/B, and a Pass in NURSING 2J04 and registration in the B.Sc.N. Accelerated (F) Stream

**Antirequisite(s):** NURSING 3X04

**Co-requisite(s):** NURSING 3V03

*This course is evaluated on a Pass/Fail basis.*

### NURSING 3ZB3 - PROFESSIONAL NURSING PRACTICE IV FOR ACCELERATED STREAM

This is an applied professional practice course in which students gain confidence in their emerging professional practice through a guided clinical practice in increasingly complex and diverse settings.

Professional practice and clinical lab (eighteen hours); one term

**Prerequisite(s):** Pass in NURSING 3ZA3 and registration in the B.Sc.N. Accelerated (F) Stream

**Antirequisite(s):** NURSING 3Y04

**Co-requisite(s):** NURSING 3V03

*This course is evaluated on a Pass/Fail basis.*

### NURSING 4DD6 A/B S - ADVANCED LEADERSHIP AND MANAGEMENT

This advanced course builds upon NURSING 4B06 content. It integrates theories and research in leadership and management to enhance the health care provider's knowledge of key issues in today's workplace.

Tutorial or equivalent (four hours), independent study in an organization (six hours); one term

**Prerequisite(s):** NURSING 4B06 A/B S

**Antirequisite(s):** HTHSCI 4DD6 A/B S

### NURSING 4FF3 A/B S - INTEGRATIVE LEADERSHIP PROJECT

Students integrate learning and demonstrate a leadership role in addressing a real health care issue. Students work with both a tutor and a health care leader to address a mutually agreed upon leadership issue in the workplace.

Seminar and clinical lab (three hours); one term

**Prerequisite(s):** NURSING 4B06 A/B S, 4DD6 A/B S, 4I03 A/B S, 4HH3 A/B S, 4Z03 A/B S

**Antirequisite(s):** HTHSCI 4FF3

### NURSING 4H03 - INTRODUCTION TO CONCEPTS IN GLOBAL HEALTH

An introduction to the determinants of inequalities in the health of select populations in Canadian and international contexts as viewed through the lenses of historical development, political economy and medical anthropology.

Lecture/seminar (three hours); one term

**Prerequisite(s):** HTHSCI 2RR3; and registration in Level III or above in any Stream of the B.Sc.N. Program or permission of the instructor

**Antirequisite(s):** COLLAB 4H03, HTHSCI 4H03

### NURSING 4HH3 A/B S - QUALITY MANAGEMENT

This course focuses on the role of leadership in quality management in health care organizations. Theories, concepts and best practices are utilized to examine issues in the health care work environments. Concepts studied include patient safety, safety culture, benchmarks and scorecards, program evaluation and risk/utilization management.

Lecture/seminar (three hours); one term

**Prerequisite(s):** Registered Nurse or health care professional and permission of the instructor

**Antirequisite(s):** HTHSCI 4HH3 A/B S

### NURSING 4I03 A/B S - LEADING INTERPROFESSIONAL TEAMS

This course studies types and structures of interprofessional teams in health care organizations. Theories and concepts related to leadership, communication and health systems are applied in the current work environment.

Problem-based tutorial or equivalent (three hours); one term

**Prerequisite(s):** Registered Nurse or health care professional and permission of the instructor

**Antirequisite(s):** HTHSCI 4I03 A/B S

### NURSING 4J07 - PROFESSIONAL NURSING PRACTICE VI

This course focuses on the application of theory and concepts to clinical practice, including the introduction to the leadership role in patient care. Students are individually placed in a variety of health-care settings.

Professional practice (24 hours per week); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 3TT3, HTHSCI 2S03, 3BB3, and a minimum grade of C- in NURSING 3PA2 A/B or HTHSCI 3PA2 A/B, and a Pass in NURSING 3QQ3, 3Y04, and registration in any Stream of the B.Sc.N. Basic (A) Stream; or a minimum grade of C- in NURSING 3TT3, HTHSCI 2S03, and a minimum grade of C- in NURSING 3PA2 A/B or HTHSCI 3PA2 A/B, and a Pass in NURSING 3QQ3, 3Y04, and registration in the B.Sc.N. Post Diploma R.P.N. (E) Stream Program; or a minimum grade of C- in NURSING 3V03, and a minimum grade of C- in NURSING 3PF1 or HTHSCI 3PF1, and a Pass in NURSING 3QQ3, 3ZB3, and registration in the B.Sc.N. Accelerated (F) Stream

**Co-requisite(s):** NURSING 4P04

*This course is evaluated on a Pass/Fail basis.*

### NURSING 4K10 - PROFESSIONAL PRACTICE AND THE NEW GRADUATE

As an applied professional practice course, students focus on the integration and application of research, theory and concepts to professional practice, including an introduction to the leadership role in client care. Students are individually placed in a variety of contexts, where they are actively involved in the enactment of the nursing role.

Professional practice (24 hours for six weeks, 35-36 hours for six - seven weeks); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 4P04, and a Pass in NURSING 4J07, and registration in any Stream of the B.Sc.N. Program

**Antirequisite(s):** NURSING 4K07

**Co-requisite(s):** NURSING 4Q03

*This course is evaluated on a Pass/Fail basis.*

### NURSING 4P04 - ADVANCED NURSING CONCEPTS I

This course is designed to allow students to explore first hand some of the facets and elements of the act of leading in the everyday world of professional nursing. The focus on leading will be on the challenges and issues of nurses' work. This course engages students in learning about the meaning of leading through influence.

Tutorial (three and one half hours); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 3TT3, HTHSCI 2S03, 3BB3, and a minimum grade of C- in NURSING 3PA2 A/B or HTHSCI 3PA2 A/B, and a Pass in NURSING 3QQ3, 3Y04 and registration in the B.Sc.N. Basic (A) Stream program; or minimum grade of C in NURSING 3TT3, HTHSCI 2S03, and a minimum grade of C- in NURSING 3PA2 A/B or HTHSCI 3PA2 A/B, and a Pass in NURSING 3QQ3, 3Y04 and registration in the B.Sc.N. Post Diploma R.P.N. (E) Stream; or a minimum C- in NURSING 3V03, and a minimum grade of C- in NURSING 3PF1 or HTHSCI 3PF1, and a Pass in NURSING 3QQ3, 3ZB3, and registration in the B.Sc.N. Accelerated (F) Stream

**Co-requisite(s):** NURSING 4J07

### NURSING 4Q03 - ADVANCED NURSING CONCEPTS II

This course engages students in exploring the meaning of becoming a nurse. Transitioning into this role draws upon their understanding of what nursing is and the possibilities for action in professional practice involvements. This course also provides learning activities that accentuate the exploration of becoming a professional, interprofessional collaboration, and self-regulation.

Tutorial (six hours, six weeks); one term

**Prerequisite(s):** Minimum grade of C- in NURSING 4P04, and a Pass in NURSING 4J07, and registration in any Stream of the B.Sc.N. Program

**Antirequisite(s):** NURSING 4Q04

**Co-requisite(s):** NURSING 4K10

### NURSING 4Z03 A/B S - CONFLICT MANAGEMENT

This course explores types and processes of conflict in health care organizations. Application of theories and principles of conflict and negotiations to situations in the health care environment.

Tutorial (three hours); one term

**Prerequisite(s):** A minimum of one year clinical work experience in a health care profession and permission of the instructor

**Antirequisite(s):** HTHSCI 4Z03 A/B S

## Ojibwe

Courses in Ojibwe are administered by the Indigenous Studies Program.

L.R. Wilson Hall, Room 1811, ext. 23788

<https://indigenous.mcmaster.ca>

**Courses**

*If no prerequisite is listed, the course is open.*

**OJIBWE 1Z03 - INTRODUCTION TO OJIBWE LANGUAGE AND CULTURE**

This course will study the Ojibwe language, in its spoken and written forms, in the context of Ojibwe cultural traditions, values, beliefs and customs.

Lecture and seminars (three hours); one term

**OJIBWE 2Z03 - INTERMEDIATE OJIBWE**

This course expands on the vocabulary and the oral skills for the Ojibwe language. In addition, the course reviews the written component of the language.

Lecture and seminars (three hours); one term

**Prerequisite(s):** OJIBWE 1Z03

**Peace Studies**

Courses in Peace Studies are administered by the Office of Interdisciplinary Studies.

Togo Salmon Hall, Room 721, ext. 27734

<http://peacestudies.humanities.mcmaster.ca/>

**Courses**

*If no prerequisite is listed, the course is open.*

**PEACEST 1A03 - INTRODUCTION TO PEACE STUDIES**

An introduction to the discipline of peace research, focusing on the concepts of peace, war, security, conflict, violence and nonviolence, and examining the roles of values and ideologies in the attainment of peace.

Lectures and discussion (three hours); one term

**Antirequisite(s):** IBH 1BD3

**PEACEST 2A03 - CONFLICT TRANSFORMATION: THEORY AND PRACTICE**

An examination of ways of preventing, resolving and transforming conflicts in everyday life, in our own culture and others, and in the arenas of family, business, the law, schools and large-scale political conflicts.

Lectures and tutorial (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**PEACEST 2B03 - HUMAN RIGHTS AND SOCIAL JUSTICE**

An introduction to the growing national and international discussion of human rights, exploring the value and limitations of universal rights, equality under the law and social justice.

Lecture and tutorial (three hours); one term

**Prerequisite(s):** One of PEACEST 1A03, WOMENST 1A03, WOMENST 1AA3, or IBH 1BD3; or registration in Level II or above of a program in Indigenous Studies, Labour Studies, Peace Studies or Justice, Political Philosophy and Law.

**Antirequisite(s):** WOMENST 2A03

**Cross-list(s):** LABRST 2W03

**PEACEST 2BB3 - INTRODUCTION TO THE STUDY OF WAR**

A Peace Studies approach to the study of war, including the effects of war on people, societies and the earth. War prevention processes will be examined at the levels of interstate and state politics, social movements, and individual peace.

Lectures and tutorial (three hours); one term

**Prerequisite(s):** PEACEST 1A03 or IBH 1BD3 and registration in Level II or above; or registration in a program in Peace Studies or Justice, Political Philosophy and Law.

**PEACEST 2C03 - PEACE AND POPULAR CULTURE**

This course conveys concepts of peace in popular culture in selected periods and places, with emphasis on the post-WWII period, and including contemporary manifestations.

Lectures and tutorial (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**PEACEST 2E03 - PEER-TO-PEER PROBLEM-BASED INQUIRY: ARCHIVAL PEACE RESEARCH**

What is considered evidence in archival research? This question will be investigated in student-led, peer-to-peer problem-based inquiry, emphasizing use of primary sources such as the Russell Archives and other peace-related archival collections at McMaster.

Three hours; one term

**Prerequisite(s):** PEACEST 1A03 and permission of the Director of Peace Studies

**PEACEST 2GW3 - A HISTORY OF GLOBAL WAR**

A survey of the course and development of the two global wars of the twentieth century covering the period from 1914 to 1945. The emphasis is on the military, economic, and political events that characterised the conflicts.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** HISTORY 2S03, 2Y03

**Cross-list(s):** HISTORY 2GW3

*This course is administered by the Department of History.*

**PEACEST 2LS3 - LANGUAGE AND SOCIETY**

An introduction to sociolinguistics covering such topics as linguistic variation (regional, social, situational), language and gender, language and disadvantage/power, language choice, language change, pidgin and creole languages.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** CMST 3G03, LINGUIST 3X03

**Cross-list(s):** LINGUIST 2S03

*This course is administered by the Department of Linguistics and Languages*

**PEACEST 3B03 - PEACE-BUILDING AND HEALTH INITIATIVES**

An examination of the multiple links between health and peace, concentrating on social determinants; conflict reduction; food, sanitation and water supplies; and violence prevention; in crisis and non-crisis situations.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**PEACEST 3C03 - RESEARCH METHODS FOR PEACE STUDIES**

Introduction to applied research methods for peace studies and exploration of peace research applications.

Seminar (two hours); one term

**Prerequisite(s):** At least six units of Peace Studies; and registration in Level III or above of a program in Peace Studies; and permission of the Director of Peace Studies

### PEACEST 3D03 - GLOBALIZATION AND PEACE

Investigation of complex systems approaches to understanding how social-cultural-ecological change influences globalization and peace.

Seminar (two hours); one term

**Prerequisite(s):** At least six units of Peace Studies, and registration in Level III or above; or registration in Level III or above of the Justice, Political Philosophy and Law program

### PEACEST 3GG3 - THEORIES OF DECOLONIZATION AND RESISTANCE

A study of theoretical and cultural works that examine the effects of empire and chart projects for decolonization. Introduces debates in Indigenous and postcolonial studies, including as they engage with theories of racial capitalism, gender and sexuality, globalization, war, environmental change.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** CSCT 3R06 A/B, ENGLISH 3R06 A/B, PEACEST 3E06 A/B

**Cross-list(s):** ENGLISH 3GG3

*This course is administered by the Department of English and Cultural Studies*

### PEACEST 3P03 - PRACTICUM: PRACTICAL PEACE BUILDING

Exploration of service, entrepreneurship, and other modes of engagement with practical peace building through workplace experience.

Student-initiated voluntary placement for one day per week under supervised practice; one term

**Prerequisite(s):** Registration in Level III or above of a program in Peace Studies; and permission of the Director of Peace Studies

*This course is evaluated on a Pass/Fail basis.*

### PEACEST 3Q03 - PHILOSOPHY OF LAW

An investigation of the nature of law and of issues arising within legal systems. These issues include legal reasoning, equality, legal insanity, punishment, and the Charter of Rights and Freedoms.

Lecture and discussion (three hours); one term

**Prerequisite(s):** Six units of Philosophy and registration in Level III or above

**Cross-list(s):** PHILOS 3Q03

*This course is administered by the Department of Philosophy*

### PEACEST 3W03 - CONTEMPORARY NATIVE LITERATURE IN CANADA

A study of significant works by Native writers who give voice to their experience in Canada. Issues examined include appropriation of voice, native identity, women in indigenous societies, and stereotyping.

Three hours (lectures and seminars); one term

**Prerequisite(s):** Six units of Level II Indigenous Studies or six units of Level II English or permission of the instructor

**Antirequisite(s):** CSCT 3W03

**Cross-list(s):** ENGLISH 3W03, INDIGST 3D03

*This course is administered by Indigenous Studies.*

### PEACEST 3X03 - CONTEMPORARY NATIVE LITERATURE IN THE UNITED STATES

A study of contemporary works by Native writers in the United States within the context of American society and Post-Modern and Post-Colonial Literary Theory.

Three hours (lectures and seminars); one term

**Prerequisite(s):** Six units of Level II Indigenous Studies or six units of Level II English or permission of the instructor

**Antirequisite(s):** CSCT 3X03

**Cross-list(s):** ENGLISH 3X03, INDIGST 3E03

*This course is administered by Indigenous Studies.*

### PEACEST 3XX3 - HUMAN RIGHTS IN HISTORY

A thematic examination of the global historical evolution of the notion of human rights from antiquity up to the Universal Declaration of Human Rights in the 20th century.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level II or above

**Cross-list(s):** HISTORY 3XX3

*May be offered in person or online.*

*This course is administered by the Department of History*

### PEACEST 3Y03 - SPECIAL TOPICS IN PEACE STUDIES

Consult the Peace Studies Office for the topic to be offered.

Lecture and discussion (three hours); one term

**Prerequisite(s):** Three units of Peace Studies and registration in Level III or above

PEACE ST 3Y03 may be repeated, if on a different topic, to a total of six units.

### PEACEST 4B03 - INDEPENDENT RESEARCH

Students develop and execute their own research projects, in regular consultation with a faculty supervisor, and produce and orally defend a substantial paper. May include a practicum component.

**Prerequisite(s):** Registration in Level III or above of the Combined Honours in Peace Studies Program with a Grade Point Average of at least 8.5, and permission of the Director of Peace Studies

### PEACEST 4FC3 - EXPERIENTIAL LEARNING, THEORY AND PRACTICE

Intensive experiential learning: examining theory and practice in situ through action learning and/or action research. Preparatory instruction on campus will precede field work and/or travel. Students and project-partners will explore problem-based learning opportunities.

**Prerequisite(s):** Registration in Level III or above of any program and permission of the instructor

Offered during the Spring/Summer term only.

### PEACEST 4G03 - PEACE THROUGH HEALTH: PRAXIS

Exploring global perspectives of peace through health, addressing social determinants of health, gender and environment, and examining individual and institutional leadership, using problem-based and experiential learning.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or above of a program in Peace Studies; or permission of the Director of Peace Studies

### PEACEST 4GG3 - NATION AND GENOCIDE IN THE MODERN WORLD

A thematic study of genocide and mass murder in the twentieth century from a human rights perspective. The first part of the course covers the theoretical and legal aspects of genocide studies. The second part explores specific case studies of colonial massacres, the Holocaust, and the Cambodian and Rwandan genocides.

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History or Peace Studies

**Cross-list(s):** HISTORY 4G03

*Departmental permission required.*



*This course is administered by the Department of History.*

### PEACEST 4J03 - INTERNATIONAL LAW, PEACE AND ECOLOGY

Selected problems and processes of international law linking culture and ecology and exploring the consequences for peace.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or above of a program in Peace Studies; or permission of the Director of Peace Studies

### PEACEST 4L03 - PEACE, ENVIRONMENT AND HEALTH

Selected environmental issues influencing peace and health. Topics may include social, ecological and economic perspectives on global change, biodiversity and water issues locally and globally.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or above of a program in Peace Studies; or permission of the Director of Peace Studies

### PEACEST 4MA3 - FORENSIC ARCHIVAL RESEARCH IN CONFLICT AND PEACE

Practical forensic uses of archival resources as evidence in reconstructing, reconciling and making meaning in the context of contemporary conflicts from historical roots. Problem-based inquiry emphasizing engagement through peace and conflict research.

Seminar (two hours); one term

**Prerequisite(s):** At least six units of Peace Studies; and registration in Level IV of a program in Peace Studies; and permission of the Director of Peace Studies

Non-program students will be accommodated when possible.

### PEACEST 4RR3 - TRUTH AND RECONCILIATION AFTER ATROCITY

This course explores truth commissions and other truth-seeking mechanisms established globally to address historical atrocities and contemporary human rights abuses.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of any Honours program in History or Peace Studies

**Cross-list(s):** HISTORY 4RR3

*Departmental permission required.*

*This course is administered by the Department of History.*

### PEACEST 4ST3 - SPECIAL TOPICS SEMINAR

A specialized approach to selected topics of current relevance to peace research, for example, social justice, restorative justice, truth and reconciliation, climate change, gender, refugee, and migration.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or above of a program in Peace Studies; or permission of the Director of Peace Studies

*This course may be repeated, if on a different topic, to a total of 6 units.*

## Pharmacology

Courses in Pharmacology are administered by the Honours Biology & Pharmacology Co-op Program, Faculty of Health Sciences, Health Sciences Centre Room 2E21A, ext. 22312.

<https://healthsci.mcmaster.ca/biopharm>  
biopharm@mcmaster.ca

PHARMAC courses are available only to those students registered in Honours Biology and Pharmacology.

#### Note

PHARMAC 3A06 A/B, 3B06 A/B, 4A03, 4AA3, 4C03, 4D03 and 4E03 will be based on self-directed problem based learning.

#### Courses

### PHARMAC 3A06 A/B - INTRODUCTION TO PHARMACOLOGY

Principles of pharmacodynamics, principles of pharmacokinetics. Drugs acting on the CNS, female reproductive system, autonomic nervous system and respiratory system. Antimicrobials. Course teaches skills needed to perform effectively in a problem-based learning environment, critically read literature, and design a clinical trial.

One tutorial (three hours); two terms

**Prerequisite(s):** Registration in the Honours Biology and Pharmacology Co-op (B.H.Sc.) program

### PHARMAC 3B06 A/B - METHODS IN PHARMACOLOGY

Laboratory course with extensive teaching and guidance by teaching assistants. Experimental methods for the study of drugs in vitro. Interpretation and communication of experimental data. Design and conducting a Discovery Project at an academic laboratory.

One lab (three hours); two terms

**Prerequisite(s):** Credit or registration in PHARMAC 3A06 A/B

### PHARMAC 4A03 - RECEPTOR-DRUG INTERACTIONS

Receptor classification, receptor theory, stimulus response coupling, second messengers.

One tutorial (three hours); one term

**Prerequisite(s):** PHARMAC 3A06 A/B

### PHARMAC 4AA3 - ADVANCED TOPICS IN PHARMACOLOGY

New developments in pharmacology, with an emphasis on mechanisms of drug action.

One tutorial (three hours); one term

**Prerequisite(s):** PHARMAC 4A03

### PHARMAC 4C03 - PRINCIPLES OF TOXICOLOGY

General principles of toxicology, adverse effects of selected agents on humans and other organisms. This course includes learning skills related to oral presentations and making and presenting a poster presentation.

One tutorial (three hours); one term

**Prerequisite(s):** PHARMAC 3A06 A/B

### PHARMAC 4D03 - DRUG DESIGN

Principles of drug design based on drug transport, metabolism and selectivity of action at the target sites with emphasis on quantitative structure-activity relationships.

One tutorial (three hours); one term

**Prerequisite(s):** PHARMAC 3A06 A/B, 4A03

### PHARMAC 4E03 - SOCIAL PHARMACOLOGY

Epidemiological analysis of drug use in humans; adverse drug reactions; legal and economic aspects of drug utilization, prescribing patterns in national and international contexts.

One tutorial (three hours); one term

**Prerequisite(s):** PHARMAC 3A06 A/B

## PHARMAC 4T12 - SENIOR THESIS

A thesis based upon a research project carried out under the direction of a supervisor approved by the Program Director.

**Prerequisite(s):** PHARMAC 3A06 A/B

*Not open to students with credit or registration in any Level IV department- or program-based thesis or independent study/project course.*

## Philosophy

Courses in Philosophy are administered by the Department of Philosophy.

University Hall, Room 310, ext. 26445

<http://philos.humanities.mcmaster.ca/>

### Department Notes

1. The Department of Philosophy offers courses in all major areas of Philosophy, namely History of Philosophy, Logic, Ethics and Theory of Value, Legal and Political Philosophy, and Theory of Knowledge and Metaphysics. Students are advised to include courses from each of these areas in their programs.
2. Students are advised to note carefully the prerequisites for all courses. Students who do not meet the specified prerequisites for a course may, in exceptional circumstances, obtain permission of the Departmental Undergraduate Counsellor to take the course. Note that not all courses are offered every year, however, all required courses are offered every year. Please consult the university Master Schedule.
3. Students interested in registering in PHILOS 3W03, 4W03 are strongly encouraged to obtain permission from the Departmental Undergraduate Counsellor by the end of May of the preceding year. Access to these courses cannot be guaranteed beyond that date.
4. Students in Level 3 of an Honours Philosophy program may seek permission from the Departmental Undergraduate Counsellor to gain access to Level 4 courses.

### Courses

*If no prerequisite is listed, the course is open.*

## PHILOS 1A03 - PHILOSOPHICAL TEXTS

An introduction to philosophy through the close reading of selected classical texts. Authors to be considered may include Plato, Descartes, Hobbes, Hume, Marx, Mill, Nietzsche, Russell, and De Beauvoir.

Two lectures, one tutorial; one term

## PHILOS 1B03 - PHILOSOPHY, LAW AND SOCIETY

An introduction to philosophy through an exploration of issues in moral, political and legal philosophy. Topics may include: The Canadian Charter of Rights; terrorism, torture, and the rule of law; legal restrictions on hate speech and pornography.

Two lectures, one tutorial; one term

## PHILOS 1E03 - PHILOSOPHICAL QUESTIONS

An introduction to philosophy through the study of some of its central questions. Topics may include God, knowledge, mind and body, free will, politics, morality, and art.

Two lectures, one tutorial; one term

## PHILOS 1F03 - MEANING IN LIFE

An introduction to philosophy through an exploration of the question: What makes life meaningful? Topics may include such themes as happiness, suffering, suicide, faith, love, friendship, work, art, and hope.

Two lectures, one tutorial; one term

## PHILOS 2B03 - INTRODUCTORY LOGIC

An introduction to logical reasoning and the analysis of argument through the study of propositional and quantification logic.

Three lectures; one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

## PHILOS 2CT3 - CRITICAL THINKING

This course aims to improve skills in analyzing and evaluating arguments from everyday life and academic contexts.

Two lectures; one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** ARTSSCI 1B06, ARTSSCI 1BB3, IBH 2AE3

## PHILOS 2D03 - BIOETHICS

An introduction to moral philosophy, through a consideration of issues in health care ethics. Topics such as abortion, human experimentation, euthanasia, and genetic screening will be investigated.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** IBH 2BD3, HTHSCI 3L03, PEACEST 2D03, RELIGST 2C03

## PHILOS 2E03 - CLASSICAL CHINESE PHILOSOPHY

Introductory survey of classical Chinese philosophy, especially Confucianism and Daoism. Readings include Confucius, Mencius, Laozi and Zhuangzi.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

## PHILOS 2F03 - PHILOSOPHICAL PSYCHOLOGY

A consideration of such questions as: In what terms might human nature be described? How do intentional and unintentional behaviour differ? How do physical and mental states differ? When is action free? Can intelligence be duplicated artificially?

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

## PHILOS 2G03 - SOCIAL AND POLITICAL ISSUES

A philosophical exploration of current social and political issues. Topics may include discrimination, violence, environmental problems, poverty, liberty, equality, democracy, or terrorism.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** PEACEST 2I03

## PHILOS 2H03 - AESTHETICS

An introduction to some main theories of the nature of art, criticism, and the place of art in life and society.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** CMST 2003

**Cross-list(s):** ARTHIST 2H03

## PHILOS 2N03 - BUSINESS ETHICS

An analysis of ethical issues arising in contemporary business life. Sample topics include: fair and unfair competition; responsibilities towards employees, society and the environment; honesty and integrity in business; the moral status of corporations.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** COMMERCE 2SB3

### PHILOS 2P03 - ANCIENT GREEK PHILOSOPHY

A survey of ancient Greek and Roman philosophical thought from its beginnings to the Hellenistic period, including Socrates, Plato, Aristotle, the Stoics and the Epicureans.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** CLASSICS 2P03

### PHILOS 2Q03 - JUSTICE, POLITICAL PHILOSOPHY, AND LAW

A critical survey of the essentials of private law (tort, contracts, and property), criminal law, administrative law, the Canadian Charter, and international law and institutions.

Lecture and discussion (three hours); one term

**Prerequisite(s):** Registration in level II of the Honours Justice, Political Philosophy, and Law program

### PHILOS 2S03 - HISTORY OF POLITICAL PHILOSOPHY

A survey of major historical works in political philosophy, including works by some or all of: Plato, Aristotle, Hobbes, Locke, Rousseau, Kant, Wollstonecraft, Bentham, Mill, Taylor, and Marx.

Three hours (lecture and discussion); one term

**Prerequisite(s):** Registration in Level II or above

### PHILOS 2TT3 - ETHICAL ISSUES IN COMMUNICATION

This course will examine ethical issues as they arise in interpersonal communication, social media, and mass communication. The dominant moral theories and approaches to moral decision-making will be analyzed and put to use to help students understand and evaluate concrete examples.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** CMST 2TT3, 3N03, PEACEST 2TT3, 3N03

### PHILOS 2X03 - EARLY MODERN PHILOSOPHY I

An introduction to the political, epistemological and ontological problems investigated by philosophers of the 17th and 18th centuries (Bacon, Hobbes, Descartes, Spinoza, Leibniz, Malebranche, Locke, Berkeley and Hume.)

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

### PHILOS 2XX3 - EARLY MODERN PHILOSOPHY II

A sequel to Early Modern Philosophy I, continuing in the study of 17th and 18th century philosophy.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

### PHILOS 2YY3 - ETHICS

An introduction to moral philosophy and its application to contemporary moral problems. Topics may include the objectivity of values, the nature of moral judgments, rights and duties, virtues, and consequentialism.

(Two lectures, one tutorial); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** IBH 1BC3

### PHILOS 2ZZ3 - PHILOSOPHY OF LOVE AND SEX

An exploration of philosophical texts concerned with the nature of love and sex, including such themes as friendship, romance, perversity, intimacy, desire, sex and sexuality.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

### PHILOS 3B03 - CONTINENTAL PHILOSOPHY AFTER HEGEL

A study of the different lines of thought that emerged in philosophy in 19th-century continental Europe after Hegel. Authors may include Schopenhauer, Feuerbach, Kierkegaard, Nietzsche, or Bergson.

lecture and discussion (Three hours); one term

**Prerequisite(s):** Six units of Philosophy and registration in Level III or above

### PHILOS 3C03 - ADVANCED BIOETHICS

An advanced study of selected problems in bioethics such as our reproductive practices, the therapeutic relationship, the ethics of human experimentation, the concept of health, or public health ethics.

Three hours (lecture and discussion); one term

**Prerequisite(s):** One of PHILOS 2D03, PHILOS 2YY3, or RELIGST 2C03, and at least three additional units of Philosophy, and registration in Level III or above

### PHILOS 3CC3 - ADVANCED ETHICS

An advanced discussion of one or more theories or current issues in ethics. Topics may include meta-ethics, ethical naturalism, theories of rights and obligations, moral psychology, the role of moral emotions, or moral responsibility.

Three hours (lecture and discussion); one term

**Prerequisite(s):** One of PHILOS 2D03, PHILOS 2YY3, or RELIGST 2C03, and at least three additional units of Philosophy, and registration in Level III or above

### PHILOS 3D03 - PHILOSOPHY OF SCIENCE

A survey of philosophical problems concerning science. Topics to be considered include explanation, causation, scientific laws, and instrumentalism vs. realism.

Lecture and discussion (three hours); one term

**Prerequisite(s):** Six units of Philosophy and registration in Level III or above

### PHILOS 3E03 - PHILOSOPHY OF LANGUAGE

This course surveys some of the main themes pertaining to the philosophical study of language and communication and attempts to understand the most significant developments of the discipline in the course of the last century.

Lecture and discussion (three hours); one term

**Prerequisite(s):** Six units of Philosophy or PHILOS 2B03; and registration in Level III or above

**Antirequisite(s):** CMST 3Y03

### PHILOS 3EE3 - CONTEMPORARY CONTINENTAL PHILOSOPHY

An examination of the work of 20th- and 21st-century continental philosophers such as Heidegger, Sartre, Beauvoir, Foucault, Deleuze, Derrida or Agamben.

Lecture and discussion (three hours); one term

**Prerequisite(s):** Six units of Philosophy and registration in Level III or above

**Antirequisite(s):** PHILOS 4E03

### PHILOS 3HH3 - METAPHYSICS

An investigation of metaphysical concepts, such as substance, individuation, identity, essence, quality, process, mind, time and causality. Some contemporary criticisms of metaphysics will be discussed.

Three hours (lecture and discussion); one term

**Prerequisite(s):** Six units of philosophy and registration in Level III or above

### PHILOS 3I03 - PHILOSOPHY AND FEMINISM

A philosophical investigation of current feminist theorizing at the intersection of gender, race, sexuality, ability, and other categories of social difference.

Lecture and discussion (three hours); one term

**Prerequisite(s):** Six units of Philosophy or WOMENST 1A03, 1AA3; and registration in Level III or above

**Antirequisite(s):** WOMENST 3I03

### PHILOS 3L03 - ENVIRONMENTAL PHILOSOPHY

A consideration of the characterization of nature and/or our evaluative responses to it.

Lecture and discussion (three hours); one term

**Prerequisite(s):** Six units of Philosophy and registration in Level III or above

### PHILOS 3N03 - POLITICAL PHILOSOPHY

A study of major political concepts and themes, such as social contract, ideology, justice, freedom, equality, reform vs. revolution, state vs. individual.

Lecture and discussion (three hours); one term

**Prerequisite(s):** Six units of Philosophy and registration in Level III or above

### PHILOS 3NN3 - PHILOSOPHY OF THE ENLIGHTENMENT

An examination of the philosophy of 18th-century Europe, particularly of the thinkers associated with the Encyclopedia project. This movement was a concerted attempt to replace the old theological-cum-political order with one based on scientific reason and human rights.

Three hours (lecture and discussion); one term

**Prerequisite(s):** Six units of Philosophy and registration in Level III or above

### PHILOS 3O03 - THEORY OF KNOWLEDGE

A study of scepticism and certainty, knowledge and belief, perception, memory, and truth.

Lecture and discussion (three hours); one term

**Prerequisite(s):** Six units of Philosophy and registration in level III or above

### PHILOS 3P03 - PHILOSOPHIES OF WAR AND PEACE

A philosophical appraisal of the rationality and morality of the conduct of war and proposals for fostering peace among nations.

Lecture and discussion (three hours); one term

**Prerequisite(s):** Six units of Philosophy and registration in Level III or above; or registration in Level III or IV of the Combined Honours in Peace Studies Program

**Antirequisite(s):** PEACEST 3M03

### PHILOS 3Q03 - PHILOSOPHY OF LAW

An investigation of the nature of law and of issues arising within legal systems. These issues include legal reasoning, equality, legal insanity, punishment, and the Charter of Rights and Freedoms.

Three hours (lecture and discussion); one term

**Prerequisite(s):** Six units of Philosophy and registration in Level III or above; or registration in Level III or IV of the Combined Honours in Peace Studies

Program

**Cross-list(s):** PEACE ST 3Q03

### PHILOS 3VV3 - KANT

An introduction to Kant's critical philosophy through a study of the Critique of Pure Reason and of the debates between Kant and such contemporaries as Jacobi, Reinhold and Fichte.

Lecture and discussion (three hours); one term

**Prerequisite(s):** PHILOS 2X03, 2XX3, and registration in Level III or above

### PHILOS 3W03 - READING COURSE

A tutorial course in which individual students meet regularly with an instructor on a list of readings outside normally available course offerings. It is the student's responsibility to secure the agreement of an instructor and to complete a proposal form (available in the Philosophy Department office), before attempting to register in the course.

**Prerequisite(s):** Registration in Level III or IV of any program in Philosophy, with a Grade Point Average of at least 8.5 and permission of the Department

### PHILOS 3XX3 - PLATO

A detailed study of one or more of Plato's dialogues, with an emphasis on his philosophical ideas.

Lecture and discussion (three hours); one term

**Prerequisite(s):** PHILOS 2P03 or CLASSICS 2P03

**Antirequisite(s):** CLASSICS 3XX3

### PHILOS 3YY3 - HEGEL

An introduction to Hegel's philosophy and to the further developments of his thought by nineteenth century philosophers such as Marx, Schleiermacher, Kierkegaard, and Nietzsche.

Lecture and discussion (three hours); one term

**Prerequisite(s):** Six units of Philosophy and registration in Level III or above

### PHILOS 3ZZ3 - ARISTOTLE

A detailed study of various parts of the philosophy of Aristotle. Topics covered may include Aristotle's views on logic, nature, the soul, metaphysics, ethics and politics.

Lecture and discussion (three hours); one term

**Prerequisite(s):** PHILOS 2P03 or CLASSICS 2P03

**Antirequisite(s):** CLASSICS 3ZZ3

### PHILOS 4A03 - EARLY MODERN PHILOSOPHY

A critical study of one or more 17th- or 18th-century European or British philosophers, such as Descartes, Leibniz, Hume.

Seminar (three hours); one term

**Prerequisite(s):** PHILOS 2X03 and 2XX3 and registration in Level IV of any program in Philosophy

Departmental permission required

### PHILOS 4C03 - PHILOSOPHY OF CONSTITUTIONAL LAW

A philosophical study of the nature and role of constitutions and of the judicial interpretation and application of constitutional charters of rights.

Seminar (three hours); one term

**Prerequisite(s):** PHILOS 3Q03 and registration in Level IV of any program in Philosophy

Departmental permission required



### PHILOS 4D03 - TWENTIETH-CENTURY ANALYTIC PHILOSOPHY

A study of some main currents of 20th-century analytic philosophy and of the work of some of the key philosophers involved (e.g. Russell, Moore, Wittgenstein, Quine and Davidson).

Seminar (three hours); one term

**Prerequisite(s):** Registration in Level IV of any program in Philosophy  
Departmental permission required

### PHILOS 4F03 - ISSUES IN CONTINENTAL PHILOSOPHY

An exploration of a particular theme or issue important to recent continental philosophers, such as violence, xenophobia, justice, dissent, community, identity, or ecology.

Seminar (three hours); one term

**Prerequisite(s):** Registration in Level IV of any program in Philosophy  
Departmental permission required

### PHILOS 4I03 - MEDIEVAL PHILOSOPHY

A study of one or more central medieval philosophers, such as Augustine, Aquinas, or William of Ockham.

Seminar (three hours); one term

**Prerequisite(s):** PHILOS 2P03; and registration in Level IV of any program in Philosophy  
Departmental permission required

### PHILOS 4K03 - SEMINAR IN ANCIENT PHILOSOPHY

A critical examination of a major thinker, movement, theme, or work in ancient Greek and Roman philosophy (e.g. pre-Socratic philosophy, a particular Platonic dialogue, Stoic ethics, ancient skepticism, or philosophy in late antiquity).

Seminar (three hours); one term

**Prerequisite(s):** PHILOS 2P03 or CLASSICS 2P03; and registration in Level IV of any program in Philosophy or Classics

**Antirequisite(s):** CLASSICS 4K03  
Departmental permission required

### PHILOS 4Q03 - NORMATIVE JURISPRUDENCE

This course critically examines the structure and underlying rationale of one or more key areas of law, such as (but not limited to) tort, contract, property, or criminal law.

Seminar (three hours); one term

**Prerequisite(s):** Registration in level IV of the Honours Justice, Political Philosophy, and Law program  
Departmental permission required

### PHILOS 4S03 - HUMAN RIGHTS AND GLOBAL JUSTICE

This course examines the philosophical foundations and political implications of human rights and theories of justice in the international sphere. We will also consider related topics of sovereignty, political legitimacy, international responsibility, humanitarian intervention, international criminal law.

Seminar (three hours); one term

**Prerequisite(s):** Registration in level IV of the Honours Justice, Political Philosophy, and Law program  
Departmental permission required

### PHILOS 4V03 - MULTIDISCIPLINARY WORKSHOP IN APPLIED ETHICS AND POLICY

This course is a multidisciplinary, team-based workshop focused on identifying and resolving the ethical and policy challenges presented by new technologies that are promising but also potentially disruptive. Open to students from Health Sciences, Engineering, Business, Humanities, Sciences and Social Sciences.

Three hours; one term

**Prerequisite(s):** PHILOS 2D03 or 2YY3; 3 units of PHILOS 2S03 or 2G03; 3 units of PHILOS 2N03, 2TT3, 3C03, or 3CC3; 3 units of PHILOS 3I03, 3L03, 3Q03, or 3N03; and permission of the department.

This course is restricted to students accepted into CAEP (Certificate for Applied Ethics and Policy).

### PHILOS 4W03 - INDEPENDENT STUDY

In consultation with a member of the Department of Philosophy, students will prepare an essay on an approved topic, on the basis of a list of readings outside normally available course offerings. It is the student's responsibility to secure the agreement of an instructor and to complete a proposal form (available in the Philosophy Department office), before attempting to register in the course.

**Prerequisite(s):** Registration in Level IV of any Honours program in Philosophy, with a Grade Point Average of at least 8.5 and permission of the Department

### PHILOS 4XP3 A/B - LAW AND COMMUNITY

This course seeks to foster a sophisticated understanding of the legal institutions that make up the social world by hosting visits with a number of offices whose central mission involves participating in the political and legal processes in which laws are made, applied and developed.

*This course is evaluated on a Pass/Fail basis.*

Three hours; two terms (alternate weeks)

**Prerequisite(s):** Registration in level IV of the Honours Justice, Political Philosophy, and Law program  
Departmental permission required

### PHILOS 4XX3 - INTERMEDIATE LOGIC

A study of one or more advanced topics in formal logic, such as the metatheory of classical logic, extensions of or alternatives to classical logic, or the philosophy of logic.

Seminar (three hours); one term

**Prerequisite(s):** PHILOS 2B03; and registration in Level IV of any program in Philosophy  
Departmental permission required

### PHILOS 4YE3 A/B - PHILOSOPHY, PEDAGOGY AND COMMUNITY

This experiential learning course introduces students to A) fundamental issues in the philosophy of education with an emphasis on the intersection of education and community building, B) training in methods of facilitating philosophical enquiry, C) application of these methods within the community. In partnership with McMaster Children and Youth University.

Three hours; two terms (alternate weeks)

**Prerequisite(s):** Registration in level IV Honours Philosophy only  
Departmental permission required

### PHILOS 4YY3 - TOPICS IN ETHICS

An advanced study of ethics broadly defined to include those aspects of human life that provide meaning and value (e.g. aesthetic, moral, religious, social or

political experience.)

Seminar (three hours); one term

**Prerequisite(s):** One of PHILOS 2YY3, 3C03, 3CC3, and registration in Level IV of any program in Philosophy or Peace Studies

**Antirequisite(s):** PHILOS 4B03, PEACEST 4C03

PHILOS 4YY3 may be repeated, if on a different topic, to a total of six units.

*Departmental permission required.*

## Physics

Courses in Physics are administered by the Department of Physics and Astronomy.

A.N. Bourns Science Building, Room 241, ext. 24559

<http://www.physics.mcmaster.ca/>

### Department Notes

1. The Department reserves the right to withdraw a Level III or IV course which is not specifically required in a Physics program if the registration falls below ten.
2. Students in Level III or IV of Physics programs will find a number of relevant electives among the offerings of the Department of Biology, the Department of Engineering Physics and the School of Geography and Earth Sciences.
3. Courses in Physics and Astronomy are not open to students registered in the Bachelor of Technology program.

### Courses

*If no prerequisite is listed, the course is open.*

### PHYSICS 1A03 - INTRODUCTORY PHYSICS

A first course in university physics, taught using examples and applications from many areas of science. Topics include the concepts of force and energy, mechanics, waves and fluids.

Lectures, web modules (three hours), one lab (two hours) every other week; one term

**Prerequisite(s):** One of Grade 12 Calculus and Vectors U, Grade 12 Advanced Functions and Introductory Calculus U, MATH 1F03

**Co-requisite(s):** WHMIS 1A00 if not already completed, must be completed prior to the first lab.

**Antirequisite(s):** PHYSICS 1B03, 1C03

*Not open to students with credit or registration in ISCI 1A24 A/B or PHYSICS 1D03.*

*It is recommended that students in Chemical and Physical Sciences Gateway complete PHYSICS 1C03.*

### PHYSICS 1AA3 - INTRODUCTION TO MODERN PHYSICS

A course presenting aspects of modern physics relevant to life sciences. Electromagnetic fields. Atomic, quantum, and nuclear physics. Applications to imaging and understanding biological systems.

Three lectures, one lab (three hours) every other week; one term

**Prerequisite(s):** One of PHYSICS 1A03, 1B03, 1C03

**Antirequisite(s):** PHYSICS 1BA3, 1BB3, 1CC3

*Not open to students with credit or registration in ISCI 1A24 A/B.*

*It is recommended that students in Chemical and Physical Sciences Gateway complete PHYSICS 1CC3.*

### PHYSICS 1C03 - PHYSICS FOR THE CHEMICAL AND PHYSICAL SCIENCES

A first course in university physics intended for physics and chemistry students, or students in any other discipline who have an appropriate secondary school background. This course is a comprehensive treatment of linear and rotational mechanics - kinematics, dynamics, and the relevant conservation laws.

Three lectures, one lab (two hours) every week; one term

**Prerequisite(s):** Either Grade 12 Physics U or PHYSICS 1L03 ; and either Grade 12 Calculus and Vectors U or MATH 1F03; and credit or registration in one of ARTSSCI 1D06 A/B, MATH 1A03, 1LS3, MATH 1X03, 1ZA3

**Co-requisite(s):** WHMIS 1A00 if not already completed, must be completed prior to the first lab.

**Antirequisite(s):** PHYSICS 1A03, 1B03

*Not open to students with credit or registration in ISCI 1A24 A/B or PHYSICS 1D03.*

### PHYSICS 1CC3 - MODERN PHYSICS FOR THE CHEMICAL AND PHYSICAL SCIENCES

*This course is the continuation of PHYSICS 1C03.*

Topics include simple harmonic motion, waves, interference, electrostatics, magnetostatics and an introduction to quantum physics.

Three lectures, one lab (three hours) every other week; one term

**Prerequisite(s):** PHYSICS 1A03, 1B03 or 1C03

**Antirequisite(s):** PHYSICS 1AA3, 1BA3, 1BB3

*Not open to students with credit or registration in ISCI 1A24 A/B.*

### PHYSICS 1D03 - INTRODUCTORY MECHANICS

A course for engineering students. Principles of mechanics of particles and rigid bodies, including Newton's Laws, rotational kinematics and dynamics, torque, energy, momentum, angular momentum, and simple harmonic motion.

Three lectures, one lab (three hours) every other week; one term

**Prerequisite(s):** Registration in a program in the Faculty of Engineering

### PHYSICS 1E03 - WAVES, ELECTRICITY AND MAGNETIC FIELDS

A course for engineering students. Oscillations and waves, interference; electrostatics, electric potential, circuit elements; magnetic fields.

Three lectures, one lab (three hours) every other week; one term

**Prerequisite(s):** PHYSICS 1D03 and registration in Engineering

**Antirequisite(s):** PHYSICS 2A03

### PHYSICS 2B03 - ELECTRICITY AND MAGNETISM I

Electric and magnetic fields, electric potential, Maxwell's equations, D.C. circuits.

Three lectures, one lab (three hours) every other week; one term

**Prerequisite(s):** One of ARTSSCI 2D06 A/B, ISCI 1A24 A/B, PHYSICS 1A03, 1B03, 1C03, 1D03; and one of MATH 1A03, 1LS3, 1X03, 1ZA3 (or ISCI 1A24 A/B); and credit or registration in one of MATH 1AA3, 1LT3, 1XX3, 1ZB3 (or ISCI 1A24 A/B)

**Antirequisite(s):** MEDPHYS 2B03, PHYSICS 1E03, 2A03, 2B06

### PHYSICS 2BB3 - ELECTRICITY AND MAGNETISM II

Differential form of Maxwells equations, A.C. circuits.

Three lectures; one term

**Prerequisite(s):** PHYSICS 2B03; and MATH 2X03 (or ISCI 2A18 A/B or MATH 2A03); and credit or registration in MATH 2C03

**Antirequisite(s):** MEDPHYS 2B03, PHYSICS 2A03, 2B06

### PHYSICS 2C03 - MODERN PHYSICS

Special relativity. Introductory quantum physics.

Three lectures; one term

**Prerequisite(s):** One of ARTSSCI 2D06 A/B, BIOPHYS 1S03, LIFESCI 1D03, PHYSICS 1AA3, 1BA3, 1BB3, 1CC3, 1E03; and one of ARTSSCI 1D06 A/B, MATH 1AA3, 1LT3, 1XX3, 1ZB3; or ISCI 1A24 A/B; or registration in an Honours

Biophysics or an Honours Medical and Biological Physics program

**Antirequisite(s):** PHYSICS 3M03

### PHYSICS 2E03 - MECHANICS

Dynamics of a particle, simple harmonic motion and resonance, central field problem, many-particle systems, non-inertial systems, generalized coordinates and Lagrange's equations.

Three lectures; one term

**Prerequisite(s):** Registration in a program in Biophysics, Medical and Biological Physics, or Physics; or one of PHYSICS 1A03, 1C03, 1D03 (or 1B03), ARTSSCI 2D06 A/B, ISCI 1A24 A/B, and credit or registration in MATH 2X03 (or MATH 2A03 or 2Z03 or ISCI 2A18 A/B) and MATH 2C03 (or 2ZZ3)

**Antirequisite(s):** PHYSICS 2D03

### PHYSICS 2G03 - SCIENTIFIC COMPUTING

A hands-on introduction to modern scientific structured programming using standard C/C++ under Linux. Assumes no prior programming experience.

Students develop a programming project on a research topic of their choosing (e.g. living populations, disease simulation, dynamics, economics). The course covers programming fundamentals, floating point and number representation and introduces algorithms and numerical methods. Class discussions include topics such as scripting, web content, objects/classes, graphics and parallel programming, according to student interest. Students are required to have a laptop for in-class work.

Two lectures, two labs; one term

**Prerequisite(s):** One of ARTSSCI 1D06 A/B, ISCI 1A24 A/B, MATH 1A03, 1LS3, 1X03, 1ZA3

### PHYSICS 2NM3 - MEDIA NUMERACY: TELLING STORIES WITH NUMBERS

As public discourse moves to a "post-truth" era, the evaluation of numerical information used in support of narratives is an essential skill in a democratic society. Course develops simple, practical numeracy skills to interpret and compare the stories told by text and numbers in articles selected from the popular media. Content delivered through class discussion and presentations.

Three hours (lectures); one term

### PHYSICS 2P03 - INTRODUCTORY LABORATORY

An introduction to common techniques in experimental physics, data analysis and error analysis.

Two lectures or tutorials (two hours), one lab every other week (three hours); one term

**Prerequisite(s):** One of PHYSICS 1A03, 1B03, 1C03, and credit or registration in PHYSICS 1AA3, 1BA3, 1BB3, 1CC3, BIOPHYS 1S03, LIFESCI 1D03 or registration in ARTSSCI 2D06 A/B or ISCI 1A24 A/B; and credit or registration in MATH 2X03 (or 2A03)

**Antirequisite(s):** PHYSICS 3H03

### PHYSICS 2X00 - FROM CLASSICAL PHYSICS INTO THE QUANTUM WORLD

An enrichment course focusing on the connections between classical and quantum physics.

*This course is evaluated on a Pass/Fail basis.*

One lecture; one term

**Prerequisite(s):** PHYSICS 2C03 or permission of the instructor

### PHYSICS 3A03 - RELATIVITY, GRAVITY AND THE GEOMETRY OF SPACETIME

An introduction to general relativity. Topics include: special relativity and Minkowski spacetime, introductory tensor analysis, gravity as curvature, Einstein Field equations, black holes and cosmology.

Three lectures; one term

**Prerequisite(s):** PHYSICS 2C03, and credit or registration in MATH 3C03, and registration in any Honours program in the Faculty of Science or any program in the Faculty of Engineering; or registration in Honours Mathematics and Physics

Alternates with PHYSICS 3C03.

### PHYSICS 3C03 - ANALYTICAL MECHANICS

Topics include: Motion of rigid bodies; coupled oscillators and normal modes; Lagrangian and Hamiltonian dynamics; transformation theory and action-angle variables; perturbation theory; nonintegrable systems and chaos; classical field theory.

Three lectures; one term

**Prerequisite(s):** PHYSICS 2D03 or 2E03, and credit or registration in MATH 3C03 and registration in any Honours program in the Faculty of Science or any program in the Faculty of Engineering; or registration in Honours Mathematics and Physics; or permission of the instructor

Alternates with PHYSICS 3A03.

### PHYSICS 3D03 A/B - INQUIRY IN PHYSICS

Independent study of the scientific literature, including the preparation of seminars and reports on assigned topics.

Two lectures or seminars; two terms

**Prerequisite(s):** Registration in an Honours Physics program or Honours Mathematics and Physics (B.Sc.)

**Antirequisite(s):** MEDPHYS 3A03, 3AA1, 3AB2, 4A03, 4AA1, 4AB2, PHYSICS 3DA1, 3DB2, 4A03, 4AA1, 4AB2

*Not open to students with credit or registration in ISCI 3A12 A/B.*

### PHYSICS 3DA1 - INQUIRY IN PHYSICS (I)

Independent study of the scientific literature, including the preparation of seminars and reports on assigned topics.

Two lectures or seminars; one term

**Prerequisite(s):** Registration in Level III of Honours Biophysics Co-op or Honours Physics Co-op

**Antirequisite(s):** MED PHYS 3A03, 3AA1, 3AB2, 4A03, 4AA1, 4AB2, PHYSICS 3D03 A/B, 4A03, 4AA1, 4AB2

*Not open to students with credit or registration in ISCI 3A12 A/B.*

Last offered in 2020-2021.

### PHYSICS 3DB2 - INQUIRY IN PHYSICS (II)

The continuation of PHYSICS 3DA1.

Two lectures or seminars; one term

**Prerequisite(s):** PHYSICS 3DA1 or 4AA1

**Antirequisite(s):** MEDPHYS 3A03, 3AA1, 3AB2, 4A03, 4AA1, 4AB2, PHYSICS 3D03 A/B, 4A03, 4AB2

*Not open to students with credit or registration in ISCI 3A12 A/B.*

### PHYSICS 3ET3 A/B S - PHYSICS TEACHING PLACEMENT

This placement course allows students to explore teaching as a profession, work on scientific communication and integrate academics with a community, volunteer or professional experience.

Students must complete 60 hours of placement work involving teaching,

assisting a teacher and/or tutoring. In addition, students will complete an academic component.

May be completed over one or two terms

**Prerequisite(s):** Registration in Level III or above of any Honours program in Physics or the Honours Mathematics and Physics program; and permission of the Chair of the Department

### PHYSICS 3G03 - INTRODUCTION TO NEURAL NETWORKS AND MACHINE LEARNING

A practical introduction to neural network algorithms and their applications in machine learning. Supervised learning as well as unsupervised and reinforcement learning will be discussed. The course will focus on developing and implementing a series of useful models.

Three lectures; one term

**Prerequisite(s):** One of COMPSCI 1MD3, MATH 1MP3, PHYSICS 2G03; and MATH 1B03 and one of ARTSSCI 1D06 A/B, ISCI 1A24 A/B, MATH 1AA3, 1LT3, 1XX3, 1ZB3; or permission of the instructor

### PHYSICS 3H03 A/B - INTERMEDIATE LABORATORY

Experiments in atomic physics, neutron physics, optics, spectroscopy, mechanics. As part of this course, students will become familiar with computing for instrument interfacing, data visualization and data analysis.

Two lectures, one term; one lab (three hours), two terms

**Prerequisite(s):** One of MEDPHYS 2B03, PHYSICS 2B03; and credit or registration in one of ENGPYHS 2QM3, PHYSICS 2C03, 3M03

**Antirequisite(s):** PHYSICS 3H04, PHYSICS 3HC1

Last offered in 2020-2021.

### PHYSICS 3HC1 - ADVANCED LABORATORY (I)

Experiments in atomic physics, neutron physics, optics, spectroscopy, mechanics. As part of this course students will become familiar with computing for instrument interfacing, data visualization and data analysis.

One lecture, one lab (three hours); one term

**Prerequisite(s):** One of MEDPHYS 2B03, PHYSICS 2B03; and credit or registration in one of ENGPYHS 2QM3, PHYSICS 2C03, 3M03; and registration in Level III of Honours Biophysics Co-op (B.Sc.), Honours Medical and Biological Physics Co-op (B.Sc.), Honours Medical Physics Co-op (B.Sc.) or Honours Physics Co-op (B.Sc.)

**Antirequisite(s):** PHYSICS 3H03 A/B, 3H04, 3P03 A/B

Last offered in 2020-2021.

### PHYSICS 3HD2 - ADVANCED LABORATORY (II)

The continuation of PHYSICS 3HC1.

One lab (three hours); one term

**Prerequisite(s):** PHYSICS 3HC1

### PHYSICS 3K03 - THERMODYNAMICS AND STATISTICAL MECHANICS

The laws of thermodynamics, with emphasis on the mathematical structure of the theory; classical and quantum statistical mechanics.

Three lectures; one term

**Prerequisite(s):** MATH 2X03 (or 2A03), 2C03, PHYSICS 2H04; or ISCI 2A18 A/B and MATH 2C03; or registration in Honours Mathematics and Physics (B.Sc.) or an Honours Medical and Biological Physics (B.Sc.) program

### PHYSICS 3MM3 - QUANTUM MECHANICS I

Quantum physics in 1D and 3D systems, with applications including the hydrogen atom.

Three lectures; one term

**Prerequisite(s):** Credit or registration in MATH 3C03, and one of ENGPYHS 2QM3, PHYSICS 2C03, 3M03; or registration in Honours Mathematics and Physics (B.Sc.)

### PHYSICS 3N04 - PHYSICAL OPTICS

Geometrical optics, electromagnetic waves, interference of light, Fraunhofer and Fresnel diffraction, polarized light, Fresnel equations, optical properties of materials, introduction to optical systems and precision optics experiments, selected topics in modern optics.

Three lectures, one tutorial, one lab (three hours each, three per Term); one term

**Prerequisite(s):** One of ISCI 2A18 A/B, MATH 2A03, 2Q04, 2X03, 2ZZ3; and one of MATH 2C03, 2P04, 2Z03; and one of PHYSICS 2B03 or ENGPYHS 2A04

**Cross-list(s):** ENGPYHS 3E04

**Antirequisite(s):** ENGPYHS 3E03, PHYSICS 3N03

### PHYSICS 3P03 A/B - ADVANCED LABORATORY

Experiments in atomic physics, neutron physics, optics, spectroscopy, mechanics. As part of this course, students will become familiar with computing for instrument interfacing, data visualization and data analysis.

One lab (three hours); two terms

**Prerequisite(s):** PHYSICS 2P03; and MEDPHYS 2B03 or PHYSICS 2B03; and credit or registration in one of ENGPYHS 2QM3, PHYSICS 2C03, 3M03

**Antirequisite(s):** PHYSICS 3H03, 3H04, 3HC1

*First offered 2021-2022.*

### PHYSICS 3QI3 - INTRODUCTION TO QUANTUM INFORMATION

An introduction to basic notions of quantum information and information processing. Topics may include the Einstein-Podolsky-Rosen (EPR) paradox, Bells inequalities, the measurement problem, quantum entanglement, quantum teleportation, quantum cryptography, and quantum computing.

Three lectures; one term

**Prerequisite(s):** One of MATH 1AA3, 1LT3, 1XX3, 1ZB3, ISCI 1A24, ARTSSCI 1D06 A/B; and either MATH 1B03 or 1ZC3

### PHYSICS 4B03 - ELECTROMAGNETIC THEORY

Potential theory, electrostatics and magnetostatics in matter, electrodynamics, electromagnetic waves and wave guides, radiation.

Two lectures; one term

**Prerequisite(s):** MATH 3D03 and either PHYSICS 2B06 or 2BB3 or both ENGPYHS 2A04 (or 2A03) and 2E04; or registration in Honours Mathematics and Physics (B.Sc.) or Honours Physics Co-op (B.Sc.)

**Antirequisite(s):** PHYSICS 4B04

### PHYSICS 4E03 - PARTICLE AND NUCLEAR PHYSICS

An introduction to modern particle and nuclear physics. Topics include: radioactive decay, classical and quantum scattering, structure of the nucleus, structure of nucleons, antiparticles, quarks and leptons, the Standard Model.

Three lectures; one term

**Prerequisite(s):** PHYSICS 3MM3

*Alternates with PHYSICS 4Q03*

### PHYSICS 4F03 - QUANTUM MECHANICS II

Advanced quantum mechanics with applications such as scattering, perturbation theory and the variational method.



Three lectures; one term

**Prerequisite(s):** PHYSICS 3MM3 and credit or registration in MATH 3D03; or registration in Honours Mathematics and Physics (B.Sc.)

### PHYSICS 4G03 - COMPUTATIONAL PHYSICS

A course using computers to solve selected problems in physics. Students are required to develop working programs for solving problems such as: Monte Carlo simulations, The Schrodinger equation, molecular dynamics, differential equations among others.

Three lectures; one term

**Prerequisite(s):** PHYSICS 2G03; and PHYSICS 3MM3 or ENGPYS 2QM3; or registration in one of Honours Physics Co-op (B.Sc.), an Honours Biophysics, or Honours Medical and Biological Physics (B.Sc.) program; or permission of the instructor

### PHYSICS 4IS3 - INDEPENDENT STUDY

Independent study to be carried out under the supervision of a faculty member.

One term

**Prerequisite(s):** Permission of the Chair of the Department

### PHYSICS 4K03 - SOLID STATE PHYSICS

Crystal structure and binding; lattice vibrations; electron energy bands; metals and semiconductors; magnetism.

Three lectures; one term

**Prerequisite(s):** PHYSICS 3MM3

### PHYSICS 4L03 A/B - LITERATURE REVIEW

A directed reading and review of the literature in any field of physics or astronomy, associated with a faculty member's research area. Normally, a report and poster presentation will be required.

Occasional tutorial (two hours); two terms

**Prerequisite(s):** Registration in Level IV of Honours Mathematics and Physics (B.Sc.) or any Honours Physics program; and permission of the Chair of the Department

*Not open to students with credit or registration in ISCI 4A12 A/B.*

### PHYSICS 4P06 A/B - SENIOR RESEARCH PROJECT

An experimental or theoretical project to be carried out under the supervision of a faculty member. Normally, a report, oral and poster presentation will be required.

One occasional tutorial (two hours); two terms

**Prerequisite(s):** Registration in Level IV of any Honours Physics or the Honours Mathematics and Physics program; and a GPA of at least 9.0; and permission of the Chair of the Department

**Antirequisite(s):** BIOPHYS 4P06 A/B, MEDPHYS 4Y06 A/B

*Not open to students with credit or registration in ISCI 4A12 A/B.*

### PHYSICS 4Q03 - INTRODUCTION TO QUANTUM FIELD THEORY

An introduction to quantum field theory. Topics include: creation and annihilation operators, many-particle systems, Bose-Einstein condensation, fields and forces, relativistic quantum field theory, spin-statistics connection, antiparticles.

Three hours (lectures); one term

**Prerequisite(s):** PHYSICS 3MM3

Alternates with PHYSICS 4E03.

## PHYSICS 5GT3 - GRADUATE TOPICS IN PHYSICS

This course allows an undergraduate student to take a graduate-level course (3 units) offered by the Department of Physics and Astronomy. Refer to the Graduate Calendar for course information.

**Prerequisite(s):** Permission of the Department of Physics and Astronomy Undergraduate students will be required to meet all academic obligations of the graduate-level course offering.

PHYSICS 5GT3 may be repeated, if on a different graduate level topic.

## Psychology, Neuroscience & Behaviour

Courses in PNB are administered by the Department of Psychology, Neuroscience & Behaviour.

Psychology Building, Room 102, ext. 23000

<http://www.science.mcmaster.ca/pnb/>

### Department Notes

1. The PNB course designation stands for Psychology, Neuroscience & Behaviour. PNB courses require registration in a program in the Department of Psychology, Neuroscience & Behaviour. PSYCH courses are open to all students who meet the stated prerequisites.
2. The University reserves the right to limit enrolment in any course. Where priorities have to be established, first consideration will be given to students registered in an Honours program in the Department of Psychology, Neuroscience & Behaviour.
3. The Psychology, Neuroscience & Behaviour Department pre-registration ballot will include the thesis courses (PNB 4D06 A/B, 4D09 A/B, 4DD6 A/B), and the Independent Library Study or Independent Research courses (PNB 3Q03 A/B S, 3QM3 A/B S, 3Q03 A/B S, 4Q03 A/B S, 4QQ3 A/B S). Students wishing to take these courses must complete and submit a ballot by **mid February**. Students will be informed of the outcome by mid March. Specific dates will be announced during the fall term. Ballots can be obtained from the Psychology, Neuroscience & Behaviour Department web site at <http://www.science.mcmaster.ca/pnb/>.
4. Students interested in Honours or Combined Honours Psychology, Neuroscience & Behaviour programs should be aware that they will not be able to complete the program requirements through evening courses.

### Courses

*If no prerequisite is listed, the course is open.*

See also courses in *PSYCH*.

### PNB 2A03 - PYTHON FOR PNB

Students will gain introductory experience programming in Python. Topics will include basic programming skills, data manipulation and analysis, plotting, and automating routine tasks. Students will learn these topics in the context of solving everyday problems experimental psychologists face.

One lecture (one hour), two labs (one hour); one term

**Prerequisite(s):** Registration in an Honours or Combined Honours Psychology, Neuroscience & Behaviour program

### PNB 2Q03 A/B S - INTRODUCTORY INDEPENDENT RESEARCH

Independent research practicum that provides students the opportunity to participate in research projects in a PNB laboratory.

By application through PNB 2XT0 in December of preceding Fall Term.

**Prerequisite(s):** PNB 2XA3, 2XB3, 2XC3 with an average of at least 9.0; and permission of the course coordinator

### PNB 2XA3 - HUMAN PERCEPTION & COGNITION

Humans gain knowledge by sensing, perceiving, evaluating and acting upon the world around us. This course explores psychological theories and measurements of these processes.

Three lectures, one tutorial; one term

**Prerequisite(s):** Registration in an Honours or Combined Honours Psychology, Neuroscience & Behaviour program or Honours Neuroscience program or Honours Music (Music Cognition) program

**Antirequisite(s):** PSYCH 2H03

### PNB 2XB3 - NEUROANATOMY & NEUROPHYSIOLOGY

This course describes the physiology of the neuron, communication between neurons, and the neural circuits that underlie touch, vision, audition, vestibular sensation, and movement.

Three lectures; one term

**Prerequisite(s):** Registration in an Honours or Combined Honours Psychology, Neuroscience & Behaviour program or Honours Neuroscience program

**Antirequisite(s):** LIFESCI 2C03

*Not open to students with credit or registration in ISCI 2A18 A/B.*

### PNB 2XC3 - ANIMAL BEHAVIOUR & EVOLUTION

This course integrates evolutionary analyses with in-depth discussions of genetic and cognitive mechanisms that generate major classes of behaviour shared by most animals, including humans.

Three lectures; one term

**Prerequisite(s):** Registration in an Honours or Combined Honours Psychology, Neuroscience & Behaviour program or Honours Neuroscience program

**Antirequisite(s):** LIFESCI 2D03

### PNB 2XD3 - INTEGRATIVE PNB THROUGH SCIENTIFIC WRITING

The course promotes integration across themes within Psychology, Neuroscience & Behaviour and teaches fundamental writing skills for the sciences. Students will be exposed to multiple topic areas and multiple faculty members.

Three lectures, one tutorial; one term

**Prerequisite(s):** PNB 2XA3 (or PSYCH 2H03), PNB 2XB3 (or one of ISCI 2A18 A/B, LIFESCI 2CC3), and PNB 2XC3 (or LIFESCI 2D03); and registration in an Honours or Combined Honours Psychology, Neuroscience & Behaviour program; or registration in Honours Neuroscience program

### PNB 2XE3 - DESCRIPTIVE STATISTICS AND RESEARCH METHODS

Students will learn research methods related to experimental design and to visualize and statistically describe data using various software packages.

Three lectures, one computer lab (two hours); one term

**Prerequisite(s):** Registration in an Honours or Combined Honours Psychology, Neuroscience & Behaviour program or Honours Neuroscience program.

*Not open to students with credit or registration in ISCI 2A18 A/B or STATS 2B03.*

### PNB 2XF3 - PERSPECTIVES IN PNB

Students will read and discuss scientific articles, and attend research seminars delivered by investigators within the Department of Psychology, Neuroscience & Behaviour (Faculty of Science).

Two lectures or colloquia, one tutorial; one term

**Prerequisite(s):** Registration in an Honours or Combined Honours Psychology, Neuroscience & Behaviour program

### PNB 2XT0 - PNB TUTORIAL

Tutorial supplementing the Honours programs offered through the Department of Psychology, Neuroscience & Behaviour. This tutorial is a prerequisite for PNB 3RM3 and therefore must be completed prior to enrollment in Level III.

This tutorial is evaluated on a Pass/Fail basis.

One hour (tutorial); one term

**Prerequisite(s):** Registration in Level II or above of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program

### PNB 3EE3 - PERCEPTION LABORATORY

Learn the skills needed for graduate school: experimental design, computer programming, manuscript writing and oral presentation. Previous programming experience not required.

One tutorial (one hour), one lab (three hours); one term

**Prerequisite(s):** Credit or registration in PNB 3XE3 and registration in Level III or above of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program; or ISCI 2A18 A/B

### PNB 3EV3 - EVOLUTIONARY PSYCHOLOGY LAB

Students will conduct an experiment recording and analyzing, and manipulating human speech, as well as photographing human faces, learning morphing techniques, and testing perceptions.

Seminar and lab (three hours); one term

**Prerequisite(s):** Credit or registration in PNB 3XE3 and registration in Level III or above of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program; or ISCI 2A18 A/B

### PNB 3HP3 - HISTORY OF PSYCHOLOGY

An account of the various schools of thought leading up to contemporary psychology including a history of how philosophers and physiologists influenced the earliest roots of Psychology as a science.

Three lectures; one term

**Prerequisite(s):** Registration in Level III or IV of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program

### PNB 3I06 A/B - PRACTICA IN PSYCHOLOGY

Supervised field placements will be arranged each year. The placements may vary from year to year, but will include cognitive, language, perceptual, memory, neuropsychological and behavioural disorders. A final report must be submitted electronically to the coordinator by April 1. Applications must be submitted to the coordinator by the beginning of February of the preceding academic year, with selection for placements announced by the end of March.

**Prerequisite(s):** One of ARTSSCI 2R03, PNB 2XE3, 3XE3, STATS 2MB3; and registration in Level III or IV of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program and permission of the coordinator.

Preference will be given to students registered in Honours Psychology, Neuroscience & Behaviour (Mental Health Specialization).

This course cannot be taken concurrently with any independent study course (PNB 3Q03 A/B S, 3QM3 A/B S, 3QQ3 A/B S, 4Q03 A/B S, 4QQ3 A/B S) with the same supervisor.

This course cannot be taken concurrently with any of PNB 4D06 A/B, 4D09 A/B, 4DD6 A/B.

### PNB 3L03 - NEURODEVELOPMENT & PLASTICITY LAB

Seminars and laboratory experience in current problems in neurobiology.

One lab (three hours); one term

**Prerequisite(s):** Credit or registration in PNB 3XE3 and registration in Level III

or above of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program; or ISCI 2A18 A/B; or registration in Level III or above of Honours Neuroscience program

### PNB 3MM3 - COGNITIVE NEUROSCIENCE LAB

Working in groups, students will learn to conduct experiments in the field of cognitive neuroscience. Issues related to research design and scientific communication will be emphasized.

Three hours (labs), two hours (tutorial); one term

**Prerequisite(s):** Credit or registration in PNB 3XE3 and registration in Level III or above of an

Honours or Combined Honours Psychology, Neuroscience & Behaviour program; or ISCI 2A18 A/B

### PNB 3Q03 A/B S - INDEPENDENT LIBRARY STUDY

A library project under the supervision of a faculty member that may extend over both terms.

**Prerequisite(s):** Registration in Level III or IV of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program or B.A. Psychology program

If PNB 3Q03 is taken concurrently with PNB 4D06 A/B, PNB 4D09 A/B or PNB 4DD6 A/B, a different faculty member must supervise each course.

Permission is by preregistration ballot. (See Department Note 3 above.)

### PNB 3QM3 A/B S - INDEPENDENT RESEARCH IN MENTAL HEALTH

A research project within the mental health field under the supervision of a faculty member within the mental health community.

Two hours (seminar/discussion)

**Prerequisite(s):** Registration in Level III or IV of the Honours B.A. or Honours B.Sc. Psychology, Neuroscience & Behaviour (Mental Health Specialization) program

**Antirequisite(s):** PNB 3Q03 A/B S

*PNB 3QM3 A/B S may be repeated once with permission of the course coordinator.*

### PNB 3Q03 A/B S - INTERMEDIATE INDEPENDENT RESEARCH

A laboratory project under the supervision of a faculty member that may extend over both terms.

**Prerequisite(s):** Registration in Level III or IV of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program or B.A. Psychology program

If PNB 3Q03 is taken concurrently with PNB 4D06 A/B, 4D09 A/B or 4DD6 A/B, a different faculty member must supervise each course.

Permission is by preregistration ballot. (See Department Note 3 above.)

### PNB 3S03 - ANIMAL BEHAVIOUR LAB

Laboratory and field studies involving a wide variety of species.

One lab (three hours); one term

**Prerequisite(s):** Credit or registration in PNB 3XE3 and registration in Level III or above of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program; or ISCI 2A18 A/B

### PNB 3V03 - LABORATORY IN HUMAN MEMORY AND COGNITION

Students will conduct a series of experiments aimed at contemporary issues in human memory and cognition. Understanding of background literature, experimental design, links between research questions and data analysis, and scientific communication will be emphasized.

One lab (three hours); one term

**Prerequisite(s):** PSYCH 3VV3; and credit or registration in PNB 3XE3 and registration in Level III or above of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program; or ISCI 2A18 A/B

### PNB 3XE3 - INFERENCE STATISTICS AND RESEARCH METHODS

Advanced topics include general linear model; multiple regression; analysis of variance; repeated measures; data transformations; factor analysis.

Three lectures, one computer lab (two hours); one term

**Prerequisite(s):** One of ARTSSCI 2R03, PNB 2XE3 or credit or registration in ISCI 2A18 A/B; or registration in Level III or above of Honours Neuroscience program.

*Not open to students with credit or registration in STATS 2MB3.*

### PNB 4A03 - ASSESSMENT IN CHILDREN

Examines intellectual, educational, neuropsychological and clinical standardized assessment measures and explores the intricacies of interviewing, test selection, scoring, interpretation and report writing.

Three lectures; one term

**Prerequisite(s):** Registration in Level IV of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program; and PSYCH 2AP3, 3B03, 3MT3. Preference will be given to students registered in Honours Psychology, Neuroscience & Behaviour (Mental Health Specialization).

### PNB 4D06 A/B - SENIOR THESIS

Students conduct an individual research project under the supervision of a faculty member. If any of PNB 3Q03 A/B, S, 3Q03 A/B, S, 4Q03 A/B, S, or 4Q03 A/B, S, are taken concurrently with PNB 4D06, a different faculty member must supervise each course.

For information and guidelines regarding this course, refer to the department web site at <http://www.science.mcmaster.ca/pnb/undergraduate/courses.html> and click on PNB 4D06, or contact the Course Administrator.

**Prerequisite(s):** Registration in Level IV of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program with a Grade Point Average of at least 8.0; and PNB 3XE3

**Prerequisite(s) (EFFECTIVE 2021-2022):** Registration in Level IV of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program with a Grade Point Average of at least 8.5; and one of MUSICCOG 3Q03 A/B, S, PNB 3EE3, 3EV3, 3L03, 3MM3, 3Q03, A/B, S, 3S03, 3V03

**Antirequisite(s):** ORIGINS 4A09 A/B, PNB 4D09 A/B, 4DD6 A/B

*Cannot be taken concurrently with ISCI 4A12 A/B or PNB 4SC6 A/B.*

*Permission is by preregistration ballot. (See Department Note 3 above.)*

### PNB 4D09 A/B - SENIOR HONOURS THESIS

Students conduct an individual research project under the supervision of a faculty member. If any of PNB 3Q03 A/B, S, 3QM3 A/B, S, 3Q03 A/B, S, 4Q03 A/B, S, 4Q03 A/B, S are taken concurrently with PNB 4D09, a different faculty member must supervise each course.

For information and guidelines regarding this course, refer to the department web site at <http://www.science.mcmaster.ca/pnb/undergraduate/courses.html> and click on PNB 4D09, or contact the Course Administrator.

**Prerequisite(s):** Registration in Level IV of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program with a Grade Point Average of at least 8.5; and PNB 3XE3

**Prerequisite(s) (EFFECTIVE 2021-2022):** Registration in Level IV of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program with a Grade Point Average of at least 8.5; and one of MUSICCOG 3QQ3 A/B, S, PNB 3EE3, 3EV3, 3L03, 3MM3, 3QM3 A/B, S, 3QQ3 A/B, S, 3S03, 3V03

**Antirequisite(s):** BIOLOGY 4C09 A/B, 4C12 A/B, 4F06 A/B, NEUROSCI 4L09 A/B, 4L12 A/B, ORIGINS 4A09 A/B, PNB 4D06 A/B, 4DD6 A/B  
Cannot be taken concurrently with ISCI 4A12 A/B or PNB 4SC6 A/B.

*Permission is by preregistration ballot. (See Department Note 3 above.)*

### PNB 4DD6 A/B - SENIOR THESIS

Students conduct an individual research project under the supervision of a faculty member. If any of PNB 3Q03 A/B, S, 3QQ3 A/B, S, 4Q03 A/B, S, or 4QQ3 A/B, S, are taken concurrently with PNB 4DD6, a different faculty member must supervise each course. For information and guidelines regarding this course, refer to the department web site at <http://www.science.mcmaster.ca/pnb/undergraduate/courses.html> and click on PNB 4DD6, or contact the Course Administrator.

**Prerequisite(s):** Registration in Level IV of the Honours Biology and Psychology, Neuroscience & Behaviour program with a minimum Grade Point Average of at least 8.5; and PNB 3XE3

**Prerequisite(s) (EFFECTIVE 2021-2022):** Registration in Level IV of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program with a Grade Point Average of at least 8.5; and one of MUSICCOG 3QQ3 A/B, S, PNB 3EE3, 3EV3, 3L03, 3MM3, 3QQ3 A/B, S, 3S03, 3V03

**Antirequisite(s):** BIOLOGY 4C09 A/B, 4C12 A/B, 4F06 A/B, NEUROSCI 4L09 A/B, 4L12 A/B, ORIGINS 4A09 A/B, PNB 4D06 A/B, 4D09 A/B  
Cannot be taken concurrently with ISCI 4A12 A/B or PNB 4SC6 A/B.

*Permission is by preregistration ballot. (See Department Note 3 above.)*

### PNB 4E03 - SOCIAL COGNITIVE NEUROSCIENCE

The aim of this course is to provide students with a general appreciation of the field, and a deeper understanding of selected topics that are popular in the contemporary literature.

Three lectures; one term

**Prerequisite(s):** PSYCH 2C03, and registration in Level III or IV of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program

### PNB 4J03 - INQUIRY IN PSYCHOLOGY, NEUROSCIENCE & BEHAVIOUR

This course provides students with an opportunity to develop skills for investigations in selected areas of psychology, neuroscience and behaviour.

Three lectures; one term

**Prerequisite(s):** Registration in Level IV of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program  
*Not open to students with credit or registration in ISCI 4A12 A/B.*

### PNB 4Q03 A/B S - SENIOR INDEPENDENT LIBRARY STUDY

A library project under the supervision of a faculty member that may extend over both terms.

**Prerequisite(s):** Registration in Level IV of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program. If PNB 4Q03 A/B S is taken concurrently with PNB 4D06 A/B, PNB 4D09 A/B, PNB 4DD6 A/B a different faculty member must supervise each course.

Permission is by preregistration ballot. (See Department Note 3 above.)

### PNB 4Q03 A/B S - SENIOR INDEPENDENT RESEARCH

A laboratory project under the supervision of a faculty member that may extend over both terms.

**Prerequisite(s):** Registration in Level IV of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program. If PNB 4Q03 A/B S is taken concurrently with PNB 4D06 A/B, PNB 4D09 A/B, PNB 4DD6 A/B, a different faculty member must supervise each course.

PNB 4Q03 A/B S may be repeated once with permission of the course coordinator.

Permission is by preregistration ballot. (See Department Note 3 above.)

### PNB 4SC6 A/B - SCIENCE COMMUNICATION IN THE BEHAVIOURAL SCIENCES

Students will learn critical writing skills to translate basic research for popular media outlets. Examples of bad journalism and inaccurate reporting will be highlighted.

Three lectures; two terms

**Prerequisite(s):** Registration in Level IV of an Honours or Combined Honours Psychology, Neuroscience & Behaviour program or Level IV Honours Neuroscience program

**Antirequisite(s):** HUMBEHV 4SC6 A/B

*Cannot be taken concurrently with BIOLOGY 4C09 A/B, 4C12 A/B, 4F06 A/B, ISCI 4A12 A/B, NEUROSCI 4L09 A/B, 4L12 A/B, ORIGINS 4A09 A/B, PNB 4D06 A/B, 4D09 A/B, 4DD6 A/B.*

## Polish

Courses in Polish are administered by the Department of Linguistics and Languages.

Togo Salmon Hall, Room 629, ext. 24388

<http://linguistics.humanities.mcmaster.ca/>

### Notes

1. Students should note that the Department has classified its Polish language courses under the following categories:

- **Introductory Level Language Courses:** POLISH 1Z03, 1ZZ3
- **Intermediate Level Language Courses:** POLISH 2Z03, 2ZZ3

2. POLISH 1Z03 and 1ZZ3 are open only to students with very limited or no prior knowledge of Polish. Students with more advanced knowledge of written and oral Polish are advised to enroll in POLISH 2Z03 and 2ZZ3.

3. Not all courses are offered on an annual basis. Students should consult the timetable for available courses.

### Courses

*If no prerequisite is listed, the course is open.*

### POLISH 1Z03 - BEGINNER'S POLISH I

An introduction to basic conversational and written Polish, teaching the skills of listening, speaking, and writing. The sequel to this course is POLISH 1ZZ3.

Three hours; one term

*Open only to students with very limited or no prior knowledge of Polish.*

*Not open to students with credit or registration in POLISH 1ZZ3.*

*The Department reserves the right to place students in the course most appropriate to their abilities.*

### POLISH 1ZZ3 - BEGINNER'S POLISH II

A course designed to further the student's command of oral and written Polish. The sequel to this course is POLISH 2Z03.

Three hours; one term

**Prerequisite(s):** POLISH 1Z03 or permission of the Department

*The Department reserves the right to place students in the course most*



*appropriate to their abilities.*

### **POLISH 2Z03 - INTERMEDIATE POLISH I**

This course concentrates on the study of Polish grammar and develops skills for conversation, reading and writing. The sequel to this course is POLISH 2ZZ3.

Three hours; one term

**Prerequisite(s):** POLISH 1ZZ3

*The Department reserves the right to place students in the course most appropriate to their abilities.*

### **POLISH 2ZZ3 - INTERMEDIATE POLISH II**

This course concentrates on the study of grammatical structures and rules of composition. It develops written and oral skills.

Three hours; one term

**Prerequisite(s):** POLISH 2Z03

*The Department reserves the right to place students in the course most appropriate to their abilities.*

## **Political Science**

Courses in Political Science are administered by the Department of Political Science.

Kenneth Taylor Hall, Room 527, ext. 24741

<https://politicalscience.mcmaster.ca/>

#### **Department Notes**

1. The Department of Political Science offers courses in the fields of Canadian Politics, Comparative Politics, International Relations, Political Theory and Public Policy, as well as courses that are not field specific. The Department does not require students to concentrate in any field of study. (Please see Department of Political Science in the Faculty of Social Sciences section of this Calendar for specific program requirements.) However, students should note that prerequisites for upper year courses normally come from the specific field of which those courses are part. In some instances, prerequisites call simply for prior coursework in a particular field, in which case students may consult the lists below to determine which courses satisfy these requirements.
2. Not every Political Science course listed in this Calendar is offered every year. Students are advised to consult the Master Timetable published by the Office of the Registrar or contact the Department after April 1st for the list of courses that will be offered in the following academic year.
3. All students are encouraged to seek advice from members of the Department in developing a program of study. All Honours students are strongly advised to discuss their program with an undergraduate advisor to ensure that it meets Departmental requirements.
4. POLSCI 2NN3 and POLSCI 3NN3 or POLSCI 3N06 A/B are required for students in Honours Political Science programs.
5. POLSCI 2006 A/B is required for students enrolled in Honours Political Science programs and is recommended for students in the B.A. program.
6. Students should be alerted to those Level II and III courses that are required to qualify for a number of Level IV courses. Students who wish to enter courses but who lack the necessary prerequisites must obtain the permission of the instructor.
7. Some Level III courses do not have course prerequisites. However, students without related Level II courses should contact one of the Department's undergraduate advisors or the course instructor to determine whether they have the appropriate academic background for any specific Level III course.
8. Political Science Honours and Combined Honours students are encouraged but not required to take one or more of the Level III Honours Issues courses (POLSCI 3B03, 3H03 and 3J03). The topics of the courses will be described on the Department's website in advance of the date on which registration

for them begins. Normally they will correspond to the research interests of the permanent faculty members (if available) who will teach them.

Students are responsible for ensuring that course prerequisites are fulfilled.

#### **I. Canadian Politics**

POLSCI 2C03, 2D03, 2EM3, 2F03, 2LW3, 2PF3, 2U03, 3BB3, 3C03, 3CL3, 3FF3, 3FG3, 3GG3, 3IP3, 3J03, 3JJ3, 3K03, 3NN6 A/B, 3RF3, 3Z03, 4CA3, 4CF3, 4JS3, 4JS6 A/B, 4LC3, 4O06 A/B, 4P03, 4RR3, 4T06 A/B, 4UP3

#### **II. Comparative Politics**

POLSCI 2C03, 2M03, 2PF3, 2U03, 2US3, 2XX3, 3BB3, 3D03, 3EE3, 3F03, 3G03, 3GG3, 3H03, 3I03, 3JR3, 3K03, 3KK3, 3LC3, 3LL3, 3PG3, 3U03, 3V03, 3VV3, 3Y03, 4A03, 4AA6 A/B, 4D06 A/B, 4G06 A/B, 4KC3, 4LA3, 4PA3, 4P03, 4Q06 A/B, 4R06, 4RR3, 4SS3, 4UF3, 4UP3, 4YR3

#### **III. International Relations**

POLSCI 2H03, 2I03, 2J03, 2XX3, 3AA3, 3B03, 3E03, 3EE3, 3FF3, 3GC3, 3JR3, 3K03, 3KK3, 3LB3, 3P03, 3PG3, 3Q03, 3QQ3, 3X03, 3Y03, 4D06 A/B, 4DV3, 4GC3, 4GG3, 4HR3, 4KB3, 4KD3, 4KK3, 4LL3, 4NN3, 4PE3, 4PP3, 4QQ3, 4Y03, 4YR3

#### **IV. Political Theory**

POLSCI 2006 A/B, 3CC3, 3FR3, 3LA3, 3PB3, 3PG3, 3VV3, 4AA6, 4C06 A/B, 4DD3, 4E06 A/B, 4DV3, 4FF3, 4HH3, 4JJ3, 4KA3, 4OL3, 4RT3, 4Y03

#### **V. Public Policy**

POLSCI 2C03, 2U03, 2EM3, 2LW3, 3B03, 3D03, 3E03, 3FF3, 3GC3, 3IP3, 3J03, 3LL3, 3LP3, 3U03, 3Z03, 4CF3, 4G06 A/B, 4JS3, 4L03, 4LC3, 4O06 A/B, 4P03, 4LC3, 4R06, 4RR3, 4SS3

**The following courses while satisfying the requirements of the program are not specific to any field of study:**

POLSCI 1AA3, 1AB3, 1G06 A/B, 2NN3, 2MN3, 3N06 A/B, 3NN3, 3PR3, 3UU3, 3WP3, 4Z06 A/B, 4ZZ3, 4ZZ6 A/B

#### **Courses**

*If no prerequisite is listed, the course is open.*

### **POLSCI 1AA3 - GOVERNMENT, POLITICS, AND POWER**

What forces shape the political process? Towards what ends? In whose interests? In this course we will investigate these questions by focusing on the ideas, institutions, and structures that have shaped the contemporary political landscape.

Lectures and tutorials (three hours); one term

**Antirequisite(s):** POLSCI 1G06 A/B

### **POLSCI 1AB3 - POLITICS AND POWER IN A GLOBALIZING WORLD**

This course explores theories of conflict/cooperation, cases of international action/inaction, and the formal and informal rules written by global political actors. We will also ask questions about why states resemble or differ from one another.

Lectures and tutorials (three hours); one term

**Antirequisite(s):** POLSCI 1G06 A/B

### **POLSCI 2C03 - FORCE AND FEAR, CRIME AND PUNISHMENT**

This course examines the use of the criminal justice system, other coercive policies and the use of actual force by governments in Canada and other democratic states and the impact it has on citizens.

Lectures and tutorials (three hours); one term

### **POLSCI 2D03 - CANADIAN DEMOCRACY**

An introduction to institutions delimiting the practice of citizenship in Canada and of the political values they embody.

Three hours (lectures and tutorials); one term

### POLSCI 2EM3 - POLITICAL ECONOMY OF THE MEDIA

A comparative examination of changing patterns of ownership and control of the mass media in light of globalization, technological change, government policy, market restructuring and corporate consolidation.

Three lectures; one term

**Prerequisite(s):** Completion of one of the following: CMST 1A03, MMEDIA 1A03, POLISCI 1AA3, POLISCI 1AB3, SOCIOLOG 1C03 or SOCIOLOG 1Z03, and registration in Level II or above; or registration in Level II or above in Justice, Political Philosophy and Law

**Cross-list(s):** CMST 2K03

*This course is administered by the department of Communication Studies and Multimedia.*

### POLSCI 2F03 - POLITICS, POWER AND INFLUENCE IN CANADA

This course analyzes who gets represented and whose interests get translated into public policies in Canada, including issues of inequality, immigration and citizenship, and representation by parties, interest groups and social movements.

Lectures and tutorials (three hours); one term

### POLSCI 2H03 - GLOBALIZATION AND THE STATE

An overview of the impact that globalization has had on the powers of the state and an assessment of how states have tried to preserve their authority in the face of globalization.

Lectures and tutorials (three hours); one term

### POLSCI 2I03 - GLOBAL POLITICS

A study of institutions and processes of the international political system.

Three hours (lectures and tutorials); one term

### POLSCI 2J03 - GLOBAL POLITICAL ECONOMY

A study of institutions and processes of the international political economy.

Three hours (lectures and tutorials); one term

### POLSCI 2LW3 - COMMUNICATION POLICY AND LAW

An examination of communication law and policy. Topics include freedom of expression and the press, telecommunications and broadcasting regulation, Internet law, privacy, and intellectual property.

Three hours; one term

**Prerequisite(s):** Completion of one of the following: CMST 1A03, MMEDIA 1A03, POLISCI 1AA3, or POLISCI 1AB3, and registration in Level II or above; or registration in Level II or above in Justice, Political Philosophy and Law

**Antirequisite(s):** CMST 3I03

**Cross-list(s):** CMST 2LW3

*This course is administered by the department of Communication Studies and Multimedia.*

### POLSCI 2M03 - GOVERNANCE, REPRESENTATION, AND PARTICIPATION IN DEMOCRACIES

A systematic introduction to comparing the politics of industrialized and post-industrial countries including electoral and government institutions, parties, ideologies and values, and political economy.

Three hours (lectures and tutorials); one term

### POLSCI 2MN3 - REEL POLITICS

This course examines various trends and issues in politics as depicted in and through film.

This course cannot be used to satisfy any of the Political Science course requirements in fulfillment of a Political Science degree, however it can be applied to elective requirements.

**Prerequisite(s):** Registration in Level II or above

*Three hours; one term*

### POLSCI 2NN3 - POLITICS BY DESIGN

What steps are involved in designing and implementing a primary-source research project? This course focuses on the key elements of the research process from developing original research questions, to gathering and analysing primary data.

Three hours (lectures and tutorials); one term

**Prerequisite(s):** POLISCI 1AB3 or POLISCI 1G06 A/B

**Antirequisite(s):** POLISCI 3N06 A/B

(See Note 4)

### POLSCI 2O06 A/B - POLITICAL THEORY

An introduction to political theory that includes Classical Greek thought, early modern natural right theory and contemporary political theory.

Three hours (lectures and tutorials); two terms (See Note 5 above.)

### POLSCI 2PF3 - POLITICS OF FUNNY

Examination of politics through the lens of comedy, from stand up to satirical news and including perspectives on race, class, gender, and free speech.

Lectures and tutorials (three hours); one term

Prerequisite: Registration in Level II or above

### POLSCI 2U03 - PUBLIC POLICY AND ADMINISTRATION

This course examines the forces and factors influencing government policy decisions and the implementation of those policy choices from Canadian and comparative perspectives as means of understanding the distribution of wealth and power in society.

Lectures and tutorials (three hours); one term

### POLSCI 2US3 - US POLITICS

An introduction into the politics and institutions of the United States of America.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

### POLSCI 2XX3 - POLITICS OF THE DEVELOPING WORLD

An examination of major theoretical approaches to the study of development and underdevelopment, such as modernization, politics of order, dependency and modes of production.

Three hours (lectures and tutorials); one term

### POLSCI 3B03 - HONOURS ISSUES IN INTERNATIONAL RELATIONS AND GLOBAL PUBLIC POLICY

In-depth examination of a theoretical and empirical issue or topic in international relations or global public policy. Specific topic to be chosen by the instructor.

Three hours; (lectures and discussion); one term

**Prerequisite(s):** Registration in Level III or above of an Honours Political Science Program. (See Note 8 above.)

### **POLSCI 3BB3 - POLITICAL COMMUNICATION: CANADA AND THE WORLD**

The relationship between politics and the media is analysed in terms of issues such as political news coverage, electioneering, political marketing, policy formation and publicity, and agenda setting and public opinion.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level III or above of a Communication Studies or Political Science program; or POLSCI 1AA3 and 1AB3 or 1G06 and registration in Level III or above of the Honours Social Psychology (B.A.) program

**Cross-list(s):** CMST 3D03

### **POLSCI 3C03 - GOVERNMENT AND POLITICS OF INDIGENOUS PEOPLE**

An historical examination of the leadership and politics in Canada's indigenous communities, with a particular focus on pre-contact political structures, the Indian Act and its consequences, and contemporary social questions.

Three hours; (lectures and discussion); one term

**Prerequisite(s):** Three units of Level II Indigenous Studies or permission of the instructor or registration in Honours Political Science Specialization in Public Law and Judicial Studies.

**Cross-list(s):** INDIGST 3J03

*This course is administered by Indigenous Studies.*

### **POLSCI 3CC3 - POLITICAL AUTHORITY: 20TH-CENTURY POLITICAL THEORY**

An examination of major themes in political theory in the 20th century focusing on concerns about legitimate political authority and the nature of power and human relations in modern society.

Lectures and discussion (three hours); one term

**Prerequisite(s):** ARTSSCI 2A06 or POLSCI 2006 and registration in Level III or above

### **POLSCI 3CL3 - CONSTITUTIONAL AND PUBLIC LAW IN CANADA**

This course examines how law mediates the relationship between government and citizens with a focus on the constitutional, administrative and criminal law in Canada.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level III or above

**Antirequisite(s):** POLSCI 3NN6 A/B

### **POLSCI 3EE3 - INTERNATIONAL RELATIONS: NORTH-SOUTH**

An examination of recent North-South relations concentrating on such issues as commodity trade, protectionism, the debt crisis and negotiations over a new international economic order.

Three hours; (lectures and discussion); one term

**Prerequisite(s):** Registration in Level III or above

Priority will be given to students registered in a Political Science program. (See Note 7 above.)

### **POLSCI 3FG3 - PUBLIC SERVICE LEADERSHIP**

Focuses on core leadership competencies identified by the federal public service as key in dynamic organizations and effective leaders.

Three hours; (lectures and discussion); one term

**Prerequisite(s):** Registration in Level III or above of an Honours program

**Antirequisite(s):** SOCSCI 3EL3

### **POLSCI 3G03 - ETHNICITY AND MULTICULTURALISM: THEORY AND PRACTICE**

An examination of ethnicity, multiculturalism and citizenship in theoretical and comparative perspectives, principally in industrially advanced societies.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Six units of Political Science and registration in Level III or above. (See Note 7 above.)

### **POLSCI 3GC3 - GLOBAL CLIMATE CHANGE**

This course provides students with an introduction to the domestic and international politics of climate change.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in level III or above

**Antirequisite(s):** GEOG 3EG3

**Cross-list(s):** ENVSOCTY 3EG3

*Not open to students with credit in POLSCI 3B03 if the topic was Global Climate Change.*

### **POLSCI 3GG3 - FEDERALISM**

An analysis of the constitutional framework, evolution, and structure of the federal system in Canada and/or other Western countries.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level III or above. (See Note 7 above.)

### **POLSCI 3H03 - HONOURS ISSUES IN COMPARATIVE POLITICS**

Examination of a theoretical and empirical issue or topic in comparative politics of the developing or developed world. Specific topic to be chosen by instructor.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level III or above of an Honours Political Science Program. (See Note 8 above.)

### **POLSCI 3I03 - TOPICS IN AMERICAN POLITICS**

The study of a central component of the U.S. political system.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level III or above

POL SCI 3I03 may be repeated, if on a different topic, to a total of six units.

Priority will be given to students registered in a Political Science program. (See Note 9 above.)

### **POLSCI 3IP3 - INTELLECTUAL PROPERTY**

An examination of intellectual property from a practical/legal perspective, and in broader context. Exploring the politics of intellectual property online and offline: philosophies and practices, politics and institutions, and alternatives.

Three hours; one term

**Prerequisite(s):** Completion of one of the following: CMST 1A03, MMEDIA 1A03, POLISCI 1AA3, or POLISCI 1AB3, and registration in Level III or above; or registration in Level III or above of a program in Justice, Political Philosophy and Law

**Cross-list(s):** CMST 3I13

*This course is administered by the department of Communication Studies and Multimedia.*

### **POLSCI 3J03 - HONOURS ISSUES IN CANADIAN POLITICS AND CANADIAN PUBLIC POLICY**

In-depth examination of a theoretical and empirical issue or topic in Canadian politics or Canadian public policy. Specific topic to be chosen by instructor.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level III or above of an Honours Political Science Program. (See Note 8 above.)

### **POLSCI 3JJ3 - PROVINCIAL POLITICS IN CANADA**

A study of the development, nature and functioning of the political systems of the Canadian provinces.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level III or above. (See Note 7 above.)

### **POLSCI 3JR3 - THE RULE OF LAW AND LEGAL AND JUDICIAL REFORMS IN THE DEVELOPING WORLD**

The course offers an examination of legal systems throughout the developing world following World Bank, IMF, international aid agencies push to homogenize the rule of law through legal and judicial reforms.

Three hours (lectures); one term

**Prerequisite(s):** POLSCI 2XX3 and registration in Level III or above or permission of the instructor

### **POLSCI 3K03 - MIGRATION AND CITIZENSHIP: CANADIAN, COMPARATIVE AND GLOBAL PERSPECTIVES**

This course examines immigration as a local, national and global phenomenon. It considers the process of incorporation of immigrants into receiving societies, and the implications of migration for our understanding of citizenship and the nation-state.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level III or above. (See Note 7 above.)

### **POLSCI 3KA3 - INDIGENOUS HUMAN RIGHTS**

A study of government policies and their impact on Indigenous Peoples, specifically Indian Affairs in Canada and the United States. Topics will include individual and collective rights of Indigenous Peoples and the conceptual problems which arise in a Westernized justice system.

Lectures and seminars (three hours); one term

**Prerequisite:** Three units of Level II Indigenous Studies or permission of the instructor or registration in Honours Political Science Specialization in Public Law and Judicial Studies.

**Cross-list(s):** INDIGST 3K03

*This course is administered by Indigenous Studies.*

### **POLSCI 3KK3 - GENOCIDE: SOCIOLOGICAL AND POLITICAL PERSPECTIVES**

An examination of genocide and other extreme crimes against humanity.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above

**Antirequisite(s):** SOC SCI 2C03

**Cross-list(s):** SOCIOL 3KK3

*Priority will be given to students registered in a Political Science or Sociology program. (See Note 7 above.)*

### **POLSCI 3LA3 - RELIGION AND POLITICS**

The relationship between religion and politics is explored by way of readings by Locke, Rousseau, and Schmitt, and case studies concerning the place of religion in public life.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** RELIGST 3CC3

**Cross-list(s):** SCAR 3CC3

### **POLSCI 3LB3 - GLOBALIZATION AND THE WORLD ORDER**

Addresses the past and current dynamics of globalization and how global systems have evolved into their current forms, including global economy, global governance and citizenship.

Lectures and discussion (three hours); one term

**Prerequisite(s):** One of POLSCI 2I03, 2J03; and registration in Level III or above

### **POLSCI 3LC3 - SOUTHEAST ASIAN POLITICS**

Examines the politics of select Southeast Asian countries including history, economy, regime type, civil-military relations, party system, socio-political cleavages, human rights and development.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level III or above

### **POLSCI 3LL3 - DEVELOPMENT AND PUBLIC POLICY**

An examination of critical issues in public policy as they impact on the process of development.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level III or above

(See Note 7 above.)

### **POLSCI 3LP3 - TOPICS IN LAW AND POLICY**

In-depth examination of a specific area or field of law and its intersection with politics and public policy at the domestic and/or international level. Specific topic to be chosen by the instructor.

Three hours (lectures); one term

**Prerequisite(s):** Registration in Level III or above

### **POLSCI 3NN3 - STATISTICAL ANALYSIS OF PRIMARY DATA**

Social scientific research often produces enormous quantities of primary data on voters, states, beliefs, and actions. This course highlights statistical techniques we can use to simplify that data allowing us to identify patterns and relationships.

Three hours (lectures and labs); one term

**Prerequisite(s):** POLSCI 2NN3

**Antirequisite(s):** POLSCI 3N06

(See Note 4 above.)

### **POLSCI 3PB3 - POLITICS FROM BELOW**

This course examines social and political problems with large-scale democracies and considers several contemporary responses that, in their own distinctive ways, turn to community/locality.

Lectures and discussion (three hours); one term

**Prerequisite(s):** ARTSSCI 2A06 A/B or POLSCI 2006 A/B and registration in Level III or above

### **POLSCI 3PG3 - POLITICAL GEOGRAPHY**

This course examines the intersections between Political Science and Geography. It aims to unpack how these two disciplines inform and enrich each other by exploring the intellectual development of political geography as a sub-discipline.

**Prerequisite(s):** Registration in Level III or above.

### **POLSCI 3PR3 - PRACTICE OF POLITICS**

Connects theories and generalizations about politics with experience on the ground. Students engage real-world issues, while reflecting upon issues of



citizenship, power, opportunity, and exclusion.

One term

**Prerequisite(s):** Registration in Level III or above Political Science; and permission of the Department

**Antirequisite(s):** SOCSCI 3EL3

### **POLSCI 3Q03 - THE CAUSES OF WAR**

An examination of theoretical perspectives on the causes of war and conditions for peace between and within political communities.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level III or above

Priority will be given to students registered in a Political Science program. (See Note 7 above.)

### **POLSCI 3RF3 - THE CHARTER OF RIGHTS AND FREEDOMS**

An examination of the Charter of Rights and Freedoms and its interpretation and impact on governments, public policy and governance in Canada.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level III or above

**Antirequisite(s):** POL SCI 3NN6 A/B

### **POLSCI 3UU3 - READING COURSE**

Topics to be arranged between an individual student and instructor.

One term

**Prerequisite(s):** Registration in Level III or IV of any program in Political Science, and the written permission of an Undergraduate Advisor on behalf of the Department. A written proposal must be submitted to the Department by the instructor prior to the term in which the course is to be taken.

### **POLSCI 3V03 - GENDER AND POLITICS**

Theoretical and empirical approaches to understanding the role of gender in politics, including electoral politics, democratization, peace and security, organized womens movements.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level III or above. (See Note 7 above.)

### **POLSCI 3VV3 - DEMOCRATIC THEORY**

An examination of historical and contemporary debates about democracy and its challenges.

Lectures and discussion (three hours); one term

**Prerequisite(s):** ARTSSCI 2A06 A/B or POLSCI 2006 A/B and registration in Level III or above

### **POLSCI 3WP3 - WORKING IN POLITICS**

This course will provide students with the opportunity to earn academic credit for their work in an employment or internship position. The department does not provide positions, but may assist students in finding their own position.

**Prerequisite(s):** Registration in Level II or above; and permission of the Department

### **POLSCI 3Y03 - DEMOCRATIZATION AND HUMAN RIGHTS**

A review of the process of democratization and the forces that drive it and an assessment of the place of human rights in emerging democracies.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level III or above. (See Note 7 above.)

### **POLSCI 3Z03 - CANADIAN PUBLIC SECTOR MANAGEMENT**

The organizational arrangements for implementing public policies in Canada, including an assessment of their efficiency, effectiveness and accountability.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level III or above.

(See Note 7 above.)

### **POLSCI 4AA6 A/B - CONTEMPORARY POLITICS**

An in-depth and extensive examination of theoretical, conceptual, methodological and/or empirical issues associated with a specific topic affecting the practice of politics in modern times.

Three hours (seminar); two terms

**Prerequisite(s):** Registration in Level IV Honours Political Science

### **POLSCI 4CA3 - ISSUES IN CANADIAN POLITICS**

An examination of the major issues in contemporary Canadian politics, with a particular emphasis on democratic institutions.

Seminar (three hours); one term

**Prerequisite(s):** Registration in Level IV Honours Political Science

### **POLSCI 4CF3 - CANADIAN FOREIGN POLICY**

This seminar will consider the theories and practice of Canadian foreign policy.

Seminar (three hours); one term

**Prerequisite(s):** Registration in Level IV Honours Political Science

### **POLSCI 4D06 A/B - INTERNATIONAL POLITICS**

In-depth and extensive examination of theoretical, conceptual, methodological and/or empirical issues associated with a specific topic in international relations, global politics or global public policy.

Three hours (seminar); two terms

**Prerequisite(s):** One of POLSCI 2I03 or 2J03; and registration in Level IV Honours Political Science

### **POLSCI 4DV3 - DEATH AND VIOLENCE**

Is violence a continuation of politics? Is death the end? Considers topics in mortality and vulnerability including self-sacrifice, revolution, tragedy, grief and the hallowed dead.

Seminar (three hours); one term

**Prerequisite(s):** 3 units of Level III Political Theory and registration in Level IV Honours Political Science

### **POLSCI 4FF3 - RIGHTS AND JUSTICE**

An examination of major debates in liberal political theory, with emphasis on rights, individualism, and egalitarianism.

Three hours (seminar); one term

**Prerequisite(s):** ARTSSCI 2A06 A/B or POLSCI 2006 A/B and registration in Level IV Honours Political Science

### **POLSCI 4G06 A/B - POLITICS OF PUBLIC POLICY**

An examination of the political causes and mechanisms that shape public policies, such as political parties, interest groups, policy legacies, and how they influence policy choices on challenging issues as well as account for cross-national differences.

Seminar (three hours); two terms

**Prerequisite(s):** one course in Public Policy or Comparative Politics; and registration in Level IV Honours Political Science

### **POLSCI 4GC3 - ADVANCED ISSUES IN GLOBAL CITIZENSHIP**

This seminar critically assesses what it means to be a global citizen in relation to pressing global challenges, including refugee movements, climate change, corporate responsibility, humanitarian interventions, and global inequality.

Seminar (three hours); one term

**Prerequisite(s):** Registration in Level IV Honours Political Science Specialization in Global Citizenship

### **POLSCI 4GG3 - CONCEPTUAL ISSUES IN GLOBAL POLITICS**

An examination of contending theoretical approaches and issues to global politics.

Three hours (seminar); one term

**Prerequisite(s):** POLSCI 2I03 and registration in Level IV Honours Political Science

### **POLSCI 4HH3 - CRITICAL THEORY**

An examination of selected critical political theories from the 1930s to the present.

Seminar (three hours); one term

**Prerequisite(s):** ARTSSCI 2A06 A/B or POLSCI 2006 A/B and registration in Level IV Honours Political Science

### **POLSCI 4HR3 - HUMAN RIGHTS**

An examination of the concept of human rights as reflected in international declarations and practices.

Seminar (three hours); one term

**Prerequisite(s):** Registration in Level IV Honours Political Science

### **POLSCI 4JJ3 - COSMOPOLITANISM**

An examination of historical and contemporary debates about the idea that we should think and act as citizens of the world.

Seminar (three hours); one term

**Prerequisite(s):** ARTSSCI 2A06 A/B or POLSCI 2006 A/B and registration in Level IV Honours Political Science

**Antirequisite(s):** POLSCI 4C06

### **POLSCI 4JS3 - JUDICIAL STUDIES**

An examination of the theories, factors and principles underlying the impact of the judiciary on political and policy outcomes in democratic states.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV Honours Political Science Specialization in Public Law and Judicial Studies

### **POLSCI 4KB3 - NON-WESTERN INTERNATIONAL RELATIONS**

This seminar challenges the assumptions found in the 'canonical' readings of IR Theory. It draws on a plethora of Non-Western thinkers such as Frantz Fanon, Aimé Césaire, Al-Afghani, Gandhi, Soekarno, Kwame Nkrumah, and Edward Said, among others.

Three hours (seminar); one term

**Prerequisite(s):** POLSCI 2I03 and registration in Level IV Honours Political Science.

### **POLSCI 4KC3 - COMPARATIVE DEMOCRATIZATION**

Concepts, theories and issues in democratization, including: definitions and measurement, emergence and consolidation; institutional design, party and

electoral systems, rule of law, political culture, civil society, media freedom and foreign assistance.

Seminar (three hours); one term

**Prerequisite(s):** one course in Comparative Politics and registration in Level IV Honours Political Science

### **POLSCI 4KK3 - ADVANCED ISSUES IN GLOBAL SECURITY**

An examination of conceptual issues and particular cases in contemporary thinking about the global security environment.

Three hours (seminar); one term

**Prerequisite(s):** One of POLSCI 2I03 or POLSCI 2J03 and registration in Level IV Honours Political Science

### **POLSCI 4LA3 - POLITICS IN LATIN AMERICA**

An examination of Latin America's longstanding hegemonic crisis and corresponding ideologies such as populism, corporatism, and authoritarianism.

Seminar (three hours); one term

**Prerequisite(s):** Registration in Level IV Honours Political Science

### **POLSCI 4LC3 - RESEARCH ON LAW AND COURTS**

This course reviews the methodological and empirical foundations for judicial research and requires the completion of a major research paper in the field.

Three hours (seminar); one term

**Prerequisite(s):** Registration in Level IV Honours Political Science Specialization in Public Law and Judicial Studies

### **POLSCI 4NN3 - STUDIES IN GLOBAL POLITICAL ECONOMY**

An examination of selected issues in the global political economy.

Three hours (seminar); one term

**Prerequisite(s):** POLSCI 2J03 and registration in Level IV Honours Political Science

### **POLSCI 4O06 A/B - CANADIAN POLITICS**

In-depth extensive examination of the theoretical, conceptual, methodological and/or empirical issues associated with a specific topic in Canadian politics or Canadian public policy.

Seminar (three hours); two terms

**Prerequisite(s):** POLSCI 1AA3 and 1AB3 or POL SCI 1G06; and registration in Level IV Honours Political Science

### **POLSCI 4OL3 - ORIGINS OF LAW**

Is the birth of law inevitable? Why? Considers topics such as divinity, rationality, performativity, and "the people" in the development and reform of legal order.

Seminar (three hours); one term

**Prerequisite(s):** ARTSSCI 2A06 A/B or POLSCI 2006 A/B and registration in Level IV Honours Political Science

### **POLSCI 4PA3 - POLICY ANALYSIS AND IMPLEMENTATION**

This course examines the methods to analyze the efforts of policy actors to improve policy outcomes through the development and implementation of policy options.

Seminar (three hours); one term

**Prerequisite(s):** Registration in Level IV Honours Political Science

### **POLSCI 4PE3 - GLOBAL POLITICAL ECOLOGY**

An introduction to the field of global political ecology which examines the politics of the relationship between global capitalism and the environment.

Seminar (three hours); one term

**Prerequisite(s):** Registration in Level IV Honours Political Science

### **POLSCI 4P03 - PUBLIC OPINION**

This course examines the conceptual foundations and theoretical frameworks of public opinion research. It also develops practical skills by offering exercises in survey design and analysis.

Seminar (three hours); one term

**Prerequisite(s):** POLSCI 3NN3 and registration in Level IV Honours Political Science.

### **POLSCI 4Q06 A/B - COMPARATIVE POLITICS**

An in-depth and extensive examination of theoretical, conceptual, methodological and/or empirical issues associated with a specific topic in comparative politics.

Seminar (three hours); two terms

**Prerequisite(s):** One course in Comparative Politics and registration in Level IV Honours Political Science

### **POLSCI 4Q03 - ISSUES IN INTERNATIONAL POLITICS**

An examination of selected issues in international politics and foreign policy.

Three hours (seminar); one term

**Prerequisite(s):** One of POLSCI 2I03 or POLSCI 2J03 and registration in Level IV Honours Political Science

### **POLSCI 4RR3 - HEALTH POLICY IN THE INDUSTRIALIZED WORLD**

Discussion of the Canadian health system and comparison to alternate examples (i.e. UK or US). Topics include multilevel governance, reform initiatives, health spending, and tools for evaluation.

Three hours (seminar); one term

**Prerequisite(s):** One course in Comparative Politics and registration in Level IV Honours Political Science.

### **POLSCI 4RT3 - RADICAL POLITICAL THEORY**

This course explores a wide range of radical political theories, historical and contemporary, ranging from Marxism, to anarchism, to non-Western political philosophies, and more. Its specific topic/theme will be determined annually by the instructor.

**Prerequisite(s):** 3 units of Level III Political Theory and registration in Level IV Honours Political Science

### **POLSCI 4SS3 - PUBLIC OPINION AND POLICY**

An examination of public opinion about public policies, like education, social assistance, and health care, through analysis of survey data from around the globe.

Seminar (three hours); one term

**Prerequisite(s):** A grade of at least B- in POLSCI 3NN3 and registration in Level IV Honours Political Science

### **POLSCI 4UF3 - US FOREIGN POLICY**

This seminar will consider the theories and practice of current US foreign policy.

Seminar (three hours); one term

**Prerequisite(s):** Registration in Level IV Honours Political Science

### **POLSCI 4UP3 - URBAN POLITICS IN THE POST-INDUSTRIAL ERA: HAMILTON & DETROIT**

Students work in small groups, applying theory and first-hand experience in comparing local politics, civic engagement, social in/exclusion and urban transformation in two large post-industrial cities Hamilton, ON and Detroit, MI. Includes 3-day learning excursion to Detroit (supplementary cost approx. \$300; must have valid passport).

Three hours; one term

**Prerequisite(s):** Registration in Level IV Honours Political Science

### **POLSCI 4Y03 - DOMINATION AND DECOLONIZATION**

This course explores political theories of decolonization from the early 20th century to the present day criticizing the conceptual and practical foundations of empire.

Seminar (three hours); one term

**Prerequisite(s):** ARTSSCI 2A06 A/B or POLSCI 2006 A/B and registration in a Level IV Honours Political Science (B.A.)

### **POLSCI 4YR3 - CHILD/YOUTH RIGHTS AND SECURITY IN GLOBAL POLITICAL PERSPECTIVE**

An examination into how global power and politics construct, rely upon, constrain, regulate, diminish, and deny the possibilities and prospects for young people's political subjecthood.

Seminar (three hours); one term

**Prerequisite(s):** Registration in Level IV Honours Political Science

### **POLSCI 4Z06 A/B - HONOURS ESSAY**

A major research paper, supervised by a faculty member. The subject matter is to be different from that covered in 3UU3, if the student is registered or has credit in that course.

**Prerequisite(s):** Registration in Level IV Honours Political Science normally with a minimum C.A. of 9.0; and written permission of the faculty member supervising the students Honours Essay; and permission of the Department.

### **POLSCI 4ZZ3 - EXPERIENTIAL LEARNING IN RESEARCH**

A major collaborative research project supervised by a faculty member and involving a unique course of instruction. one term

**Prerequisite(s):** Registration in Level IV Honours Political Science; and written permission of the faculty member supervising the research; and permission of the Department.

*Not open to students with credit in POLSCI 3UU3 or POLSCI 4Z06 A/B if on a similar topic.*

### **POLSCI 4ZZ6 A/B - EXPERIENTIAL LEARNING IN RESEARCH**

A major collaborative research project supervised by a faculty member and involving a unique course of instruction.

**Prerequisite(s):** Registration in Level IV Honours Political Science; and written permission of the faculty member supervising the research; and permission of the Department.

*Not open to students with credit in POLSCI 3UU3 or POLSCI 4Z06 A/B if on a similar topic.*

## **Process Automation Technology**

Courses in Process Automation Technology are administered by the Bachelor of Technology Program.

Engineering Technology Building (ETB), Room 121, ext. 20195

<http://mybtechdegree.ca>

**For the Four-Year Program, registration is only permitted for courses of the same level in which the student is registered, unless otherwise specified.**

### PROCTECH 2CA3 - CAD FOR DESIGN

Two-dimensional drafting: drawing environment and commands, drafting settings, drawing editing, plotting output, dimensioning, orthographic projections and views, sectional and auxiliary views. Three-dimensional solid modeling: parts, assemblies, 2D drawings generation.

One lab (three hours); first term

**Prerequisite(s):** Registration in level II or above of Automation Engineering Technology Co-op (B.Tech.)

### PROCTECH 2CE3 - CHEMICAL ENGINEERING I: MASS BALANCE

Steady-State mass balances with possible recycle and reactions. Gas laws. Phase rule. Vapour-liquid equilibrium basics.

Two lectures, one tutorial, one lab (two and one half hours); first term

**Prerequisite(s):** ENGTECH 1CH3, 1MC3, 1PH3 and registration in level II or above of Automation Engineering Technology

### PROCTECH 2EC3 - CHEMICAL ENGINEERING II: ENERGY BALANCE

Steady-state energy balances including possible reactions. Combined mass and energy balances. First and second law of thermodynamics. Physical/chemical equilibrium. Application to industrial processes. Drawing and interpretation of Piping and Instrumentation diagrams (P&ID).

Two lectures, one tutorial, one lab (two and one half hours); second term

**Prerequisite(s):** ENGTECH 1MC3, PROCTECH 2CE3 and registration in level II or above of Automation Engineering Technology

### PROCTECH 2EE3 - ELECTRICITY AND ELECTRONICS II

Second course in electricity and electronics covers transformers, passive and active filters, and semiconductor diodes and transistors theory and applications.

Three lectures, one tutorial, one lab (three hours); first term

**Prerequisite(s):** ENGTECH 1EL3, 1MC3 and registration in level II or above of Automation Engineering Technology.

### PROCTECH 2IO3 - INDUSTRIAL ORGANIC CHEMISTRY

A study of organic chemistry, including structure, nomenclature, major reactions and industrial applications. Emphasis will be placed on industrial manufacturing and uses. Lab sessions emphasize common organic chemistry techniques.

Three lectures, one lab (three hours); second term

**Prerequisite(s):** ENGTECH 1CH3 and registration in level II or above of Automation Engineering Technology.

### PROCTECH 2IC3 - INSTRUMENTATION AND CONTROL

This course covers common pressure, level, temperature and flow measuring systems that provide the basis to specify, design, construct, test and tune a control loop using a PID controller. A distributed control system is also introduced.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** ENGTECH 1MC3 and registration in level II or above of Automation Engineering Technology.

### PROCTECH 2PL3 - INTRODUCTION TO PLC PROGRAMMING

An introduction to Programmable Logic Controllers (PLCs) and their use in automation applications. AC and DC motors, PLC basics, Input/output, memory addressing and program control instructions, PLC networking, motor control protection and starting.

Three lectures, one lab (three hours); second term

**Prerequisite(s):** ENGTECH 1MT3, PROCTECH 2EE3, 2IC3 and registration in level II or above of Automation Engineering Technology.

### PROCTECH 3CE3 - CHEMICAL ENGINEERING III: UNIT AND PROCESS DESIGN

This course covers simulation and analysis of integrated process units within a chemical process plant. Key topics covered are: process flow diagrams and simulation models, process analysis using simulation model, rudimentary process optimization and plant simulation

Three lectures, one lab (two hours); first term

**Prerequisite(s):** ENGTECH 2MA3, PROCTECH 2EC3, 3CT3 and registration in Level IV of Automation Engineering Technology.

### PROCTECH 3CT3 - CONTROL THEORY I

This course covers analysis and design of closed loop control systems. System characteristics and performance, stability analysis, system types, performance improvement, digital control systems, compensation, filtering and motion system tuning.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** ENGTECH 2MT3, PROCTECH 2IC3, 2PL3 and registration in level III or above of Automation Engineering Technology

### PROCTECH 3MC3 - MOTION CONTROL AND ROBOTICS

The motion control part of this course covers the theory and operation of AC and DC drive systems and digital motion control. The robotics portion of the course covers robot anatomy and attributes, end effectors, robot programming and applications.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** PROCTECH 3CT3, 3PL3 and 3SC3 or SMRTTECH 3CC3 and registration in Level IV of Automation Engineering Technology

### PROCTECH 3PL3 - ADVANCED PLC PROGRAMMING AND CONTROL

Advanced PLC programming concepts such as files, subroutines and indexing, industrial networks, PID and PWM, HMI, AC and DC drives integration and implementation in PLCs, and automation design project.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** PROCTECH 2PL3 and registration in level III or above of Automation Engineering Technology.

### PROCTECH 4AS3 - INDUSTRIAL SYSTEM COMPONENTS AND INTEGRATION

This course covers advanced sensor and actuator technology, robotics and vision systems, automated workcell, flexible manufacturing systems, computer integrated manufacturing. Hardware and software integration issues, when and how to automate, OPC and HMI.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** PROCTECH 4IC3, 4IT3; ENGTECH 4EE0 and registration in level IV of Automation Engineering Technology



### PROCTECH 4CT3 - ADVANCED CONTROL THEORY II

This course covers process characteristics, methods of analysis, controller design, adaptive control, loop tuning, process control improvement examples with emphasis on plant control and tutorial exercises using MATLAB.

Three lectures, one tutorial; second term

**Prerequisite(s):** PROCTECH 3CE3, 3CT3 and registration in level IV of Automation Engineering Technology.

**Co-requisite(s):** PROCTECH 4IC3

### PROCTECH 4IC3 - INDUSTRIAL NETWORKS AND CONTROLLERS

Corporate and industrial networks, OSI model, Ethernet and TCP/IP, Modbus, Foundation Field bus, DeviceNet, PROFIBUS, AS-I, proprietary buses and protocols and interfaces, distributed I/O, drivers and devices and their implementation in PC and PLC based systems.

Three lectures, one lab (three hours); second term

**Prerequisite(s):** PROCTECH 3MC3, 3PL3 and 3SD3 or SMRTTECH 3CC3 and registration in level IV of Automation Engineering Technology

**Co-requisite(s):** PROCTECH 4CT3

### PROCTECH 4IT3 - INTERNET TECHNOLOGIES AND DATABASES

This course covers the following topics: internet technologies and standards, database concepts, structured query language elements, web database processing and client and server side scripts.

Two lectures, one lab (two hours); second term

**Prerequisite(s):** ENGTECH 1CP3, 1PR3 and registration in level IV of Automation Engineering Technology

### PROCTECH 4MH3 - MACHINE HEALTH AND REMOTE MONITORING

This course covers machine monitoring using an electronic interface to a machines PLC and with Direct Machine Interface (DMI) modules, installation of noise and vibration sensor network and analysis of data from the sensors. It also covers, signal processing, mobile and remote monitoring through sensors, wired and wireless Local Area Networks, cloud, and the Internet of Things (IoT).

Three lectures, one lab (three hours every other week); first term

**Prerequisite(s):** ENGTECH 4EE0 and registration in level IV of Automation Engineering Technology program or the Automotive and Vehicle Engineering Technology program

### PROCTECH 4MS3 - MANUFACTURING TECHNOLOGIES

This course examines manufacturing and production technologies, material selection and design process, measurement and quality assurance. Plastics, steels, and ceramics manufacturing, environmental and safety management, asset management and reliability.

Three lectures, one lab (two hours every other week); first term

**Prerequisite(s):** ENGTECH 1CH3, 1PH3, 1MT3, PROCTECH 2CA3, 3CE3; ENGTECH 4EE0 and registration in level IV of Automation Engineering Technology

### PROCTECH 4MT2 - MATERIALS TECHNOLOGY

This course covers classes of engineering materials, their important properties and applications. Topics include: metals and alloys, stress and strain, plastics and elastomers, ceramic materials and selection of a material for an application.

Two lectures; second term

**Prerequisite(s):** ENGTECH 1CH3, 1PH3 and registration in level IV of Automation Engineering Technology

### PROCTECH 4SS3 - SYSTEM SPECIFICATION AND DESIGN

This course focuses on requirement analysis, functional design, detailed design, reliability, maintainability and system life cycle. Methodologies and tools, requirements and validations, requirements for safety-related systems and mission critical systems.

Two lectures, one tutorial; first term

**Prerequisite(s):** PROCTECH 2CA3 and registration in level IV of Automation Engineering Technology

### PROCTECH 4TR1 - CAPSTONE DESIGN PROJECT I

This course requires students to research, design, develop and implement an independent project. The project plan and a model developed will be documented as a technical report and presented in a seminar.

One tutorial, one lab (two hours); second term

**Prerequisite(s):** GENTECH 3MT3, PROCTECH 3CE3, 3MC3, 4SS3 and 3SD3 or SMRTTECH 3DE3 and registration in level IV of Automation Engineering Technology

### PROCTECH 4TR3 - CAPSTONE DESIGN PROJECT II

This course is a continuation of PROCTECH 4TR1 and it requires students to conduct further research, modify/refine project design, develop and implement the independent project proposal submitted as a part of the Capstone Design Project I course. The project will be documented as a technical report and presented in a seminar.

One tutorial, one lab (three hours); first term

**Prerequisite(s):** PROCTECH 4TR1, 4IT3; PROCTECH 4IC3 or SMRTTECH 4ID3, ENGTECH 4EE0 and registration in level IV of Automation Engineering Technology

## Psychology

Courses in PSYCH are administered by the Department of Psychology, Neuroscience & Behaviour.

Psychology Building, Room 102, ext. 23000

<http://www.science.mcmaster.ca/pnb/>

### Department Notes

1. The PNB course designation stands for Psychology, Neuroscience & Behaviour. PNB courses require registration in a program in the Department of Psychology, Neuroscience & Behaviour. PSYCH courses are open to all students who meet the stated prerequisites.
2. The University reserves the right to limit enrolment in any course. Where priorities have to be established, first consideration will be given to students registered in an Honours program in the Department of Psychology, Neuroscience & Behaviour.
3. The Psychology, Neuroscience & Behaviour Department pre-registration ballot will include the thesis courses (PNB 4D06 A/B, 4D09 A/B, 4DD6 A/B), and the Independent Library Study or Independent Research courses (PNB 3Q03 A/B S, 3QM3 A/B S, 3QQ3 A/B S, 4Q03 A/B S, 4QQ3 A/B S). Students wishing to take these courses must complete and submit a ballot by **mid February**. Students will be informed of the outcome by mid March. Specific dates will be announced during the fall term. Ballots can be obtained from the Psychology, Neuroscience & Behaviour Department web site at <http://www.science.mcmaster.ca/pnb/>.
4. Students interested in Honours or Combined Honours Psychology, Neuroscience & Behaviour programs should be aware that they will not be

able to complete the program requirements through evening courses.

### Courses

If no prerequisite is listed, the course is open.

See also courses in HUMBHEV and PNB.

### PSYCH 1F03 - SURVEY OF PSYCHOLOGY

Students completing this course will have a good understanding of the methods, research questions and major areas of psychology. This course would be ideal for students looking to complete an elective requirement without necessarily planning to continue study in psychology. Students considering applying to an Honours Psychology, Neuroscience & Behaviour program are referred to PSYCH 1X03 for which this course is an anti-requisite.

On-line web modules, discussions and testing; one term

**Antirequisite(s):** PSYCH 1N03, 1X03

*Not open to students with credit or registration in ISCI 1A24 A/B.*

### PSYCH 1FF3 - SURVEY OF BIOLOGICAL BASIS OF PSYCHOLOGY

This course introduces important themes as the foundations to investigate psychology, neuroscience and behaviour with an emphasis on sensory systems, and behaviours critical to survival. This course would be ideal for students looking to complete an elective requirement without necessarily planning to continue study in psychology. Students considering applying to an Honours Psychology, Neuroscience & Behaviour program are referred to PSYCH 1XX3 for which this course is an anti-requisite.

Online web modules, discussions and testing; one term

**Prerequisite(s):** Grade 12 Biology U or credit or registration in one of BIOLOGY 1A03, 1M03, 1P03; or registration in a Nursing program; or registration in Level I or above of an Arts & Sciences program

**Antirequisite(s):** HTHSCI 1G03, PSYCH 1NN3, 1XX3

*Not open to students with credit or registration in ISCI 1A24 A/B or students registered at the B.Sc.N. Conestoga campus.*

### PSYCH 1N03 - INTRODUCTION TO PSYCHOLOGY, NEUROSCIENCE & BEHAVIOUR

This course introduces the scientific methods used to study the psychology of higher order processes and interpersonal behaviour.

Lecture, web modules, weekly tutorials (three hours); one term

**Prerequisite(s):** Registration in B.Sc.N., Conestoga campus

**Antirequisite(s):** PSYCH 1F03, 1X03

### PSYCH 1NN3 - FOUNDATIONS OF PSYCHOLOGY, NEUROSCIENCE & BEHAVIOUR

This course introduces important themes as the foundations to investigate psychology, neuroscience and behaviour with an emphasis on sensory systems, and behaviours critical to survival.

Three hours (lecture, web modules, weekly tutorials); one term

**Prerequisite(s):** Registration in B.Sc.N., Conestoga campus

**Antirequisite(s):** PSYCH 1FF3, 1XX3

### PSYCH 1X03 - INTRODUCTION TO PSYCHOLOGY, NEUROSCIENCE & BEHAVIOUR

This course introduces the scientific methods used to study the psychology of higher order processes and interpersonal behaviour. Students interested in applying to an Honours Psychology, Neuroscience & Behaviour program are encouraged to take PSYCH 1X03 rather than PSYCH 1F03.

Lecture, web modules, weekly tutorials (three hours); one term

**Antirequisite(s):** PSYCH 1F03, 1N03

*It is recommended that students without Grade 12 Biology U complete BIOLOGY 1P03 prior to or concurrently with this course.*

*Not open to students with credit or registration in ISCI 1A24 A/B or registered in B.Sc.N. Conestoga campus.*

### PSYCH 1XX3 - FOUNDATIONS OF PSYCHOLOGY, NEUROSCIENCE & BEHAVIOUR

This course introduces important themes as the foundations to investigate psychology, neuroscience and behaviour with an emphasis on sensory systems, and behaviours critical to survival. Students interested in applying to an Honours Psychology, Neuroscience & Behaviour program are encouraged to take PSYCH 1XX3 rather than PSYCH 1FF3.

Three hours (lecture, web modules, weekly tutorials); one term

**Prerequisite(s):** Grade 12 Biology U or credit or registration in one of BIOLOGY 1A03, 1M03, 1P03; or registration in a Nursing program; or registration in Level I or above of an Arts & Sciences program

**Antirequisite(s):** HTHSCI 1G03, PSYCH 1FF3, 1NN3

*Not open to students with credit or registration in ISCI 1A24 A/B or students registered at the B.Sc.N. Conestoga campus.*

### PSYCH 2AA3 - CHILD DEVELOPMENT

A general survey of theories and mechanisms of child development, illustrated through examples from neural, perceptual, cognitive, social and emotional development.

Students in Honours programs are referred to PSYCH 3GG3 for which this course is an antirequisite.

Three lectures; one term

**Prerequisite(s):** ISCI 1A24 A/B or one of PSYCH 1F03, 1N03, 1X03, and registration in Level II or above; or registration in Level II or above of an Arts & Science or Bachelor of Health Sciences (Honours) (B.H.Sc.) program

**Antirequisite(s):** PSYCH 3GG3

### PSYCH 2AP3 - ABNORMAL PSYCHOLOGY: FUNDAMENTALS AND MAJOR DISORDERS

Provides students with a survey of the fundamentals of psychopathology, focusing on the description and etiology of major disorders.

Three lectures; one term

**Prerequisite(s):** ISCI 1A24 A/B or one of PSYCH 1F03, 1N03, 1X03, and registration in Level II or above; or registration in Level II or above of an Arts & Science or Bachelor of Health Sciences (Honours) (B.H.Sc.) program

### PSYCH 2B03 - PERSONALITY

An introduction to the scientific study of personality which will consider theory, assessment and research in five approaches to personality: psychodynamic, biological, trait, behavioural and humanistic.

Three lectures; one term

**Prerequisite(s):** ISCI 1A24 A/B or one of PSYCH 1F03, 1N03, 1X03, and registration in Level II or above; or registration in Level II or above of an Arts & Science or Bachelor of Health Sciences (Honours) (B.H.Sc.) program

### PSYCH 2C03 - SOCIAL PSYCHOLOGY

An overview of research and theory in social psychology. Topics include, but are not limited to, social influence, persuasion, prejudice, aggression, altruism, sexuality, and processes related to attitude formation and change.

Three lectures; one term

**Prerequisite(s):** ISCI 1A24 A/B or one of PSYCH 1F03, 1N03, 1X03, and registration in Level II or above; or registration in Level II or above of an Arts & Science or Bachelor of Health Sciences (Honours) (B.H.Sc.) program

## PSYCH 2E03 - SENSORY PROCESSES

General processes mediating sensation and perception. Topics include neural principles of sensory pathways, the measurement of perception and the role of sensory processes in behaviour.

Three lectures; one term

**Prerequisite(s):** ISCI 1A24 A/B or one of PSYCH 1FF3, 1NN3, 1XX3 and registration in Level II or above; or registration in Level II or above of an Arts & Science, B.H.Sc. (Honours), the Honours Music (Music Cognition) or any Honours Cognitive Science of Language program

## PSYCH 2GG3 - LEARNING, MEASURING, AND SHAPING BEHAVIOUR

This course will survey principles of learning theories along with measurement and assessment of behaviour through theoretical, experimental, and real-world applications in humans and animals.

Lectures (three hours), one tutorial; one term

**Prerequisite(s):** ISCI 1A24 A/B or one of PSYCH 1F03, 1N03, 1X03 and registration in Level II or above; or registration in Level II or above of an Arts & Science or Bachelor of Health Sciences (Honours) (B.H.Sc.) program

## PSYCH 2H03 - HUMAN LEARNING AND COGNITION

The psychological study of knowledge and how people use it. Topics include pattern recognition, remembering and reasoning.

Three lectures; one term

**Prerequisite(s):** ISCI 1A24 A/B or one of PSYCH 1F03, 1N03, 1X03 and credit or registration in one of PSYCH 1FF3, 1NN3, 1XX3, and registration in Level II or above; or registration in Level II or above of an Arts & Science, B.H.Sc. (Honours), Honours Music (Music Cognition) or any Honours Cognitive Science of Language program

**Antirequisite(s):** PNB 2XA3

## PSYCH 2MP3 - INTRODUCTION TO MUSIC COGNITION

This course presents an overview of music cognition, covering such topics as musical acoustics, perception of melody, harmony and rhythm, social and emotional responses to music, and the evolution of music. In addition a basic introduction to music theory is included.

Three lectures; one term

**Prerequisite(s):** ISCI 1A24 A/B or one of PSYCH 1F03, 1FF3, 1X03, 1XX3 and registration in Level II or above; or registration in Level II or above of an Arts & Science, a B.H.Sc. (Honours) program, or an Honours Music Cognition program (B.A., B.Arts.Sc., B.Mus., B.Sc.); or permission of the instructor

**Antirequisite(s):** MUSIC 2MC3

**Cross-list(s):** MUSICCOG 2MP3

*This course is administered by the School of the Arts.*

## PSYCH 2NF3 - CLINICAL NEUROPSYCHOLOGY

This course provides an introduction to neuropsychology and places it in a clinical context. A review of human neuroanatomy, case histories of human brain damage, and assessment techniques are used to appreciate the relationship between brain health and behaviour.

Two lectures, one tutorial; one term

**Prerequisite(s):** ISCI 1A24 A/B or one of PSYCH 1FF3, 1NN3, 1XX3 and registration in Level II or above; or registration in Level II or above of an Arts & Science, B.H.Sc. (Honours), the Honours Music (Music Cognition) or any Honours Cognitive Science of Language program

*Not open to students with credit or registration in ISCI 2A18 A/B.*

## PSYCH 3A03 - AUDITION

An introduction to the biology of hearing with an emphasis on fundamental auditory principles and underlying physiological mechanisms. Topics include physical acoustics, sound analysis, anatomy and physiology of mammalian auditory system, and perception and psychoacoustics.

Three lectures, one tutorial; one term

**Prerequisite(s):** One of BIOLOGY 2A03, ISCI 2A18 A/B, LIFESCI 2CC3, PNB 2XA3, PNB 2XB3, PSYCH 2E03, 2NF3

## PSYCH 3AB3 - ADOLESCENT PSYCHOLOGY

This course will explore cognitive, social, emotional, neurological and physical development from puberty through the teenage years.

Three lectures; one term

**Prerequisite(s):** PSYCH 2AA3 or 3GG3

## PSYCH 3AC3 - HUMAN SEXUALITY

This course will survey research and theory on human sexuality from evolutionary, social, cultural, and clinical perspectives.

Three lectures; one term

**Prerequisite(s):** One of PSYCH 2AA3, 2C03, 3GG3

## PSYCH 3AG3 - AGING

A survey of sensory, cognitive, personality, and social changes that occur during the normal aging process.

Two lectures, one tutorial; one term

**Prerequisite(s):** PSYCH 2AA3 or 3GG3

**Antirequisite(s):** GERONTOL 3D03, HLTH AGE 3F03

## PSYCH 3B03 - SPECIAL POPULATIONS

Discusses selected topics related to normal and abnormal development in children, including behavioral affective, perceptual, and cognitive disorders and developmental disability.

Three lectures; one term

**Prerequisite(s):** PSYCH 2AP3; and credit or registration in PSYCH 2AA3 or 3GG3; and registration in Level III or IV of an Honours program.

## PSYCH 3BA3 - POSITIVE PSYCHOLOGY

This course will explore the physiology, psychological effects, and adaptive value of positive emotional and cognitive responses to the outside world, and to our own thoughts and behaviors.

Three lectures; one term

**Prerequisite(s):** PSYCH 2B03

## PSYCH 3BN3 - COGNITIVE NEUROSCIENCE I

An introduction to cognitive neuroscience, which is aimed at the study of psychological, computational, and neuroscientific bases of perception and cognition. Classes include traditional lectures, student presentations and critical discussions of articles from the current research literature.

Three lectures; one term

**Prerequisite(s):** One of LIFESCI 2CC3, PNB 2XB3, PSYCH 2E03, 2NF3, and one of PNB 2XA3, 3MM3, PSYCH 2H03, and one of ARTSSCI 2R03, PNB 3XE3, STATS 2B03, 2MB3; or one of PNB 2XA3, 3MM3, PSYCH 2H03 and ISCI 2A18 A/B

## PSYCH 3C03 - CHILD LANGUAGE ACQUISITION

Language behaviour and development in children, from birth to school age.

The course examines how data from children's language acquisition can inform

linguistic theory.

Three hours; one term

**Prerequisite(s):** LINGUIST 1A03; and one of LINGUIST 1AA3, PNB 2XA3 or PSYCH 2H03

**Cross-list(s):** LINGUIST 3C03

*This course is administered by the Department of Linguistics and Languages.*

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### PSYCH 3CB3 - ATTITUDES AND PERSUASION

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This course will explore social psychological theories and research relating to attitude formation and change, and the impact of attitudes on behavior.

Three lectures; one term

**Prerequisite(s):** PSYCH 2C03

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### PSYCH 3CC3 - FORENSIC PSYCHOLOGY

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Introduces students to applications of psychology to the law. Includes topics such as eyewitness testimony, criminal profiling, assessment of criminal responsibility, jury psychology and psychopathy.

Three lectures; one term

**Prerequisite(s):** Completion of at least 9 units of Psychology (PSYCH and/or PNB) courses and registration in Level III or above; or ISCI 2A18

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### PSYCH 3D03 - THE MULTISENSORY MIND

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This course will consider how unisensory phenomena rely on more than one sensory modality. Topics will include: flavour, posture, music, empathy, synesthesia and sensory substitution.

Three lectures; one term

**Prerequisite(s):** PNB 2XA3 or both PSYCH 2H03 and 2E03; and one of LIFESCI 2CC3, PNB 2XB3, PSYCH 2NF3 or ISCI 2A18 A/B; and registration in an Honours program

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### PSYCH 3EV3 - EVOLUTION AND MENTAL HEALTH

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This seminar course explores how evolutionary theory can be used to examine fundamental issues in mental health science.

Three lectures; one term

**Prerequisite(s):** PSYCH 3M03 and registration in Level III or above

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### PSYCH 3F03 - EVOLUTION AND HUMAN BEHAVIOUR

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The study of human social psychology and behaviour in light of evolutionary theories. Topics include family relations, sex differences, mate choice, cooperation and conflict, and universality and diversity across cultures.

Three lectures; one term

**Prerequisite(s):** One of ANTHROP 2D03, LIFESCI 2D03, PNB 2XC3, PSYCH 2GG3; or BIOLOGY 1A03, BIOLOGY 1M03; or BIOLOGY 1M03, HTHSCI 1I06 A/B; or ISCI 1A24 A/B

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### PSYCH 3FA3 - THE NEUROBIOLOGY OF LEARNING AND MEMORY

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Learning and memory mechanisms will be discussed from several perspectives ranging from cognitive neuroscience to synaptic physiology.

Three lectures, one tutorial (two hours); one term

**Prerequisite(s):** One of ISCI 2A18 A/B, LIFESCI 2CC3, PNB 2XB3, PSYCH 2NF3

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### PSYCH 3GG3 - ESSENTIALS OF DEVELOPMENTAL PSYCHOLOGY

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This course concentrates on theories and mechanisms of development. The evidence for biological and environmental influences on development are examined and the principles and mechanisms of development are illustrated

through examples from neural, perceptual, cognitive, social and emotional development.

Three lectures; one term

**Prerequisite(s):** Six units from LIFESCI 2CC3, 2D03, PNB 2XA3, 2XB3, 2XC3, PSYCH 2E03, 2GG3, 2H03, 2NF3; and one of ARTSSCI 2R03, HTH SCI 1F03, 2A03, LINGUIST 2DD3, PNB 2XE3, SOCSCI 2J03, STATS 2B03, 2D03; and registration in an Honours program; or ISCI 2A18 A/B

**Antirequisite(s):** PSYCH 2AA3

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### PSYCH 3H03 - THE ARTS AND THE BRAIN

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This course deals with the neurocognitive bases of the production and perception of the major art forms, including music, dance, the literary arts and the visual arts.

Three lectures; one term

**Prerequisite(s):** PNB 2XA3 or PSYCH 2E03; and registration in Level III or above of an Honours program

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### PSYCH 3JJ3 - SOCIO-EMOTIONAL DEVELOPMENT

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Discusses historical and contemporary topics related to socio-emotional development from infancy to middle childhood, with an emphasis on the development of maladaptive social behaviours.

Three lectures; one term

**Prerequisite(s):** PSYCH 2C03; and credit or registration in one of PSYCH 2AA3 or 3GG3; and registration in Level III or IV of an Honours program

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### PSYCH 3M03 - MOTIVATION AND EMOTION

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The biological basis of motivation and emotion in humans and other mammals, with an integration of evolutionary, physiological, developmental, and social perspectives.

Three lectures; one term

**Prerequisite(s):** One of LIFESCI 2D03, PNB 2XC3, PSYCH 2GG3; and one of ISCI 2A18 A/B, LIFESCI 2CC3, PNB 2XB3, PSYCH 2NF3

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### PSYCH 3MT3 - PSYCHOMETRICS

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An introduction to theoretical and practical concepts in standardized psychological measurement. It will cover applications in areas, such as education, employment, health, and clinical psychology.

Three lectures; one term

**Prerequisite(s):** One of PSYCH 1F03, 1N03, 1X03, and one of PSYCH 1FF3, 1NN3, 1XX3, and one of ARTSSCI 2R03, COMMERCE 2QA3, ECON 2B03, HTHSCI 2A03, KINESIOL 3C03, LINGUIST 2DD3, PNB 2XE3, SOCSCI 2J03, STATS 2B03, 2D03, or credit or registration in HUMBEHV 3HB3 or 3ST3, and registration in Level III or above; or registration in Level III or IV of an ISCI program or B.H.Sc. (Honours) program

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### PSYCH 3NL3 - COGNITIVE NEUROSCIENCE OF LANGUAGE

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A survey of the current scientific literature dealing with brain function related to language processes in typical and special populations.

Three hours; one term

**Prerequisite(s):** Registration in Level III or IV of a program in Cognitive Science of Language or Psychology, Neuroscience & Behaviour

**Antirequisite(s):** LINGUIST 4F03

**Cross-list(s):** LINGUIST 3NL3

*This course is administered by the Department of Linguistics and Languages.*

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### PSYCH 3SE3 - COMPARATIVE SOCIAL EVOLUTION

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Students will review the basic ecological and evolutionary principles underlying social evolution, and explore the conceptual frameworks and



methodologies that characterize social structures, social roles, and the tension between conflict and cooperation across living systems. They will then examine various kinds of sociality exhibited across life (in insects, fish, reptiles, mammals and primates) with an eye towards understanding the central features that unite them.

Two one-hour lectures; one term

**Prerequisite(s):** One of BIOLOGY 1M03, LIFESCI 2D03, or PNB 2XC3; and registration in Level II or above

### PSYCH 3SP3 - THE SCIENCE OF PERFORMANCE

This course explores empirical, methodological and cultural aspects of the study of performance, with a principal focus on the performing arts (music, dance, and theatre).

Three lectures; one term

**Prerequisite(s):** Credit or registration in PNB 2XA3 or PSYCH 2H03; and one of ARTSSCI 2R03, HTHSCI 2A03, HUMBEHV 3HB3 or 3ST3, LINGUIST 2DD3, PNB 2XE3, 3XE3, SOC SCI 2J03, STATS 2B03, 2D03; and registration in Level III or IV of an Honours program; or ISCI 2A18 A/B. PSYCH 2MP3 (MUSICCOG 2MP3) is recommended.

**Antirequisite(s):** MUSICCOG 3MP3, PSYCH 3MP3

**Cross-list(s):** MUSICCOG 3SP3

### PSYCH 3T03 - BEHAVIOURAL ECOLOGY

This course will explore proximate causes and ultimate function of behaviour from the perspective of evolutionary and ecological theory. Topics include aggression, altruism, kinship, parent-offspring interaction, sex and reproduction. In addition, students will have a chance to learn how behaviour can be studied to better understand human impacts on the environment.

Three lectures; one term

**Prerequisite(s):** One of BIOLOGY 2C03, 2F03, 3FF3, 3SS3, ISCI 2A18 A/B, LIFESCI 2D03, PNB 2XC3

**Antirequisite(s):** LIFESCI 3C03

### PSYCH 3TT3 - SCIENCE OF TEACHING AND LEARNING

Students will gain practical experience with teaching methods and communication skills relevant to psychology, neuroscience and behaviour and explore issues in educational psychology. Applications must be submitted by March 1 of the preceding academic year, with selection for placements announced by May 15.

Three lectures; one term

**Prerequisite(s):** A grade of A- in both PSYCH 1X03 (or 1F03) and PSYCH 1XX3 (or 1FF3) or ISCI 1A24 A/B; and registration in Level III or IV of an Honours program; and permission of the instructor/ coordinator

### PSYCH 3UU3 - PSYCHOLOGY OF LANGUAGE

This course discusses the cognitive and neurological basis of language comprehension and production, from an experimental perspective. The emphasis is on the processing of spoken language.

Three lectures; one term

**Prerequisite(s):** PNB 2XA3 or PSYCH 2H03; or LINGUIST 1A03, 1AA3; or permission of the instructor

### PSYCH 3VV3 - HUMAN MEMORY

This course focuses on a selected set of themes that have shaped the study of human memory over the past half century. These themes will be considered in light of contemporary research that encourages critical analysis of widely held beliefs about human memory.

Three lectures; one term

**Prerequisite(s):** PNB 2XA3 or PSYCH 2H03; and registration in Level III or IV of an Honours program

### PSYCH 3WA3 - THE MIND AS A WORK OF ART

This course explores how the arts can be used as a model to understand the nature of human cognition and behaviour. Through an analysis of the psychology and neuroscience of visual art, theatre, dance and music, we can develop an understanding of perception, learning, memory, motor control, reasoning, problem solving, decision making, language, emotion, motivation, and social cognition.

Three lectures; one term

**Prerequisite(s):** One of PNB 2XA3 or PSYCH 2H03 and registration in Level III or above of an Honours program

### PSYCH 4BN3 - COGNITIVE NEUROSCIENCE II

Students work in small groups to conduct research into the cognitive neuroscience of different brain regions and how alcohol exposure affects the brain and cognition.

Three hours (seminar); one term

**Prerequisite(s):** One of LIFESCI 2CC3, PNB 2XB3, PSYCH 2E03, 2NF3, and one of PNB 2XA3, 3MM3, PSYCH 2H03, and one of ARTSSCI 2R03, PNB 3XE3, STATS 2B03, 2MB3; or one of PNB 2XA3, 3MM3, PSYCH 2H03 and ISCI 2A18 A/B

### PSYCH 4KK3 - BAYESIAN INFERENCE

This course explores a sophisticated method for drawing inferences from data, used both for statistical analysis and as a model of human brain function.

Three lectures, one tutorial (optional); one term

**Prerequisite(s):** One of Math 1A03, 1LS3; and one of ARTSSCI 2R03, ECON 2B03, GEOG 3MB3, HTHSCI 2A03, ISCI 2A18 A/B, PNB 3XE3, STATS 2B03, 2D03, 2MB3, 3J04, 3Y03; and registration in Level III or above of an Honours program

### PSYCH 4MP3 - NEUROSCIENCE OF MUSIC

This seminar explores theories on how and why music evolved, and how the perception, development, performance and emotional experience of music are mediated by the brain. Primary source materials are discussed in class and experimental designs developed to address critical questions.

Three hours (lecture/seminar); one term

**Prerequisite(s):** MUSICCOG 2MP3 or PSYCH 2MP3 or PSYCH 3H03; and registration in a Music Cognition program (B.A., B.Arts.Sc., B.Mus., B.Sc.), or PNB 2XA3 or PSYCH 2E03 and registration in an Honours program, or ISCI 2A18 A/B; or permission of the instructor. PSYCH 2E03 is recommended.

**Cross-list(s):** MUSICCOG 4MP3

### PSYCH 4R03 - SPECIAL TOPICS IN ANIMAL BEHAVIOUR

An advanced seminar focusing on selected topics in animal behaviour.

Seminar and discussions (three hours); one term

**Prerequisite(s):** PNB 2XC3 or PSYCH 2GG3; and PSYCH 3F03 or PSYCH 3T03; and registration in Level IV of an Honours Biology, or an Honours or Combined Honours Psychology, Neuroscience & Behaviour program

This course may be repeated, if on a different topic.

## Religious Studies (See Society, Culture & Religion)

### Note

Former Religious Studies (RELIGST) courses are now listed as Society, Culture

& Religion (SCAR) courses. Students having credit in RELIGST courses may not take the corresponding course under the SCAR designation.

## Russian

Courses in Russian are administered by the Department of Linguistics and Languages.

Togo Salmon Hall, Room 629, ext. 24388

<http://linguistics.humanities.mcmaster.ca/>

### Department Notes

- Students should note that the Department has classified its Russian language courses under the following categories:
  - Introductory Level Language Courses:** RUSSIAN 1Z03, 1ZZ3
  - Intermediate Level Language Courses:** RUSSIAN 2Z03, 2ZZ3
- Not all courses are offered on an annual basis. Students should consult the timetable for available courses.

### Courses

*If no prerequisite is listed, the course is open.*

### RUSSIAN 1Z03 - INTENSIVE BEGINNER'S RUSSIAN I

This course is designed for students with no prior knowledge of Russian. Students will learn the Cyrillic alphabet, some basic rules of pronunciation and the essentials of Russian grammar. The sequel to this course is RUSSIAN 1ZZ3. Three hours; one term

**Antirequisite(s):** Grade 12 U or M equivalent

*Not open to students with credit in RUSSIAN 1ZZ3. The Department reserves the right to place students in the course most appropriate to their abilities.*

### RUSSIAN 1ZZ3 - INTENSIVE BEGINNER'S RUSSIAN II

This course is designed to develop the four basic skills of listening, speaking, reading and writing. Students will continue to learn new vocabulary and the essentials of Russian grammar and to use them in simple conversations and in writing. The sequel to this course is RUSSIAN 2Z03. Three hours; one term

**Prerequisite(s):** RUSSIAN 1Z03

**Antirequisite(s):** Grade 12 U or M equivalent

*The Department reserves the right to place students in the course most appropriate to their abilities.*

### RUSSIAN 2G03 - MASTERPIECES OF RUSSIAN LITERATURE IN FILM AND TV SERIES (TAUGHT IN ENGLISH)

An examination of 19th and 20th century Russian literature through the prism of contemporary film and TV series, with a special focus on interpretations offered by European and North American cinema. Three hours; one term

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

### RUSSIAN 2H03 - SOVIET PROPAGANDA IN FILMS AND OTHER MASS MEDIA (TAUGHT IN ENGLISH)

A study of Soviet and post-Soviet propaganda in films, news, posters, TV reels, and other mass media. The "fake news" phenomenon is explored through the history of propaganda in Soviet Union and other countries. Three hours; one term

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of any program

### RUSSIAN 2Z03 - INTERMEDIATE RUSSIAN I

This course continues the study of Russian grammar with emphasis on extending skills for conversation, reading and writing. Video film and

interactive computer software will be used to supplement traditional printed materials. The sequel to this course is RUSSIAN 2ZZ3.

Three hours; one term

**Prerequisite(s):** RUSSIAN 1ZZ3

*Not open to students with credit or registration in RUSSIAN 2ZZ3*

*The Department reserves the right to place students in the course most appropriate to their abilities.*

### RUSSIAN 2ZZ3 - INTERMEDIATE RUSSIAN II

Emphasis will be on extending skills for conversation, reading and writing. Video film and interactive computer software will be used to supplement traditional printed materials.

Three hours; one term

**Prerequisite(s):** RUSSIAN 2Z03

*The Department reserves the right to place students in the course most appropriate to their abilities.*

## Sanskrit

Courses in Sanskrit are administered by the Department of Religious Studies. University Hall, Room 123, ext. 23109

<http://religiousstudies.mcmaster.ca>

### Department Notes

- Students are advised to consult both the Department (University Hall, Room 123) and the Undergraduate Timetable for a list of the courses offered in the current year.
- Students wishing to specialize in Asian Religious Traditions should consider beginning language training in Sanskrit or Japanese or both early in their program (See Sanskrit course offerings listed below or course offerings listed under *Japanese* in the *Course Listings* section of this Calendar).

### Courses

*If no prerequisite is listed, the course is open.*

### SANSKRIT 3A06 A/B - INTRODUCTION TO SANSKRIT GRAMMAR

Basic course in the elements of Sanskrit grammar. No previous knowledge of Sanskrit is required.

Three lectures; two terms

**Cross-list(s):** SCAR 3SA6 A/B

**Antirequisite(s):** RELIGST 3SA6 A/B

### SANSKRIT 4B06 A/B - READINGS IN SANSKRIT TEXTS

Intermediate course with readings in selected texts.

Three lectures; two terms

**Cross-list(s):** SCAR 4B06 A/B

**Prerequisite(s):** SANSKRIT 3A06 A/B

**Antirequisite(s):** RELIGST 4B06 A/B

## School for Eng Practice

### SEP 4E03 - ENTREPRENEURIAL OPPORTUNITY IDENTIFICATION

Students will develop an understanding of the fundamentals of sustainable businesses by exploring and evaluating their new business ideas. Students will develop an awareness of, and skills in innovation and entrepreneurial behaviour. There will be a focus on understanding business idea generation, development, and evaluation.

**Prerequisite(s):** Enrolment in Level IV of any program, permission of the

instructor, and permission of the home department

**Co-requisite(s):** SEP 4EP3

**Cross-list(s):** ENGNMGT 5E03

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### SEP 4EL3 - LEADING INNOVATION

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This course will explore leadership in an innovation context and provide a conceptual understanding of role model leadership. A personal leadership capacity development approach will be explored.

**Prerequisite(s):** Enrolment in Level III of any program, permission of the instructor, and permission of the home department

**Cross-list(s):** ENGNMGT 5EL3

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### SEP 4EP3 - NEW ENTERPRISE CAPSTONE PROJECT

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Students work in multidisciplinary teams to carry out a feasibility study for the creation of a new, knowledge-based business.

Lectures, labs, tutorials; term one

**Prerequisite(s):** SEP 4E03 or ENGNMGT 5E03

**Co-requisite(s):** SEP 4E03

**Cross-list(s):** ENGNMGT 5EP3

*SEP 4E03 or ENGNMGT 5E03 may be taken concurrently with this course.*

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### SEP 4X03 - LIVABLE CITIES, THE BUILT AND NATURAL ENVIRONMENT

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This course explores urban renewal with respect to concepts of the natural and built environment. Students are expected to apply various tools and evaluate the methods that promote best practices, in the context of theory and case studies.

## Science

Courses with the subject code SCIENCE are administered by the Faculty of Science.

Burke Science Building, Room 129, ext. 27590

<http://www.science.mcmaster.ca/>

[science@mcmaster.ca](mailto:science@mcmaster.ca)

#### Courses

*If no prerequisite is listed, the course is open.*

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### SCIENCE 1A03 - INVESTIGATING SCIENCE: OPPORTUNITIES & EXPERIENCES

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Designed to prepare students for their university careers through the introduction to the people, academic programs, resources and attitudes needed during their undergraduate studies. Course content is taught through in-class sessions and mini-projects and will focus on investigating science through research to explore the opportunities and experiences available to students in the Faculty of Science.

Lecture (two hours), tutorial (three hours); one term

**Prerequisite(s):** Registration in one of Chemical and Physical Sciences I, Environmental and Earth Sciences I, Life Sciences I, or Mathematics and Statistics I

*This course is administered by the School of Interdisciplinary Science (SIS).*

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### SCIENCE 2A03 - PEER MENTORING IN SCIENCE

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This course will engage students in considering the role of mentorship in their science education and developing their own mentoring skills. It explores the theory and practice of how mentoring benefits both mentors and mentees. Emphasis will be placed on facilitative leadership, reflective practice, and scientific discourse. Students will gain practical experience, as well as

leadership and communication skills, which can be applied to the development of peer-mentoring relationships with science students transitioning to university.

Three hours (seminar), three hours (tutorial); one term

**Prerequisite(s):** SCIENCE 1A03, registration in Level II or above of an Honours program in the Faculty of Science, and a GPA of at least 7.0; or permission of the Department.

*Not open to students with credit in SCIENCE 3A03.*

*This course is administered by the School of Interdisciplinary Science.*

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### SCIENCE 2C00 - SKILLS FOR CAREER SUCCESS IN SCIENCE

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Develop career skills (resume, cover letter, interview, job search, networking, professionalism) necessary to create a career path.

*This course is evaluated on a Complete/Fail basis.*

Eight lectures/workshops (each one hour); one term

**Prerequisite(s):** Registration in Level II or above of any program in the Faculty of Science

*Students intending to register in a Co-op program in Level III must complete this course before their first work placement and, therefore, are strongly encouraged to complete this course in Level II.*

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### SCIENCE 2P03 - IMPACTFUL INITIATIVES IN HEALTH

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The IMPACT (Interdisciplinary, Mentorship, Practice, Applied, Community, Transformative) initiative collaboratively engages undergraduate and graduate students from various Faculties, McMaster alumni, healthcare partners, and real community clients to understand and address challenges experienced by people living with disabilities associated with the conditions of arthritis, cerebral palsy, dementia, expressive aphasia, multiple sclerosis, amyotrophic lateral sclerosis, Parkinson's disease, and visual impairment related to diabetes. Students will learn and mobilize their applied and conceptual knowledge of science to collaboratively create customized devices that help real community clients with activities critical to their health to improve their quality of life.

Lectures/tutorials (three hours); one term

**Prerequisite(s):** Grade 12 Biology U or BIOLOGY 1P03 and registration in Level II or above of any Arts & Science program, the Honours Bachelor of Health Sciences program, or any program in the Faculty of Science; or permission of the instructor

**Antirequisite(s):** ENGINEER 1P03, 1P13, SCIENCE 1P03

*Students will be required to participate in collaborative interdisciplinary design reviews (minimum of four hours) outside of lecture/tutorial time.*

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### SCIENCE 3C00 - ADVANCED JOB SEARCH SKILLS FOR SCIENCE CO-OP STUDENTS

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This course will develop advanced skills in conducting a successful job search and prepare students for

their first work term. Using case studies and drawing on current best practice in career education, students will further develop their professional acumen and maximize their accomplishments during their time in co-op.

*This course is evaluated on a Complete/Fail basis.*

Eight, one hour seminars; one term

**Prerequisite(s):** SCIENCE 2C00 and registration in a co-operative education program in the Faculty of Science

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### SCIENCE 3EP3 A/B S - APPLIED SCIENCE PLACEMENT

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This course provides students with the opportunity to explore career options and integrate academics with a community, volunteer or professional experience. In most cases, these placements require an academic and a site placement supervisor (typically, off-campus). In addition to successfully

completing a minimum of 60 hours of placement work, students must complete an academic component that will be evaluated.

Students are responsible to arrange a suitable placement and supervision, and are required to submit an application, including a detailed learning contract to the Science Career & Cooperative Education office thirty days prior to the date classes begin in each Term (see the *Sessional Dates* section of this Calendar). More information and the application form can be found at <https://www.science.mcmaster.ca/scce/experiential-learning/experiential-education.html>.

May be completed over one or two terms

**Prerequisite(s):** Credit or registration in SCIENCE 2C00; and registration in Level III or above of a program in the Faculty of Science; and permission of the academic supervisor and the Manager, Science Career and Cooperative Education or delegate

*Students with credit or registration in any department- or program-based applied placement, internship or practicum course within the University, who wish to complete more than one opportunity, must demonstrate each experience is substantively different for consideration.*

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### SCIENCE 3EX6 A/B S - APPLIED SCIENCE PLACEMENT

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This course provides students with the opportunity to explore career options and integrate academics with a community, volunteer or professional experience. In most cases, these placements require an academic and a site placement supervisor (typically, off-campus). In addition to successfully completing a minimum of 120 hours of placement work, students must complete an academic component that will be evaluated.

Students are responsible to arrange a suitable placement and supervision, and are required to submit an application, including a detailed learning contract to the Science Career & Cooperative Education office thirty days prior to the date classes begin in each Term (see the *Sessional Dates* section of this Calendar). More information and the application form can be found at <https://www.science.mcmaster.ca/scce/experiential-learning/experiential-education.html>.

Two terms

**Prerequisite(s):** Credit or registration in SCIENCE 2C00 and registration in Level III or above of a program in the Faculty of Science; and permission of the academic supervisor and the Manager, Science Career and Cooperative Education or delegate

*Students with credit or registration in any department- or program-based applied placement, internship or practicum course within the University, who wish to complete more than one opportunity, must demonstrate each experience is substantively distinct for consideration.*

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### SCIENCE 3IE0 - UNDERGRADUATE SCIENCE INTERNSHIP

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Full-time, academically relevant, paid, 4-month internship approved by the Science Career & Cooperative Education office. Students self-generate work placements, in consultation with the Science Career & Cooperative Education office, with participating companies through an application and interview process. Students wishing to extend the duration of their SCIENCE 3IE0 internship to 8, 12 or 16 months, with permission of the Manager, Science Career & Cooperative Education; will enrol in SCIENCE 3IF0, 3IG0, 3IH0 in the subsequent terms.

*This course is evaluated on a Complete/Not Complete basis.*

Four months in length

**Prerequisite(s):** Completion of SCIENCE 2C00 and all mandatory orientation activities; and registration in Level II or III of an Honours program in the Faculty of Science, with at least 9 units of course work left to complete; and permission of the Manager, Science Career & Cooperative Education  
Course fee of \$500 is payable to McMaster University within first month of internship.

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### SCIENCE 3IF0 - UNDERGRADUATE SCIENCE INTERNSHIP

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Extends SCIENCE 3IE0 to an eight month internship.

*This course is evaluated on a Complete/Not Complete basis.*

**Prerequisite(s):** SCIENCE 3IE0; and registration in Level II or III of an Honours program in the Faculty of Science, with at least 9 units of course work left to complete; and permission of the Manager, Science Career & Cooperative Education

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### SCIENCE 3IG0 - UNDERGRADUATE SCIENCE INTERNSHIP

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Extends SCIENCE 3IE0 to a 12-month internship.

*This course is evaluated on a Complete/Not Complete basis.*

**Prerequisite(s):** SCIENCE 3IF0; and registration in Level II or III of an Honours program in the Faculty of Science, with at least 9 units of course work left to complete; and permission of the Manager, Science Career & Cooperative Education

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### SCIENCE 3IH0 - UNDERGRADUATE SCIENCE INTERNSHIP

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Extends SCIENCE 3IE0 to a 16-month internship.

*This course is evaluated on a Complete/Not Complete basis.*

**Prerequisite(s):** SCIENCE 3IG0; and registration in Level II or III of an Honours program in the Faculty of Science, with at least 9 units of course work left to complete; and permission of the Manager, Science Career & Cooperative Education

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### SCIENCE 3M03 - APPLIED CURRICULUM DESIGN IN SCIENCE

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An experiential approach to teaching and learning, the course will allow students to investigate and apply the fundamentals of curriculum design through the development of learning modules in their scientific field of interest. Students will explore both in theory and in practice how research in pedagogy can inform science education and curriculum design. By the end of the course, students will have developed research-grounded learning modules targeted at students who are transitioning from high school to university.

*Applications must be submitted by November 1 of the preceding term.*

*Successful students will be notified by December 1.*

Seminars/discussions (three hours); one term

**Prerequisite(s):** Registration in Level III or above of a program in the Faculty of Science; and a GPA of at least 8.0; and permission of the Associate Dean of Science (Academic) or delegate

*This course is administered by the School of Interdisciplinary Science (SIS).*

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### SCIENCE 3RP3 A/B S - RESEARCH PRACTICUM

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Students will conduct research, as directed by a faculty member, in a wide range of scientific lab/field settings. Students will complete an academic component in addition to their research. Serves as excellent preparation for a Level IV Thesis or Independent Study experience.

Students are responsible to arrange a suitable research experience and supervision, and are required to submit an application, including a detailed learning contract and confirmation of an academic supervisor to the Science Career & Cooperative Education office thirty days prior to the date classes begin in each Term (see the *Sessional Dates* section of this Calendar). More information and the application form can be found at <https://www.science.mcmaster.ca/scce/experiential-learning/experiential-education.html>. Minimum of 6 hours per week is required over the duration of the research experience (scheduling to be arranged by supervisor); one term

**Prerequisite(s):** Registration in Level III or above of an Honours program in the Faculty of Science; and permission of the academic supervisor and the Manager, Science Career and Cooperative Education or delegate. Credit or



registration in SCIENCE 2C00 is recommended.

*Students with credit or registration in any department- or program-based independent study or research seminar course within the University, who wish to complete more than one opportunity, must demonstrate each experience is substantively distinct for consideration.*

### SCIENCE 3WT0 - SCIENCE CO-OP WORK TERM

Full-time, academically relevant, paid work experiences, approved by the Science Career & Cooperative Education office. Students enrolled in Co-op programs must be registered in full-time studies, including all prescribed courses, during the academic terms of their program (a minimum of 18 units in a full-term; and at least 9 units in a half-term) and will be charged per unit registered. An additional Science Co-op fee will be charged for each work term of a Co-op program. Students compete for employment with participating companies through an application and interview process, as well as conduct a personalized job search. Upon completion of the co-op work term, all students must submit a Final Work Term Report for evaluation and receive a successful employer evaluation.

*This course is evaluated on a Complete/Not Complete basis.*

Students will register in this course in Level III in both, the Winter Term (January to April) and Spring/Summer Term (May to August)

**Prerequisite(s):** SCIENCE 3C00; and registration in Level III of an Honours Co-op program in the Faculty of Science; and completion of all mandatory orientation activities; and permission of Manager, Science Career & Cooperative Education

### SCIENCE 3WW0 - SCIENCE CO-OP WORK TERM

Full-time, academically relevant, paid work experiences, approved by the Science Career & Cooperative Education office. Students enrolled in Co-op programs must be registered in full-time studies, including all prescribed courses, during the academic terms of their program (a minimum of 18 units in a full-term; and at least 9 units in a half-term) and will be charged per unit registered. An additional Science Co-op fee will be charged for each work term of a Co-op program. Students compete for employment with participating companies through an application and interview process, as well as conduct a personalized job search. Upon completion of the co-op work term, all students must submit a Final Work Term Report for evaluation and receive a successful employer evaluation.

This course is graded on a Complete/Not Complete basis.

**Prerequisite(s):** SCIENCE 3C00; and registration in Level III of the B.H.Sc. Biology and Pharmacology Co-op Program; and completion of all mandatory orientation activities; and permission of Manager, Science Career & Cooperative Education

### SCIENCE 4WT0 - SCIENCE CO-OP WORK TERM

Full-time, academically relevant, paid work experiences, approved by the Science Career & Cooperative Education office. Students enrolled in Co-op programs must be registered in full-time studies, including all prescribed courses, during the academic terms of their program (a minimum of 18 units in a full-term; and at least 9 units in a half-term) and will be charged per unit registered. An additional Science Co-op fee will be charged for each work term of a Co-op program. Students compete for employment with participating companies through an application and interview process, as well as conduct a personalized job search. Upon completion of the coop work term, all students must submit a Final Work Term Report for evaluation and receive a successful employer evaluation.

This course is graded on a Complete/Not complete basis.

**Prerequisite(s):** SCIENCE 3WT0 ; and registration in Level IV of an Honours Co-op program in the Faculty of Science; and completion of all mandatory

orientation activities; and permission of Manager, Science Career & Cooperative Education

### SCIENCE 4WW0 - SCIENCE CO-OP WORK TERM

Full-time, academically relevant, paid work experiences, approved by the Science Career & Cooperative Education office.

Students enrolled in Co-op programs must be registered in full-time studies, including all prescribed courses, during the academic terms of their program (a minimum of 18 units in a full-term; and at least 9 units in a half-term) and will be charged per unit registered. An additional Science Co-op fee will be charged for each work term of a Co-op program. Students compete for employment with participating companies through an application and interview process, as well as conduct a personalized job search. Upon completion of the co-op work term, all students must submit a Final Work Term Report for evaluation and receive a successful employer evaluation.

*This course is evaluated on a Complete/Not Complete basis.*

**Prerequisite(s):** SCIENCE 3WW0; and registration in Level IV of the B.H.Sc. Biology and Pharmacology Co-op Program; and completion of all mandatory orientation activities; and permission of Manager, Science Career & Cooperative Education

### SCIENCE 5WT0 - SCIENCE CO-OP WORK TERM

Full-time, academically relevant, paid work experiences, approved by the Science Career & Cooperative Education office. Students enrolled in Co-op programs must be registered in full-time studies, including all prescribed courses, during the academic terms of their program (a minimum of 18 units in a full-term; and at least 9 units in a half-term) and will be charged per unit registered. An additional Science Co-op fee will be charged for each work term of a Co-op program. Students compete for employment with participating companies through an application and interview process, as well as conduct a personalized job search. Upon completion of the co-op work term, all students must submit a Final Work Term Report for evaluation and receive a successful employer evaluation.

This course is graded on a Complete/Not Complete basis.

**Prerequisite(s):** SCIENCE 4WT0 ; and registration in Level V of an Honours Co-op program in the Faculty of Science; and completion of all mandatory orientation activities; and permission of Manager, Science Career & Cooperative Education

### SCIENCE 5WW0 - SCIENCE CO-OP WORK TERM

Full-time, academically relevant, paid work experiences, approved by the Science Career & Cooperative Education office.

Students enrolled in Co-op programs must be registered in full-time studies, including all prescribed courses, during the academic terms of their program (a minimum of 18 units in a full-term; and at least 9 units in a half-term) and will be charged per unit registered. An additional Science Co-op fee will be charged for each work term of a Co-op program. Students compete for employment with participating companies through an application and interview process, as well as conduct a personalized job search. Upon completion of the co-op work term, all students must submit a Final Work Term Report for evaluation and receive a successful employer evaluation.

*This course is evaluated on a Complete/Not Complete basis.*

**Prerequisite(s):** SCIENCE 4WW0 ; and registration in Level V of an Honours Co-op program in the Faculty of Science or the B.H.Sc. Biology and Pharmacology Co-op Program; and completion of all mandatory orientation activities; and permission of Manager, Science Career & Cooperative Education

## Science Communication

Courses in Science Communication are administered by the School of Interdisciplinary Science.

General Sciences Building, Room 105, ext. 21181

<https://science.mcmaster.ca/sis/>

### SCICOMM 2A03 - FOUNDATIONS IN SCIENCE COMMUNICATION

How do scientists make sure their work in the lab or field is put to good use in communities? They communicate it to their peers, policymakers and the public. In this course, students will learn and practice the basics of effective written, visual and oral science communication. They will create research papers, posters, lay summaries, graphical abstracts, oral presentations, commentaries and tweets that tackle a range of scientific disciplines and explore the growing field of science communication research.

Lecture (two hours), tutorials (two hours); one term

**Prerequisite(s):** Registration in Level II or above

*This course is administered by the School of Interdisciplinary Science (SIS).*

### SCICOMM 2M03 - ENGAGING YOUR WORLD: SCIENCE FOR THE GLOBAL CITIZEN

Examines the linkage between science and society. Topics include: How can science address the key challenges in our society? How does society impact the way that science is conducted? Examines basic scientific theories and concepts and highlights the application and interpretation of science in the context of popular media and policy. Since policies on issues relevant to human health and our environment are informed by the work of scientists, we want to establish a common ground of understanding about how science is conducted, how knowledge changes, and how we can be better consumers of scientific information.

Lecture (two hours), tutorials (two hours); one term

**Prerequisite(s):** Registration in Level II or above

Antirequisite (s): SCIENCE 2M03

*This course is administered by the School of Interdisciplinary Science (SIS).*

### SCICOMM 3P03 - SCIENCE COMMUNICATION IN LIFE SCIENCES

Science communication is the bridge between scientists and nonscientists; it allows discoveries in the lab or field to shape our world. In this course, we'll experiment with different strategies for making science accessible and engaging to diverse audiences. We'll identify barriers to effective science communication, consider the potential consequences of poor science communication, and think about ways to make conversations about science more inclusive. We'll also work in groups to address a community challenge and produce a multimedia story about research at McMaster that informs and inspires.

Lectures (three hours), online tutorials; one term

**Prerequisite(s):** Registration in Level III or above of an Honours program

**Prerequisite(s) (EFFECTIVE 2021-2022):** SCICOMM 2A03 and registration in Level II or above

**Antirequisite(s):** LIFESCI 3P03

*This course is administered by the School of Interdisciplinary Science (SIS).*

*Students in a Life Sciences program should register in LIFESCI 3P03.*

## Smart Engineering Technology

Courses in Smart Engineering Technology are administered by the W. Booth School of Engineering Practice and Technology.

### SMRTECH 3CC3 - CLOUD COMPUTING AND INTERNET OF THINGS

This course covers advanced sensor and actuator technology, robotics and vision systems, selection and integration of components for autonomous or collaborative smart systems, as well as components that enable data access of smart systems using IoT communication protocols, internet technologies, network security, and cloud computing.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** ENGTECH 1CP3, 1PR3, PROCTECH 2EE3, 2IC3 and registration in level III or above of Automation Engineering Technology

### SMRTECH 3DE3 - DIGITAL ELECTRONICS

This course covers the theory and principles of electronic devices and digital circuits. Attention is devoted to topics related to logic gates, flip-flops, encoders, decoders, advanced digital systems, power switching and control, and digital control of power electronics.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** PROCTECH 2EE3, ENGTECH 2MT3 and registration in level III of Automation Engineering Technology program

### SMRTECH 4AI3 - ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

This course deals with concepts of Artificial Intelligence and Machine Learning. It covers supervised classification based on artificial neural networks - deep Learning, as well as unsupervised learning - clustering, regression, optimization and reinforcement learning. In addition the course covers application in artificial intelligent systems.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** ENGTECH 2MT3, 1CP3, 1PR3, 4EE0, SMRTECH 4ID3 and registration in level IV of Automation Engineering Technology

**Antirequisite(s):** SFWRTECH 4AI3

### SMRTECH 4ES3 - EMBEDDED SYSTEMS

This course teaches the design and implementation of embedded hardware and software systems. Topics covered include design of real-time embedded systems, hardware, interfacing a variety of external devices, control systems, real-time operating systems, and real-time issues pertinent to embedded control systems.

Three lectures, one lab (three hours); second term

**Prerequisite(s):** PROCTECH 2EE3, ENGTECH 1CP3, 1PR3, SMRTECH 3DE3 and registration in level IV of Automation Engineering Technology and permission from the Department

**Co-requisite(s):** SMRTECH 4ID3

### SMRTECH 4HM3 - HUMAN MONITORING AND SMART HEALTH SYSTEMS

This project based course covers human monitoring and health data acquisition, monitoring of respiratory activities and other vital signs, wearable and contactless sensors, multi-sensor platform for circadian rhythm analysis, signal processing, networked and mobile systems for vital signs monitoring through wired and wireless Local Area Networks, cloud, and the Internet of Things (IoT).

Three lectures, one lab (three hours every other week), one tutorial (one hour); first term

**Prerequisite(s):** SMRTECH 3DE3, ENGTECH 4EE0 and registration in level IV of Automation Engineering Technology

### SMRTTECH 4ID3 - IOT DEVICES AND NETWORKS

This course teaches how the Internet of Things IoT works. Students learn about IoT networks and how things connect to networks, including whether the connection and processing is local (fog computing), is on the network edge (edge computing), or is remote (cloud computing). In addition students learn IoT data networks, connection types, layer models and IoT network protocols and standards.

Three Lectures, one lab (3 hours); second term

**Prerequisite(s):** SMRTTECH 3CC3, 3DE3, and registration in level IV of Automation Engineering Technology and permission from the Department

**Co-requisite(s):** SMRTTECH 4ES3

### SMRTTECH 4SC3 - SMART CITIES AND COMMUNITIES

This course covers deployment of city and community networks, computation of data extracted from connected devices on the city, and sharing of analyzed data across agencies. The course also covers city wide system monitoring and predictive modeling to optimize and improve services such as parking and public transportation, low energy consumption, increase safety, reduce traffic congestion, and protect infrastructure.

Three lectures, one lab (three hours every other week); first term

**Prerequisite(s):** SMRTTECH 4ES3, 4ID3, ENGTECH 4EE0 and registration in level IV of Automation Engineering Technology

## Social Psychology

Courses in Social Psychology are administered by the Social Psychology Office. Kenneth Taylor Hall, Room 212, ext. 22241  
<https://socialpsychology.mcmaster.ca/>

### Courses

*If no prerequisite is listed, the course is open.*

### SOCPSY 1Z03 - AN INTRODUCTION TO SOCIAL PSYCHOLOGY

This course offers an introduction to social psychology from a social sciences perspective. The course will explore the various ways people think about, affect, and relate to one another.

Three hours; one term

### SOCPSY 2B03 - PSYCHOLOGY OF WELL-BEING

An exploration of what social psychological perspectives and research can contribute to the quest for physical, mental, emotional and spiritual well-being.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above in Honours Social Psychology

### SOCPSY 2C03 - SOCIAL PSYCHOLOGY OF POPULAR CULTURE

This course investigates, through three mediums of popular culture (film, television, music), what popular culture has to offer as a type of social science. What does popular culture have to show us about gender, authority, sexuality, image, family, institutions, social arrangements, hope, beauty, money, success, protest and many other topics as well?

Three hours; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** SOCSCI 2V03

### SOCPSY 2D03 - MAKING AND BREAKING RULES

An exploration of social psychological perspectives and research on the arenas of law, justice, crime and deviance.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above in Honours Social Psychology

### SOCPSY 2K03 - RESEARCH METHODS IN SOCIAL PSYCHOLOGY

This course is designed to develop those skills necessary to pursue and understand research. Several general methods of research will be examined.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above in Honours Social Psychology.

**Antirequisite(s):** CMST 2A03, GEOG 2MA3, HLTHAGE 2A03, SOCIOL 2Z03, SOC SCI 2K03

### SOCPSY 2YY3 - THEORIES IN SOCIAL PSYCHOLOGY

An overview of the history and development of various social psychological perspectives and theories.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above in Honours Social Psychology

**Antirequisite(s):** SOC SCI 3YY3, SOCPSY 3YY3

### SOCPSY 3A03 - MENTAL HEALTH

An exploration of social psychological approaches and research to mental health. Topic areas may range from the social and cultural factors that affect definitions of normal/abnormal to those that affect who experiences mental health issues and/or receives treatment.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of an Honours program in the Faculty of Social Sciences

*Priority will be given to students registered in Honours Social Psychology.*

### SOCPSY 3B03 - UNDERSTANDING LIVED EXPERIENCES

An exploration of individuals experiences of everyday life using the theories and methods of social psychology. Changing foci may include experiences of sport and physical activity, health or illness, or stigma, marginalization and exclusion.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of an Honours program in the Faculty of Social Sciences.

### SOCPSY 3C03 - REGIMES OF SOCIAL CONTROL

An exploration of social psychological approaches and research as they apply to an understanding of the law, the criminal justice system and/or other regimes of social control in society.

Three hours; one term

**Prerequisite(s):** Enrolment in Level III of any Faculty of Social Sciences Honours program

*Priority will be given to students registered in Honours Social Psychology.*

### SOCPSY 3E03 - BIG IDEAS/GREAT THINKERS IN SOCIAL PSYCHOLOGY

An exploration of social psychology through the lens of individuals whose work has contributed significantly to our understanding of the relationship between individuals and society.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of an Honours program in Faculty of Social Sciences

**Antirequisite(s):** SOCPSY 2L03

### SOCPSY 3F03 - WHO AM I? SELF AND IDENTITY

An exploration of one of the central themes in social psychology how we define ourselves. The course emphasizes the relational roots of self and the social processes underlying how identities are formed and change.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of an Honours program in the Faculty of Social Sciences

**Antirequisite(s):** SOCPSY 2M03

### SOCPSY 3L03 - ADVANCED RESEARCH METHODS

Students will learn how to design a research project and compose an effective research proposal that would be suitable for a fourth-year thesis project or independent project in the health or social sciences.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of Honours Social Psychology; SOCSCI 2J03, SOCPSY 2K03.

**Antirequisite(s):** HLTHAGE 3G03, SOCIOL 3003

**Cross-list(s):** HLTHAGE 3B03

### SOCPSY 3RR3 - IMPRISONMENT

An exploration of the history, politics, and consequences of incarceration on individuals and society.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of an Honours Program in the Faculty of Social Sciences

**Cross-list(s):** SOCIOL 3RR3

### SOCPSY 3Y03 - SOCIAL PSYCHOLOGY IN ACTION

An exploration of applied social psychology and the areas in which social psychologists apply their methods, theories, principles and research findings, including education, the justice system, the media and health care.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above in Honours Social Psychology.

### SOCPSY 3ZZ3 - SMALL WORLDS: CHILDREN AND CHILDHOOD

An exploration of children and childhood from a social psychological perspective, including consideration of childhood as a social construction, socialization and experiences of childhood from a global perspective.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above of an Honours Program in the Faculty of Social Sciences

### SOCPSY 4B03 - SPECIAL TOPICS IN SOCIAL PSYCHOLOGY

Topics of contemporary interest to social psychologists, with emphasis on current research. Students should consult the Social Psychology office for information about topics to be covered.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Enrolment in Level IV of any Faculty of Social Sciences Honours Program.

*Priority will be given to students registered in Honours Social Psychology.*

### SOCPSY 4D03 - CONTEMPORARY SOCIAL ISSUES

An in-depth look at how social psychological perspectives can illuminate social issues, with foci ranging from sexuality and gender to racism, terrorism and climate change.

Three hours; one term

**Prerequisite(s):** Registration in Level IV Honours Social Psychology

**Antirequisite(s):** SOCPSY 3D03

### SOCPSY 4E03 - SPECIAL TOPICS IN SOCIAL PSYCHOLOGY

Topics of contemporary interest to social psychologists, with emphasis on current research. Students should consult the Social Psychology office for information about topics to be covered.

Three hours; one term

**Prerequisite(s):** Enrolment in Level IV of any Faculty of Social Sciences Honours program

*Priority will be given to students registered in Honours Social Psychology. This course can be repeated to a maximum of 6 units, if on a different topic.*

### SOCPSY 4IS3 - INDEPENDENT RESEARCH

Directed study under supervision of McMaster faculty member, involving analysis of published materials, field notes and/or other data. Results to be written up in the form of a scholarly paper.

One term.

**Prerequisite(s):** Registration in Level IV Honours Social Psychology and approval of Independent Research Form in advance by Program Director.

### SOCPSY 4IS6 A/B - INDEPENDENT RESEARCH

Directed study under supervision of McMaster faculty member, involving analysis of published materials, field notes and/or other data. Results to be written up in the form of a scholarly paper.

Two terms.

**Prerequisite(s):** Registration in Level IV Honours Social Psychology and approval of Independent Research Form in advance by Program Director.

### SOCPSY 4MM3 - PUBLIC SOCIAL PSYCHOLOGY

This course examines major figures in social psychology who have had an impact on the public and transformed our culture. It also examines current public debates and controversies about social psychology or particular social psychologists.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level IV Honours Social Psychology

**Cross-list(s):** SOCIOL 4MM3

### SOCPSY 4ZZ6 A/B - SOCIAL PSYCHOLOGY RESEARCH PROJECT

This capstone course allows students to integrate knowledge and skills in a group research project in their area of interest.

**Prerequisite(s):** Registration in Level IV Honours Social Psychology

## Social Sciences

Courses using the subject code SOCSCI are administered by the Faculty of Social Sciences.

Kenneth Taylor Hall, Room 129, ext. 23772

<http://socialsciences.mcmaster.ca>

#### Notes

1. Students are strongly recommended to complete SOCSCI 2E0. Completion of SOCSCI 2E0 is required to participate in an internship.
2. SOCSCI 2CC3, 2003, and 2P03 may be substituted as units of Level II Sociology.
3. SOCSCI 1SR3 and 1TR3 may be used towards the required Social Sciences units in Level I programs in the Faculty of Social Sciences or as elective



courses.

4. Students enrolled in a three- or four-year undergraduate degree program in the Faculty of Social Sciences have the opportunity to take Social Sciences courses towards an affiliated certificate in Business Studies, Leadership and Management in the Not-For-Profit Sector, or Applied Behaviour Analysis (ABA). Students enrolled in a three-year degree program may take a maximum of six of these courses, and students enrolled in a four-year degree program may take a maximum of eight of these courses. Students who successfully complete one of the following sets of six courses may apply to have their courses recognized by Mohawk College for the awarding of an Affiliated Certificate when they graduate from their McMaster degree program. If granted, this certificate will be issued by Mohawk College.

#### **COURSES FOR THE BUSINESS STUDIES CERTIFICATE**

- SOCSCI 2AC3 - Financial & Managerial Accounting for Social Sciences
- SOCSCI 2BU3 - Introduction to Business for Social Sciences
- SOCSCI 2EN3 - Entrepreneurial Training for Social Sciences
- SOCSCI 2HR3 - Human Resources Management for Social Sciences \*
- SOCSCI 2MR3 - Introduction to Marketing for Social Sciences

#### **ONE OF:**

- SOCSCI 2BA3 - Introduction to Business Analysis for Social Sciences
- SOCSCI 2PF3

#### **COURSES FOR THE CERTIFICATE IN LEADERSHIP AND MANAGEMENT IN THE NOT-FOR-PROFIT SECTOR**

- SOCSCI 2BR3 - Board and Staff Responsibilities for the Not-for-Profit Sector
- SOCSCI 2HR3 - Human Resources Management for Social Sciences \*
- SOCSCI 2LC3 - Leadership and Communications for the Not-For-Profit Sector
- SOCSCI 2OP3 - Operational Planning for the Not-For-Profit Sector
- SOCSCI 2RD3 - Resource Development for the Not-For-Profit Sector
- SOCSCI 2SP3 - Strategic and Long Range Planning for the Not-for-Profit Sector

#### **COURSES FOR THE APPLIED BEHAVIOUR ANALYSIS (ABA) CERTIFICATE**

- SOCSCI 2UA3 - Principles of Applied Behaviour Analysis I
- SOCSCI 2UB3 - Principles of Applied Behaviour Analysis 2
- SOCSCI 2UE3 - Ethical Practice in the Field of Applied Behaviour Analysis
- SOCSCI 2UF3 - Professional Relationships with Families and Teams
- SOCSCI 2UR3 - Single Subject Research Design
- SOCSCI 2US3 - Introduction to Autism Spectrum Disorder

*\*This course is part of both certificates*

### **SOCSCI 1HS3 - PATHWAYS INTO THE SOCIAL SCIENCES**

This course recognizes a set of specialized, cross-applicable and transferable skills acquired by students in their previous education that facilitate and enhance their transition into a Social Sciences program.

Three hours; one term

**Prerequisite(s):** Completion of a SHSM program in Health and Wellness; Non-Profit; Justice, Community Safety and Emergency Services; Environment; or Business.

### **SOCSCI 1RM3 - HOW DO WE KNOW? DOING SOCIAL SCIENCES RESEARCH**

This course provides students with a glimpse in at the diversity among the types of research methods used within the social sciences. Students will learn how we study the things we do, such as economic inequality, access to health care, changing patterns of crime, the interplay of religious practice and civil rights, by providing students with basic concepts and language related to conducting research.

Three hours; one term

**Prerequisite(s):** Registration in Social Sciences I, Economics I, or Honours Health and Society I and credit or registration in SOCSCI 1SS3; or registration in Level II or above in a program in the Faculty of Social Sciences.

### **SOCSCI 1SR3 - INQUIRY: SUCCESSFUL SOCIETIES**

This inquiry-style course will guide students through the process of research design by exploring the general theme of Successful Societies. This broad theme will allow the instructor and students alike ample room to explore social sciences issues and research concerning what's better and worse when it comes to communities, economies, societies, and countries. The class community will develop individual research projects on student-selected topics and research will focus on deep questioning, including critical thinking about measurement, criteria, bias, and evaluation. This course will focus on the skills required to succeed at university.

Students can take these transferable skills into other courses, throughout their university career, and beyond.

Three hours; one term

**Prerequisite(s):** Registration in a Level 1 program in the Faculty of Social Sciences and permission of the department

### **SOCSCI 1SS3 - INQUIRY IN THE SOCIAL SCIENCES**

The systematic investigation of any subject requires a set of widely applicable and transferrable skills. Students learn how to formulate questions, gather and interpret evidence, and reach well-considered conclusions. The content theme will be drawn from Social Sciences issues and will vary depending on the subject expertise of the instructor.

Three hours; one term

**Prerequisite(s):** Registration in Social Sciences I, Economics I or Honours Health and Society I

*Not open to students with credit in INQUIRY 1HU3, 1SC3, 1SS3*

### **SOCSCI 1T03 - LIFE, THE UNIVERSITY, AND EVERYTHING**

In this course, students will build the core academic abilities and habits that are crucial for success in student life and in the transition into and through university. Through a unique blend of online and active in-person learning, students will explore issues and ideas from each of the programs in the social sciences in order to develop their academic interests and plan for success.

Three Hours (web modules, weekly tutorials); one term

**Prerequisite(s):** Registration in Social Sciences I, Economics I or Honours Health and Society I; or registration in Level II Social Sciences General BA with permission of the department.

### **SOCSCI 1TR3 - SOCIAL SCIENCES FOUNDATIONS**

This course focuses on the development of the core skills necessary for success in the Social Sciences, and in the University as a complex learning environment. Course materials will spotlight the many disciplines and programs that make up the social sciences, while applying their key conceptual and analytical tools to the kinds of everyday issues and experiences experienced by contemporary university students themselves. Upon successful completion of this course, students will have developed the skills related to academic writing, library searching, workload management, and problem-solving that are necessary for success in the social sciences and beyond.

Three hours (lectures and tutorial); one term

**Prerequisite(s):** Registration in a Level 1 program in the Faculty of Social Sciences and permission of the department.

### **SOCSCI 2AC3 - FINANCIAL & MANAGERIAL ACCOUNTING FOR SOCIAL SCIENCES**

An introduction to financial and managerial accounting with a focus on topics relevant to managerial decision making. Focuses on understanding financial statements, and includes an emphasis on costing, budgeting, and control.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of a program in the Faculty of Social Sciences; Grade 11 M or U Math is recommended

*Not open to students with credit or registration in COMMERCE 1AA3, 2AB3, 4AK3.*

*Not open to Continuing students.*

### **SOCSCI 2BA3 - INTRODUCTION TO BUSINESS ANALYSIS FOR SOCIAL SCIENCES**

The foundation of Business Analysis is planning, stakeholder analysis, structure and cultural awareness of an enterprise. Prepare for Business Analysis projects through needs analysis and business plan development using industry standard strategies such as project charter, interview and focus group techniques.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above of a program in the Faculty of Social Sciences

*Not open to Continuing students.*

### **SOCSCI 2BR3 - BOARD AND STAFF RESPONSIBILITIES FOR THE NOT-FOR-PROFIT SECTOR**

This course examines the characteristics of non-profit organizations and the relevance of an organization's mission within a changing environment. It will also consider the roles and 70 responsibilities of the Chief Executive Officer and the Board of Directors, management styles appropriate to voluntary organizations, and techniques for productive meetings.

**Prerequisite(s):** Registration in Level II or above of a program in the Faculty of Social Sciences.

*Not open to Continuing Students.*

### **SOCSCI 2BU3 - INTRODUCTION TO BUSINESS FOR SOCIAL SCIENCES**

An overview of the functional areas of business and how they interact. This course is designed to provide an understanding of the role of business in Canada, focusing on the basics of management, organizational theory and structure.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of a program in the Faculty of Social Sciences

*Not open to students with credit in COMMERCE 1B03, 1E03.*

*Not open to Continuing Students.*

### **SOCSCI 2CC3 - CHILDREN AND FAMILY IN CANADA**

This course is designed to look at the evolution of the family in Canadian society and how our children are contextualized within different family forms. Topics include life cycle development, sexism, hurrying children, self-esteem, prejudice and discrimination and sexual abuse.

On-line web modules, tutorials and testing; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** SOCSCI 2003

### **SOCSCI 2E0 - INTRODUCTION TO CAREER PLANNING THROUGH EXPERIENTIAL LEARNING**

Students will engage in exploration activities to provide a foundation for career/education planning. They will better connect the skills acquired through academics, extracurricular activities and work experiences to future occupation choices.

Six lectures/workshop (two hours); one term

**Prerequisite(s):** Registration in Level II or above of a program in the Faculty of Social Sciences

### **SOCSCI 2EN3 - ENTREPRENEURIAL TRAINING FOR SOCIAL SCIENCES**

This course will offer a careful examination of the process of entrepreneurship, concentrating on both theoretical styles and practical approaches.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of a program in the Faculty of Social Sciences

*Completion of SOCSCI 2BU3 is strongly recommended.*

*Not open to students with credit in ENGNMGT 5E03.*

*Not open to Continuing students.*

### **SOCSCI 2HR3 - HUMAN RESOURCES MANAGEMENT FOR SOCIAL SCIENCES**

Develops comprehensive knowledge and the skills required to carry out Human Resources functions. Includes a variety of methods such as case studies and simulations to enhance learning activities.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of a program in the Faculty of Social Sciences

*Not open to students with credit or registration in COMMERCE 2BC3.*

*Not open to Continuing students.*

### **SOCSCI 2J03 - INTRODUCTION TO STATISTICS**

An introduction to basic statistical concepts and their application to the analysis of data from the social sciences. The use of spreadsheets is emphasized.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of Honours Kinesiology (B.Sc. Kin.), Music (Music Cognition), Cognitive Science of Language or a Social Sciences program

**Antirequisite(s):** COMMERCE 2QA3, EARTHSC 2MB3, ECON 2B03, GEOG 2MB3, NURSING 2R03

*Not open to students with credit or registration in: ECON 3U03, HTHSCI 1F03, 2A03, KINESIOL 3C03, PNB 2XE3, 3XE3, POLSCI 2F06, 3N06, PSYCH 2RA3, 2RB3, SOCIOL 3H06 A/B or any Level II, III or IV statistics course.*

### **SOCSCI 2LC3 - LEADERSHIP AND COMMUNICATIONS FOR THE NOT-FOR-PROFIT SECTOR**

This course examines personal organizational leadership styles. Students will utilize leadership competencies to effectively lead and manage an organization. Students will learn how to develop team building skills, manage productive meetings and form strategic alliances and partnerships.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of a program in the Faculty of Social Sciences

*Not open to continuing students.*

### **SOCSCI 2MR3 - INTRODUCTION TO MARKETING FOR SOCIAL SCIENCES**

Examines how environmental forces shape an organization's marketing program. Students will learn to create marketing plans that reflect current consumer behaviour patterns.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of a program in the Faculty of Social Sciences

*Not open to students with credit or registration in COMMERCE 2MA3.*

*Not open to Continuing students.*

### **SOCSCI 2N03 - CONSPIRACY THEORIES, FAKE NEWS AND CRITICAL INVESTIGATION**

An interdisciplinary examination through the lens of the Social Sciences of the role of hoaxes, myths, urban legends, and health scares in our contemporary social media landscape. Focuses on the development of the critical thinking and digital literacy skills needed to evaluate journalistic, academic and alternative media sources.

**Prerequisite(s):** Registration in Level II or above or permission of the department

*Three Hours; one term*

### **SOCSCI 2003 - CANADIAN CHILDREN**

This course deals with a spectrum of issues related to Canadian children such as family, socialization, identity formation, moral development, abuse and strategies for a better future.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level II or above in any program

**Antirequisite(s):** SOCSCI 2CC3

### **SOCSCI 20P3 - OPERATIONAL PLANNING FOR THE NOT-FOR-PROFIT SECTOR**

Students learn to implement and manage an annual operating plan, to set priorities, develop a clear direction for action, assign responsibilities, set out costs and indicate how revenue will be generated to fund annual programs. Students will use the plan as a resource for board, staff and volunteers and to track and evaluate progress.

Seminar (three hours); one term

**Prerequisite(s):** Registration in Level II or above of a program in the Faculty of Social Sciences

*Not open to continuing students.*

### **SOCSCI 2P03 - CANADIAN ADOLESCENTS**

This course deals with a spectrum of issues related to Canadian adolescents such as identity formation, sexuality, peer groups and power and the social politics of career formation.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level II or above in any program

### **SOCSCI 2RD3 - RESOURCE DEVELOPMENT FOR THE NOT-FOR-PROFIT SECTOR**

This course will investigate sources of funding for not-for-profit organizations including grants, foundations, corporate partnerships, government programs and fundraising. Students will learn how to create a resource development plan, and how to identify capacity, vision and ethics in order to assess potential resources available to the organization.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of a program in the Faculty of

Social Sciences

*Not open to continuing students.*

### **SOCSCI 2SP3 - STRATEGIC AND LONG RANGE PLANNING FOR THE NOT-FOR-PROFIT SECTOR**

This course will explore the various models of strategic planning. Based on outcome, evaluation and accountability, students will learn how to select the appropriate model and learn how to conduct environmental analysis in order to manage the organization.

**Prerequisite(s):** Registration in Level II or above of a program in the Faculty of Social Sciences

*Not open to Continuing Students.*

### **SOCSCI 2UA3 - PRINCIPLES OF APPLIED BEHAVIOUR ANALYSIS I**

This course presents an introductory examination of the principles of applied behaviour analysis, and how they can be applied to clinical populations, such as persons with autism.

Three hours; one term

**Prerequisite(s):** Registration in Level II or above of a program in the Faculty of Social Sciences

*Not open to Continuing Students.*

### **SOCSCI 2UB3 - PRINCIPLES OF APPLIED BEHAVIOUR ANALYSIS 2**

Building on knowledge gained in ABA1, this course explores evidence-based applications of ABA to clinical problems.

Three hours; one term

**Prerequisite(s):** Credit or registration in SOCSCI 2UA3 and registration in Level II or above of a program in the Faculty of Social Sciences

*Not open to Continuing Students.*

### **SOCSCI 2UE3 - ETHICAL PRACTICE IN THE FIELD OF APPLIED BEHAVIOUR ANALYSIS**

This course introduces students to foundations of ethical thinking and practice, including ethical decision-making tools used in the field.

Three hours; one term

**Prerequisite(s):** Credit or registration in SOCSCI 2UA3 and registration in Level II or above of a program in the Faculty of Social Sciences

*Not open to Continuing Students.*

### **SOCSCI 2UF3 - PROFESSIONAL RELATIONSHIPS WITH FAMILIES AND TEAMS**

This course presents students with theories, terminology and applications underlying current approaches to teamwork and working with families of individuals with autism.

Three hours; one term

**Prerequisite(s):** Credit or registration in SOCSCI 2UA3 and registration in Level II or above of a program in the Faculty of Social Sciences

*Not open to Continuing Students.*

### **SOCSCI 2UR3 - SINGLE SUBJECT RESEARCH DESIGN**

This course presents an introduction to applied research with a primary focus on single subject design.

Three hours; one term

**Prerequisite(s):** Credit or registration in SOCSCI 2UA3 and registration in Level II or above of a program in the Faculty of Social Sciences

*Not open to Continuing Students.*

### **SOCSCI 2US3 - INTRODUCTION TO AUTISM SPECTRUM DISORDER**

This course introduces students to multiple dimensions of autism related to diagnosis, assessment and treatment.

Three hours; one term

**Prerequisite(s):** Credit or registration in SOCSCI 2UA3 and registration in Level II or above of a program in the Faculty of Social Sciences  
*Not open to Continuing Students.*

### **SOCSCI 3EL3 - LEADERSHIP THROUGH EXPERIENTIAL LEARNING**

This interactive course explores the various models of leadership, diversity, power and change with an opportunity for students to gain practical experience through community based experiences.

Three hours; one term

**Prerequisite(s):** Registration in Level III or above in any program in the Faculty of Social Sciences

**Antirequisite(s):** POLSCI 3HP3, 3PR3, 4FG3

### **SOCSCI 3F03 - SOCIAL SCIENCES IN ACTION**

This is a student driven experiential capstone course. Students will develop and implement their own course of study through planned and approved activities in the campus and greater community.

Seminars, experiential activities; 1-2 terms

**Prerequisite(s):** Registration in Level III or IV of any Social Sciences program

### **SOCSCI 3IF0 A/B S - FULL-TIME INTERNSHIP**

Full-time, non-credit, paid work opportunities of four, eight, twelve, or sixteen months allowing students to explore careers, develop employability skills and make important contacts for both now and after graduation.

Normally 26 to 40 hours per week

**Prerequisite(s):** Registration in a program in the Faculty of Social Sciences; credit in SOCSCI 2ELO; and permission of the Programming and Outreach Manager. SOC SCI 3IF0 may be repeated.

### **SOCSCI 3IP0 A/B S - PART-TIME INTERNSHIP**

Part-time, non-credit, paid work opportunities of four, eight, twelve, or sixteen months allowing students to explore careers, develop employability skills and make important contacts for both now and after graduation.

Normally 5 to 25 hours per week

**Prerequisite(s):** Registration in a program in the Faculty of Social Sciences; credit in SOCSCI 2ELO; and permission of the Programming and Outreach Manager. SOC SCI 3IP0 may be repeated.

### **SOCSCI 4ID3 - ADDRESSING SOCIAL PROBLEMS THROUGH BUSINESS, ENGINEERING AND THE SOCIAL SCIENCES**

A final-year course where students work in interdisciplinary teams on an experiential project that incorporates business, engineering and social sciences elements.

**Prerequisite(s):** Registration in Level IV of a Commerce, Engineering & Society, or Social Sciences program, or Level V of any Engineering and Management Program; and permission of the course instructor

**Cross-list(s):** COMMERCE 4ID3, ENGINEER 4ID3

## **Social Work**

Courses in Social Work are administered by the School of Social Work.  
Kenneth Taylor Hall, Room 319, ext. 23795

<http://www.socialwork.mcmaster.ca>

### **School Notes**

1. SOCWORK 1AA3 and 1BB3 are available to all students.
2. The following courses are available to students in a Labour Studies program or for elective credit for students enrolled in Level III or above of a non-Social Work program. SOCWORK 1AA3 and 1BB3 are prerequisites. Space for such students is limited and places are assigned on a first come basis. Not all courses will be offered every year.
  - SOCWORK 3B03 Transnational Lives in a Globalizing World
  - SOCWORK 3C03 Social Aspects of Health and Illness
  - SOCWORK 3I03 - Social Work and Indigenous Peoples
  - SOCWORK 3O03 Social Work and Sexualities
  - SOCWORK 3S03 Social Work, Disability and Dis/Ableism
  - SOCWORK 3T03 Poverty and Homelessness
  - SOCWORK 4C03 Critical Perspectives on Race, Racialization, Racism and Colonialism in Canadian Society
  - SOCWORK 4G03 Selected Topics
  - SOCWORK 4I03
  - SOCWORK 4J03 Social Change: Social Movements and Advocacy
  - SOCWORK 4QQ3 - Indigenizing Social Work Practice Approaches
  - SOCWORK 4R03 Feminist Approaches to Social Work and Social Justice
  - SOCWORK 4U03 Immigration, Settlement and Social Work
  - SOCWORK 4W03 Child Welfare
  - SOCWORK 4Y03 Critical Issues in Mental Health & Addiction: Mad & Critical Disability Studies Perspectives for SW
3. The following course is available to students enrolled in level III or above of a non-Social Work program. Space for such students is limited and places are assigned on a first come basis. This course will not be offered every year.
  - SOCWORK 3L03 - Violence: Social Justice Perspectives and Responses

### **Courses**

All courses are open only to Social Work students unless otherwise specified.  
(See *Notes 1, 2, and 3* above.)

### **SOCWORK 1AA3 - SO YOU THINK YOU CAN HELP? INTRODUCTION TO SOCIAL WORK I**

A critical exploration of ideas and values influencing "helping" in social work. Focus on how helping is experienced by people intended to benefit from it.

Lectures and discussions; one term

**Antirequisite(s):** SOCWORK 1A06 A/B

*This course is available to all students.*

### **SOCWORK 1BB3 - RE-IMAGINING HELP: INTRODUCTION TO SOCIAL WORK II**

A critical exploration of alternative understandings and practices of 'helping' in social work rooted in inclusive engagement with service users/communities and respect for their knowledge.

Lectures and discussions; one term

**Antirequisite(s):** SOCWORK 1A06 A/B

*This course is available to all students.*

### **SOCWORK 2A06 A/B - THEORY, PROCESS AND COMMUNICATION SKILLS FOR SOCIAL WORK**

Knowledge, value base and intervention methods of social work practice; basic skill development in interpersonal communication and interviewing.

Lectures, discussions, group work, exercises; two terms

**Prerequisite(s):** Enrolment in a Social Work program

**Antirequisite(s):** SOCWORK 2C03, 2C06, 2D03



### SOCWORK 2BB3 - ANTI-OPPRESSIVE SOCIAL WORK

The course provides a grounding in theories and knowledge that underpin anti-oppression, and explores the ways these get taken up in the work that social workers do.

Exercises, lectures, discussion; one term

**Prerequisite(s):** Enrollment in a Social Work or Labour Studies program

**Antirequisite(s):** SOCWORK 2B06

### SOCWORK 2CC3 - INTRODUCTION TO COMMUNITY PRACTICE

Understanding and analysis of social work practice within a community context that emphasizes the capacity of communities to initiate community action and social change.

Lectures, discussion, exercises; one term

**Prerequisite(s):** Enrolment in a Labour Studies or Social Work program

**Antirequisite(s):** SOCWORK 4003

### SOCWORK 3B03 - TRANSNATIONAL LIVES IN A GLOBALIZING WORLD

Transnationalism is a novel yet important topic in social work against the background of globalization. This course explores the conditions, politics, and impacts of immigrants', as well as immigrant families', sustained relationships (physical, material, symbolic, and/or imagined) with their homelands, and the implications of such relationships for social work (knowledge, policy, and practice) in this increasingly interdependent world.

Lectures, Discussion, Exercises; one term

**Prerequisite(s):** Registration in a Social Work or Labour Studies program; or SOCWORK 1AA3 or 1BB3 and registration in Level III or above of any program  
*Not Open to students with credit in SOCWORK 4GG3 if the topic was Transnational Lives in a Globalizing World.*

### SOCWORK 3C03 - SOCIAL ASPECTS OF HEALTH AND ILLNESS

Exploration of issues of health and illness, care delivery, the social determinants of health and contemporary challenges faced by social workers in health care settings.

Lectures, discussion and selective use of community resources; one term

**Prerequisite(s):** Registration in a Social Work or Labour Studies program; or SOCWORK 1AA3 or 1BB3 and registration in Level III or above of any program

### SOCWORK 3D06 A/B S - GENERAL SOCIAL WORK I

A seminar for critical examination of conceptual and practice issues emerging from the application of contemporary social work knowledge, skills and values in field practice.

Seminars, workshops; two terms; option of equivalent summer block in combination with SOCWORK 3DD6 A/B (summer); priority for summer block given to B.S.W. students

**Prerequisite(s):** SOCWORK 2B06 or, both SOCWORK 2BB3 and SOCWORK 2CC3; and 2A06 A/B or, both SOCWORK 2C03 and SOCWORK 2D03; and permission of the Department

**Co-requisite(s):** SOCWORK 3DD6 A/B

**Antirequisite(s):** SOCWORK 3D09

*Credit in this course is dependent on achieving a minimum grade of C+ and a Pass in SOCWORK 3DD6 A/B S.*

### SOCWORK 3DD6 A/B S - FIELD PRACTICUM I

Field practicum to develop basic intervention and interviewing skills, particularly in the formation of relationships with individuals, families,

groups and communities. Students participate in defining learning goals and experiences.

*This course is evaluated on a Pass/Fail basis.*

Field experience equivalent to 15 hours per week; two terms; Option of equivalent summer block placement in combination with SOCWORK 3D06 A/B taken in the summer. Priority for summer block given to B.S.W. students.

**Prerequisite(s):** SOCWORK 2B06 or, both SOCWORK 2BB3 and SOCWORK 2CC3; and SOCWORK 2A06 A/B or, both SOCWORK 2C03 and SOCWORK 2D03; and permission of the Department

**Co-requisite(s):** SOCWORK 3D06 A/B S

*Credit in this course is dependent on receiving a Pass and a minimum grade of C+ in SOCWORK 3D06 A/B S.*

### SOCWORK 3E03 - INDIVIDUAL PRACTICE ACROSS THE LIFESPAN

Examination of theories of social work practice with individuals at various life stages. Exploration of how social location and social context affects individual development and subsequent social work intervention.

Lectures, discussion, exercises; one term

**Antirequisite(s):** SOCWORK 3A03, 3N03, 3R03, 4N03

### SOCWORK 3F03 - SOCIAL WORK WITH GROUPS

Students will develop effective, ethical group practice skills including assessment from multiple perspectives, facilitation and intervention skills, evaluation, to address the needs of diverse populations.

Lectures, discussion, exercises, group work; one term

**Prerequisite(s):** Enrolment in a Social Work program

**Antirequisite(s):** SOCWORK 3A03, 3N03, 3R03, 4N03

### SOCWORK 3I03 - SOCIAL WORK AND INDIGENOUS PEOPLES

Examination of structural and cultural variables underlying the complex relationships between Indigenous communities and mainstream society, with particular attention to how they are played out in social work practice.

Lectures, discussion, exercises; one term

**Prerequisite(s):** Registration in a Social Work or Labour Studies program; or SOCWORK 1AA3 or 1BB3; and registration in Level III or above of any program.

**Antirequisite(s):** SOCWORK 4I03

*Not open to students with credit in SOCWORK 4G03 if the topic was Social Work and Indigenous Peoples.*

Students are strongly encouraged to take SOCWORK 3I03 before taking SOCWORK 4QQ3.

### SOCWORK 3L03 - VIOLENCE: SOCIAL JUSTICE PERSPECTIVES AND RESPONSES

This course critically examines the topic of violence, examining individual to systemic, overt to subtle, and socially condemned to socially normalized forms of violence. It centres critical perspectives and the voices of service users and survivors to explore the role of social work in addressing, resisting, and redressing violence.

Lectures, discussion, exercises; one term

**Prerequisite(s):** Registration in a Social Work or Labour Studies program; or registration in level III or above of any program

**Antirequisite(s):** SOCWORK 4G03 if the topic was Violence: Social Justice

### SOCWORK 3O03 - SOCIAL WORK AND SEXUALITIES

Examination of issues related to sexuality across the life course e.g. sexual development, sexual and gender identities/expressions, reproduction,

relational and political dynamics associated with sexuality.

Lectures, discussion, exercises; one term

**Prerequisite(s):** Registration in a Social Work or Labour Studies program; or SOCWORK 1AA3 or 1BB3; and registration in Level III or above of any program

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### SOCWORK 3S03 - SOCIAL WORK, DISABILITY AND DIS/ABLEISM

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A critical engagement with Social Work and Disability Studies' understandings of 'disability' and 'dis/ableism' to explore how they might intersect to inform social work practice.

Lectures, discussion, exercises; one term

**Prerequisite(s):** Registration in a Social Work or Labour Studies program; or SOCWORK 1AA3 or 1BB3 and registration in Level III or above of any program  
*Not Open to students with credit in SOCWORK 4G03 if the topic was Social Work and Disability: Intersections and Exchanges.*

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### SOCWORK 3T03 - POVERTY AND HOMELESSNESS

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This course will critically examine social work practices and policies in response to poverty and homelessness including causes, lived experiences, service provision, alternate policy options and activist responses.

Lectures, discussion, exercises; one term

**Prerequisite(s):** Registration in a Social Work or Labour Studies program; or SOCWORK 1AA3 or 1BB3; and registration in Level III or above of any program

**Cross-list(s):** LABRST 3T03

*Not Open to students with credit in SOCWORK 4G03 if the topic was Poverty and Homelessness.*

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### SOCWORK 4C03 - CRITICAL PERSPECTIVES ON RACE, RACIALIZATION, RACISM AND COLONIALISM IN CANADIAN SOCIETY

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This course examines the social, historical and political contexts of racism in Canadian society. Concepts such as race, orientalism and racialization will be explored through various theoretical frameworks including post/anti/neocolonial and decolonizing studies, critical race theory, Indigenous studies, African studies, analyses of whiteness and antiracism/anti-oppression. This course will also draw from a wide range of theoretical, policy and practice literature from social work, education, sociology, political science, cultural studies, philosophy and others. Responses to racism and its contributors/collaborators, accomplices and interlocutors (including ourselves) will also be examined.

**Prerequisite(s):** Registration in a Social Work or Labour Studies program; or SOCWORK 1AA3 or SOCWORK 1BB3 and registration in Level III or above of any program

*Not open to students with credit or registration in SOCWORK 4Z03 - Selected Issues in Social Welfare Policy, if the issue was Racial and Cultural Issues in Canadian Welfare.*

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### SOCWORK 4D06 A/B S - GENERAL SOCIAL WORK II

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The course aims to help students to integrate their academic and theoretical work with practice experience as they prepare for graduation into professional practice.

Seminar; Two terms; Option of equivalent block placement in combination with SOCWORK 4DD6 A/B S

**Prerequisite(s):** SOCWORK 3D06 A/B, SOCWORK 3DD6 A/B, and permission of the department

**Co-requisite(s):** SOCWORK 4DD6 A/B S

**Antirequisite(s):** SOCWORK 4D12

Credit in this course is dependent on achieving a minimum grade of C+ and a Pass in SOCWORK 4DD6 A/B S.

It is strongly recommended that students complete SOCWORK 3E03 before enrolling in SOCWORK 4D06 A/B, S and SOCWORK 4DD6 A/B, S.

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### SOCWORK 4DD6 A/B S - FIELD PRACTICUM II

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Field experience to refine practice skills. Students spend the equivalent of two days per week in social agencies, or with other organizations, in supervised practice.

*This course is evaluated on a Pass/Fail basis.*

Option of equivalent block placement in conjunction with SOCWORK 4D06 A/B S.

**Prerequisite(s):** SOCWORK 3D06 A/B, SOCWORK 3DD6 A/B, and permission of the department

**Co-requisite(s):** SOCWORK 4D06 A/B S

*This course is evaluated on a pass/fail basis. Credit in this course is dependent on receiving a Pass and a minimum grade of C+ in SOCWORK 4D06 A/B S.*

It is strongly recommended that students complete SOCWORK 3E03 before enrolling in SOCWORK 4D06 A/B, S and SOCWORK 4DD6 A/B, S.

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### SOCWORK 4G03 - SELECTED TOPICS

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Critical examination of social work practice in respect to selected social issues. Topics will vary from year to year and the School should be consulted for details for any particular year.

Lectures, Discussion, Exercises; one term

**Prerequisite(s):** Registration in a Social Work or Labour Studies program; or SOCWORK 1AA3 or 1BB3; and registration in Level III or above of any program  
*SOCWORK 4G03 may be repeated, if on a different topic.*

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### SOCWORK 4J03 - SOCIAL CHANGE: SOCIAL MOVEMENTS AND ADVOCACY

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Students engage in experiential learning in the community with mentors to examine current theories and practice in the area of social change.

Lectures, discussion, exercises and group work; one term

**Prerequisite(s):** Registration in a Social Work or Labour Studies program; or SOCWORK 1AA3 or 1BB3; and registration in Level III or above of any program

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### SOCWORK 4Q03 - INDIGENIZING SOCIAL WORK PRACTICE APPROACHES

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This course examines the social worker's role and responsibility in working with diverse Indigenous peoples such as First Nation, Metis and Inuit living on reserve and in urban areas. The concept and process of ethical tensions indigenizing social work practice approaches will be connected to indigenous philosophy and epistemology with the approach of understanding and building relationships and reconciliation between indigenous and non-indigenous peoples, as well practices within the social work profession.

Lectures, discussion, exercises; one term

**Prerequisite(s):** Registration in a Social Work or Labour Studies program; or SOCWORK 1AA3 or 1BB3; and registration in Level III or above of any program.

Antirequisite: SOCWORK 3Q03.

*Not open to students with credit in SOCWORK 4G03 if the topic was Indigenizing Social Work Practice Approaches.*

Students are strongly encouraged to take SOCWORK 3I03 before taking SOCWORK 4Q03.

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### SOCWORK 4R03 - FEMINIST APPROACHES TO SOCIAL WORK AND SOCIAL JUSTICE

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This course explores feminist frameworks and applies them to social work and social justice practices. Students will consider historical and present day feminist social work practice discourses, feminist critiques of social

work practice, and critiques of feminist social work practice. This course will also explore themes of intersectionality, oppression, power, resistance, and activism.

Lectures, Discussion, Exercises; one term

**Prerequisite(s):** Registration in a Social Work or Labour Studies program; or SOCWORK 1AA3 or SOCWORK 1BB3 and registration in Level III or above of any program

**Antirequisite(s):** SOC WORK 4E03, 4T03

### SOCWORK 4SA3 - CRITICAL CHILD WELFARE: FROM THEORY TO PRACTICE PART I

An advanced course on the development of knowledge, skills, and attitudes needed for child welfare work. Attention to the social/political factors that shape the way practice is imagined and delivered.

Seminars, discussions, group work, case simulation, exercises; one term

**Prerequisite(s):** SOCWORK 2A06, 2B03, 2BB3 and 4W03 (all with a minimum of C+), and permission of the instructor

### SOCWORK 4SB3 - CRITICAL CHILD WELFARE: FROM THEORY TO PRACTICE PART II

An advanced course on the integration and application of knowledge, skills, and attitudes needed for child welfare work, along with an understanding of the way social/political factors constrain/enable intervention options.

Seminars, discussions, group work, case simulation, exercises; one term

**Prerequisite(s):** SOCWORK 2A06, 2BB3, 4SA3 and 4W03 (all with a minimum of C+); and permission of the instructor for continuation after SOCWORK 4SA3

### SOCWORK 4U03 - IMMIGRATION, SETTLEMENT AND SOCIAL WORK

Examination of social and political factors impacting the lives of immigrants and refugees as they settle in Canada; critical assessment of social work responses.

Lectures, discussion, exercises; one term

**Prerequisite(s):** Registration in a Social Work or Labour Studies program; or SOCWORK 1AA3 or 1BB3; and registration in Level III or above of any program  
*Not open to students with credit in SOCWORK 4G03 if the topic was Immigration and Settlement.*

### SOCWORK 4W03 - CHILD WELFARE

This course analyzes the Canadian child welfare system, its policies and programs and teaches skills for working with children, families and substitute caregivers.

Lectures, discussions, skills development; one term

**Prerequisite(s):** Registration in a Social Work or Labour Studies program; or SOCWORK 1AA3 or 1BB3; and registration in Level III or above of any program

### SOCWORK 4X03 - SOCIAL WORK WITH FAMILIES

Examination and application of family theory and practice models including a critical look at societal definitions of and expectations for families.

Lectures, discussion, exercises; one term

**Prerequisite(s):** Credit or registration in SOCWORK 3D06 A/B and 3DD6 A/B; or permission of the instructor

**Antirequisite(s):** SOCWORK 3M03

### SOCWORK 4Y03 - CRITICAL ISSUES IN MENTAL HEALTH & ADDICTION: MAD & CRITICAL DISABILITY STUDIES PERSPECTIVES FOR SW

Critical review of contemporary theoretical frameworks, policies and programs in mental health and addiction and the implications for social work research and practice in Canada.

Lectures, discussion, exercises; one term

**Prerequisite(s):** Registration in a Social Work or Labour Studies program; or SOCWORK 1AA3 or 1BB3; and registration in Level III or above of any program  
*Not open to students with credit in SOCWORK 4G03 if the topic was Mental Health and Addiction.*

### SOCWORK 4ZZ3 - SOCIAL WELFARE: PRACTICE IMPLICATIONS AND ADVOCACY

Provides an overview of Canada's social service system from an historical and contemporary perspective. Explores the purpose and values underlying the development of social welfare programs. Engages in critical analysis of practice implications and policy advocacy for social workers.

Lectures and discussion, one term.

**Prerequisite(s):** Credit or registration in SOCWORK 3D06 A/B S and SOCWORK 3DD6 A/B S. The School of Social Work strongly suggests that students complete SOCWORK 3D06 A/B S and 3DD6 A/B S before taking this course.

**Antirequisite(s):** SOCWORK 2B06; SOCWORK 2B03

## Society, Culture, and Religion

Courses in Society, Culture & Religion are administered by the Department of Religious Studies.

University Hall, Room 123, ext. 23109

<http://religiousstudies.mcmaster.ca>

### Department Notes

1. Former Religious Studies (RELIGST) courses are now listed as Society, Culture & Religion (SCAR). Students having credit in RELIGST courses may not take the corresponding course under SCAR for additional credit.
2. Students are advised to consult both the Department (University Hall, Room 123) and the Undergraduate Timetable for a list of the courses offered in the current year.
3. All Society, Culture & Religion students will be assigned a faculty mentor upon entering the program. It is the responsibility of the student to consult with the mentor at least once each academic year to discuss their academic goals and course option.

### Courses

*If no prerequisite is listed, the course is open.*

### SCAR 1B03 - WHAT ON EARTH IS RELIGION?

An introduction to the academic study of religion and religions focusing on key themes and on how scholars approach religiosity both historically and in contemporary global cultures. Topics covered may include truth and truth-claims, ritual and practice, myth and history, authority and power, community and conformity.

Lectures and discussion (three hours); one term

**Antirequisite(s):** RELIGST 1B06 A/B, RELIGST 1B03

### SCAR 1R03 - INTRODUCTION TO ANTHROPOLOGY: RACE, RELIGION AND CONFLICT

This course examines major issues in Anthropology in both contemporary and past societies from archaeological, biological, cultural and linguistic perspectives. It will focus on identity, power, migration, race, and related

themes.

Lectures, discussion (three hours); one term

**Antirequisite(s):** RELIGST 1R03

**Cross-list(s):** ANTHROP 1AB3

*This course is administered by the Department of Anthropology.*

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### SCAR 1SC3 - THE BIG QUESTIONS: INTRODUCTION TO SOCIETY, CULTURE & RELIGION

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This course focuses on the research of current faculty and senior graduate students in the Religious Studies Department to introduce some of the issues contemporary scholars are grappling with in the academic study of religion.

Three hours (lecture and discussion); one term

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### SCAR 2AA3 - INTRODUCTION TO MODERN STANDARD ARABIC

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Formerly RELIGST 2AA3

This course introduces students to the basics of the Arabic language. Students will learn the Arabic alphabet, pronunciation, verb forms, and basic grammar.

No prior knowledge of Arabic is necessary.

Lectures and discussion (four hours); one term

**Antirequisite(s):** RELIGST 2AA3

**Cross-list(s):** ARABIC 2AA3

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### SCAR 2AB3 - ARCHAEOLOGY AND THE BIBLE

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Formerly RELIGST 1AB3

Archaeological discoveries have revolutionized the way in which we read the Bible. This course explores archaeology and ancient texts, both canonical and non-canonical, in light of each other with a view to reconstructing key moments in the history of Judaism and Christianity.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIGST 1AB3, 2AB3

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### SCAR 2AM3 - ABRAHAM IN JUDAISM, CHRISTIANITY, AND ISLAM

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Formerly RELIGST 1L03

This course looks at the early depictions of the central figure of Abraham, as well as Sarah and Hagar, Isaac and Ishmael, in what scholars often refer to as the three Abrahamic Faiths.

Lectures and discussion (three hours); one term

**Antirequisite(s):** RELIGST 1L03

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### SCAR 2AP3 - APOCALYPSE, THEN AND NOW

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Formerly RELIGST 2AP3

How did ancient Jews and Christians portray the end of the world? How do such depictions affect current religious and secular portrayals of the end of the world in modern writing and cinema?

Lectures and discussion (three hours); one term

**Antirequisite(s):** RELIGST 2AP3

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### SCAR 2AR3 - INTRODUCTION TO MODERN STANDARD ARABIC II

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Formerly RELIGST 2AR3

This course builds on the fundamentals covered in RELIGST 2AA3. The course expands students vocabulary, reading fluency, composition skills, and knowledge of grammatical constructions.

Lectures and discussion (four hours); one term

**Prerequisite(s):** RELIGST 2AA3

**Antirequisite(s):** RELIGST 2AR3

**Cross-list(s):** ARABIC 2AR3

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### SCAR 2BA3 - THE BIBLE THEN AND NOW

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This course will introduce students to the academic study of the Bible, from its early history as a book to its modern use.

Three hours (lecture and discussion); one term

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### SCAR 2BB3 - IMAGES OF THE DIVINE FEMININE

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Formerly RELIGST 2BB3

An examination of some of the ways the divine has been portrayed as feminine in diverse cultures.

Three hours (lectures and discussion); one term

**Antirequisite(s):** RELIGST 2BB3

**Cross-list(s):** WOMENST 2BB3

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### SCAR 2BN3 - SEX AND THE CITY IN BUDDHISM: THE URBAN LIFE OF BUDDHIST NUNS IN NORTH INDIA

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Formerly RELIGST 2BN3

A survey of sex, celibacy, family, married monks, pregnant nuns, monastic motherhood, entrepreneurial ecclesiastics, and other hopelessly romanticized topics in scholarly portrayals of Buddhism.

Two lectures; one tutorial; one term

**Antirequisite(s):** RELIGST 2BN3

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### SCAR 2CA3 - RELIGION AND THE ARTS

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Formerly RELIGST 2CA3, revised

An exploration of the encounters between religious traditions and practices and the performing and visual arts.

Two lectures, one tutorial; one term

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### SCAR 2CH3 - INTRODUCTION TO CHRISTIANITY

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A survey of the development of some of the essential concepts, practices and institutions of Christian religion.

Three hours (lecture and discussion); one term

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### SCAR 2EE3 - PROPHETS OF THE BIBLE

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Formerly RELIGST 2EE3

The role and teaching of biblical prophets in their ancient setting and their impact on modern religious life and thought.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIGST 2EE3

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### SCAR 2ER3 - RELIGION, THE BODY, AND THE MACHINE

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Formerly RELIGST 2ER3

This course will focus on the religious ethics of embodiment in various technological contexts of contemporary life (e.g. bioengineering and eugenics, medically assisted suicide, designer babies, cosmetic enhancement, and artificial intelligence).

Lectures and discussion (three hours); one term

**Antirequisite(s):** RELIGST 2ER3

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### SCAR 2F03 - STORYTELLING IN ASIAN RELIGIONS

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Formerly RELIGST 2F03

An in-depth study of selected examples of story literature in China, Japan, India and Tibet with attention to the way religion is represented.

Two lectures, one tutorial; one term

**Antirequisite(s):** JAPANST 3H03, RELIGST 2I03, 2F03, 3H03



### SCAR 2FF3 - MEDITERRANEAN ENCOUNTERS 1500-1800

Formerly RELIGST 2FF3

This course examines the Mediterranean region as a zone of intense cultural interaction. Particular emphasis will be given to the interaction between Christian, Jewish and Islamic societies.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Cross-list(s):** HISTORY 2HH3

**Antirequisite(s):** RELIGST 2FF3

*This course is administered by the Department of History.*

### SCAR 2G03 - RELIGIOUS THEMES IN MODERN CULTURE

Formerly RELIGST 1I03

An introduction to religious themes, imagery and issues through a study of selected works of modern literature (novels, short stories, poetry, drama), music, art, and film.

Lectures and discussion (three hours); one term

**Antirequisite(s):** RELIGST 1I03, 1I06

### SCAR 2GB3 - GREAT BOOKS IN ASIAN RELIGIONS

Formerly RELIGST 1J03

This course introduces foundational books of the major religious traditions of Asia, including Buddhism, Hinduism, Taoism, Confucianism and Shinto, in their historical and cultural contexts.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIGST 1J03

### SCAR 2GG3 - WHO WAS JESUS?

Formerly RELIGST 2GG3

A study of the Gospels. Special attention will be given to the possible literary relationships among the Gospels as well as to the distinctive features of their Jesus stories.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIGST 2GG3

### SCAR 2GR3 - EVIL

Formerly RELIGST 2GR3

An examination of understandings of reason and evil in ancient Greek, medieval Christian and modern times, and of how these understandings are related to accounts of the nature of God.

Lectures and discussion (three hours); one term

**Antirequisite(s):** RELIGST 2GR3

### SCAR 2HB3 - FROM CREATION TO EXILE

Formerly RELIGST 2HB3

An introduction to the writings of the Hebrew Bible/Old Testament in their historical setting, to their role as scripture in Jewish and Christian tradition, and to various methodologies used in their modern academic study.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIGST 1D06 A/B, 2HB3

### SCAR 2HC3 - INTRODUCTION TO BIBLICAL HEBREW I

Formerly RELIGST 2HC3

Hebrew Bible. The student will begin to read in the Hebrew Bible.

Two lectures (four hours); one term

**Antirequisite(s):** HEBREW 2A06, RELIGST 2HC3

**Cross-list(s):** HEBREW 2A03

### SCAR 2HD3 - INTRODUCTION TO BIBLICAL HEBREW II

Formerly RELIGST 2HD3

An introduction to more grammar, syntax and vocabulary of the language of the Hebrew Bible. The knowledge acquired should enable the student to read the simple prose and poetry of the Hebrew Bible.

Two lectures (four hours); one term

**Prerequisite(s):** HEBREW 2A03 or permission of the instructor

**Antirequisite(s):** HEBREW 2A06, RELIGST 2HD3

**Cross-list(s):** HEBREW 2B03

### SCAR 2HR3 - HUMOUR AND RELIGION

Formerly RELIGST 2HR3

Starting with Freud's theoretical accounts, this course explores the ways in which scholars have analyzed the relationship between religion and humour.

Lectures and discussion (three hours); one term

**Antirequisite(s):** RELIGST 2HR3

### SCAR 2IR3 - HOLLYWOOD/BOLLYWOOD AND INDIAN RELIGIONS

Formerly RELIGST 2IR3

A survey of depictions of Indian religious traditions in select films from around the world.

Lectures and discussion (three hours); one term

**Antirequisite(s):** RELIGST 2IR3

### SCAR 2J03 - INTRODUCTION TO JUDAISM

Formerly RELIGST 2J03

Survey of major facets of Jewish religion and identity from antiquity to the present, including foundational texts, major historical developments and central beliefs and practices.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIGST 2J03

### SCAR 2K03 - INTRODUCTION TO BUDDHISM

Formerly RELIGST 2K03

A survey of the developments of the essential concepts, practices, and institutions of the Buddhist religion, emphasizing its role in the history and culture of Asian societies.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIGST 2K03

### SCAR 2LL3 - GOD AND PHILOSOPHY

Formerly RELIGST 2LL3

A study of conceptions of religious belief, knowledge and God in the history of modern thought up to the 20th century, with special attention to major challenges to the role of religious faith in human existence. Authors may include: Descartes, Hume, Kant, Schleiermacher, Nietzsche, Dostoevsky, Kierkegaard, Camus, Buber, Levinas.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIG ST 2LL3, 3MM3

### SCAR 2M03 - DEATH AND DYING: COMPARATIVE VIEWS

Formerly RELIGST 2M03

A comparative survey of the diversity of social and ritual practices, religious beliefs, and emotional responses surrounding death in a variety of non-Western cultural contexts.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIGST 2M03

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### SCAR 2MT3 - ASIAN MEDITATION TRADITIONS

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Formerly RELIGST 2MT3

A study of the historical traditions and modern transformations of Asian religious practices of meditation and mental cultivation.

Lectures and discussion (three hours); one term

**Antirequisite(s):** RELIGST 2MT3

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### SCAR 2MW3 - RELIGION, MAGIC AND WITCHCRAFT

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Formerly RELIGST 2MW3

Selected issues in the study of religion, magic and witchcraft, science and the supernatural. Perspectives from history, psychology and sociology also will be discussed.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Three units of Level I Anthropology and registration in Level II or above in any program

**Antirequisite(s):** RELIGST 2MW3

**Cross-list(s):** ANTHROP 2R03

*This course is administered by the Department of Anthropology.*

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### SCAR 2N03 - DEATH AND DYING: THE WESTERN EXPERIENCE

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Formerly RELIGST 2N03

Drawing on theoretical perspectives and evidence from anthropology and sociology, this course examines death and dying in Western contexts, focusing on biomedical, social and cultural themes.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIGST 2N03

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### SCAR 2NT3 - THE NEW TESTAMENT

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Formerly RELIGST 2NT3

An introduction to the writings of the New Testament in their historical setting, to their role as scripture in the Christian tradition, and to various methodologies used in their modern academic study.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIGST 1D06 A/B, 2NT3

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### SCAR 2Q03 - INTRODUCTION TO ISLAM

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Formerly RELIGST 2Q03

The origins and early history of Islam with an emphasis on the Koran and the early Muslim community.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIGST 2Q03

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### SCAR 2Q03 - CULTS, CONSPIRACIES AND CLOSE ENCOUNTERS

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Formerly RELIGST 2Q03

Why are people often attracted to 'alternative' perspectives/religious movements? An examination of some marginal or marginalized groups, beliefs and practices and the ways they challenge and enforce 'received wisdom.'

Lectures and discussion (three hours); one term

**Antirequisite(s):** RELIGST 2Q03

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### SCAR 2RD3 - RELIGION AND DIVERSITY

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Formerly RELIGST 2RD3

This course examines religious practices and traditions in the context of

multicultural, diverse societies. Issues to be focused on may include: the intersection of particular religious practices and beliefs and civil rights, medical ethics, and legal issues.

Lectures and discussion (three hours); one term

**Antirequisite(s):** RELIGST 2RD3

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### SCAR 2RN3 - RELIGION IN THE NEWS

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Formerly RELIGST 2RN3

Examination of a variety of topical religious issues covered in the Canadian and global news media, to cultivate awareness of key historical, cultural, and social contexts framing these issues.

Lectures and discussion (three hours); one term

**Antirequisite(s):** RELIGST 2RN3

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### SCAR 2SA3 - ENCOUNTERING THE SACRED

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This course introduces ethnographic approaches to the study of Asian religions. Students will conduct their own ethnographic research on a local religious figure or community.

Three hours (lecture and discussion); one term

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### SCAR 2SG3 - SPIRITS, GHOSTS AND DEMONS

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This course will examine the conceptualizations and roles of demons and spirits in a range of cultural, contemporary, and historical settings. Special attention will be paid to how demons and spirits influence human health and well-being.

Three hours (lecture and discussion); one term

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### SCAR 2SP3 - SPORT AND/AS RELIGION

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Formerly RELIGST 2SP3

An examination of relationships between sport and religion, including ritual aspects of sport, connections between social collectivities and sports teams, and sport as meaningmaking activity.

Lectures and discussion (three hours); one term

**Antirequisite(s):** RELIGST 2SP3

**Cross-list(s):** ANTHROP 2EE3

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### SCAR 2TA3 - ISLAM IN NORTH AMERICA

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Formerly RELIGST 2TA3

This course will explore the history and different expressions of North American Islam. Students will compare and contrast the different manifestations of Islam in North America.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIGST 2TA3

**Cross-list(s):** SOCIOL 2TA3

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### SCAR 2TT3 - RELIGION AND POPULAR CULTURE IN CONTEMPORARY JAPAN

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Formerly RELIGST 2TT3

An introduction to the study of Japanese popular culture in the contemporary period and the religious traditions and world-views that inform it through textual, visual and other multi-media sources, including manga and anime.

Two lectures, one tutorial; one term

**Antirequisite(s):** JAPANST 2TT3, RELIGST 2TT3

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### SCAR 2UD3 - UTOPIAS, DYSTOPIAS

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Formerly RELIGST 2UD3

Utopias and dystopias have become widespread in modern culture. This course discusses the origin and character of utopias and dystopias through an examination of their presentation in various works of modern literature, movies, and TV series.

Two lectures, one tutorial, one term

**Antirequisite(s):** RELIGST 2UD3

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### SCAR 2VR3 - VIOLENCE AND RELIGION

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Formerly RELIGST 2VR3

Religious ideas of violence and peace are related to many secular social practices. This course will examine the complexities of these relationships in our global world, through literature, film, and a range of theoretical perspectives.

Lectures and discussion (three hours); one term

**Antirequisite(s):** RELIGST 2VR3

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### SCAR 2VV3 - THE BIBLE AS LITERATURE

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Formerly RELIGST 2VV3

An examination of narratives from the Hebrew Bible, Intertestamental literature, and New Testament, from a literary perspective. Attention is paid to narrative features such as character, plot, irony and symbolism, as well as to the dynamics of the reading experience.

Two lectures, one tutorial; one term

**Antirequisite(s):** COMPLIT 2G03, RELIGST 2VV3

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### SCAR 2WW3 - HEALTH, HEALING AND RELIGION: WESTERN PERSPECTIVES

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Formerly RELIGST 2WW3

An overview of the intersection of religious beliefs and practices with concepts of health, wellness, and possibilities for healing in both traditional and contemporary Western contexts.

Two lectures, one tutorial; one term

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### SCAR 2WX3 - HEALTH, HEALING AND RELIGION: COMPARATIVE VIEWS

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Formerly RELIGST 2WX3

A comparative survey of the intersection of religious beliefs and practices with concepts of health, wellness, and possibilities for healing in a variety of non-Western cultural contexts, both traditional and contemporary.

Two lectures, one tutorial, one term

**Antirequisite(s):** RELIGST 2WX3

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### SCAR 2YY3 - THE BIBLE AND FILM

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Formerly RELIGST 2YY3

An examination of the use of the Bible in a variety of films. Genres may include biblical epic, horror, sci-fi, Western, comedy, film noir, animated feature, music video. Topics include the depiction of biblical themes, images and values in motion pictures as well as their transformation.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIGST 2YY3

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### SCAR 3AA3 - INTERMEDIATE MODERN STANDARD ARABIC

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An intermediate course enhancing skills in modern standard Arabic through reading materials with the goal of improving comprehension in both written and spoken contexts.

**Prerequisite(s):** ARABIC 2AR3 or SCAR 2AR3 or permission of the instructor

Four hours (lectures); one term

**Cross-list(s):** ARABIC 3AA3

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### SCAR 3AR3 - CULTURE AND RELIGION

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Formerly RELIGS 3AR3

This course introduces key theorists and theories, classic and current topics, and issues of methodology and writing in the study of religion and culture.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** RELIGST 3AR3

**Cross-list(s):** ANTHROP 3AR3

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### SCAR 3BE3 - BUDDHIST ETHICS

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This course provides an overview of Buddhist ethics with several in-depth studies of Buddhist attitudes towards topics of interest in contemporary ethical debates.

Three hours (lecture and discussion); one term

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### SCAR 3BW3 - WOMEN IN THE BIBLICAL TRADITION

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Formerly RELIGST 2B03

This course will focus on the portrayal of women in the Hebrew Scriptures and the New Testament. Among the texts to be dealt with are examples of biblical narrative and legal material, the gospels, the letters of Paul and extra-biblical material.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIGST 2B03, WOMENST 2B03

**Cross-list(s):** WOMENST 3BW3

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### SCAR 3C03 - ISLAM IN THE MODERN WORLD

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Formerly RELIGST 3C03

The spread of Islam, Islam as a minority community, the role of women in Islam and fundamentalism.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** RELIGST 2V03, 3C03

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### SCAR 3CC3 - RELIGION AND POLITICS

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Formerly RELIGST 3CC3

The relationship between religion and politics is explored by way of readings by Locke, Rousseau and Schmitt, and case studies concerning the place of religion in public life.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** RELIGST 3CC3, POLSCI 3LA3

**Cross-list(s):** POLSCI 3LA3

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### SCAR 3DD3 - JEWS AND JESUS

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Formerly RELIGST 3DD3

A study of Judaism in the Greco-Roman world. The course will explore selected questions in political history, the development of sects and parties, the role of the temple, apocalypticism, and the Dead Sea Scrolls.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** RELIGST 2NN3, 3DD3, HISTORY 3DD3

**Cross-list(s):** HISTORY 3DD3

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### SCAR 3E03 - JAPANESE FILM AND RELIGION

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Formerly RELIGST 3E03

An exploration of Japanese religion and culture in a wide variety of visual media, including film, anime, and television. Topics will include Buddhism,

Shinto, New Religions, asceticism, ghosts, shamanism, ancestor worship, and Japanese identities.

Two lectures, one tutorial; one term

**Antirequisite(s):** JAPAN ST 3E03, RELIGST 3E03

### SCAR 3EE3 - SACRED JOURNEYS

Formerly RELIGST 3EE3

A study of the significance of travel in various religious traditions, focusing on shrines, pilgrimages, and the inter-relationships between secular and sacred travel.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** RELIGST 3EE3

**Cross-list(s):** ANTHROP 3SS3

### SCAR 3EP3 - JEWISH ETHICS AND POLITICS

This course explores connections between Jewish philosophical traditions, political issues, and ethical questions.

Three hours (lecture and discussion); one term

### SCAR 3F03 - APPROACHES TO THE STUDY OF RELIGION

Formerly RELIGST 3F03

An exploration of some of the ways religious phenomena are studied. Attention is also given to the history of the academic study of religion.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Six units of Religious Studies or Society, Culture and Religion courses above Level I

**Antirequisite(s):** RELIGST 3F03

### SCAR 3FF3 - GENDER AND RELIGION

Formerly RELIGST 3FF3

An examination of gender in one or more religious traditions.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** RELIGST 2SS3, 3FF3

**Cross-list(s):** WOMENST 3FF3.

### SCAR 3GH3 - INTERDISCIPLINARY GLOBAL HEALTH FIELD COURSE: MATERNAL AND INFANT HEALTH IN MOROCCO

Formerly RELIGST 3GH3

This global health field course provides an integrated linguistic, cultural, historical, and public health experience in Morocco. Introduces students to the determinants of health in the third world and considers social, religious, epidemiological, economic, technological, legal, historical, and family issues that impact birth, pregnancy, women's health, and health of newborns and children.

**Prerequisite(s):** Permission of the instructor

**Co-requisite(s):** ARABIC 3GH3

**Antirequisite(s):** HISTORY 3GH3, RELIGST 3GH3

**Cross-list(s):** ANTHROP 3GH3,

Available as a study-abroad experience in the Spring only. This course is intended for students who are entering Level III or above in the following Fall/Winter Session.

Students interested in this course must contact Dr. E. Amster by February 15 for application instructions. There is an additional cost associated with this course. This course is administered by the Department of Religious Studies.

### SCAR 3HC3 - INTERMEDIATE HEBREW I

Formerly RELIGST 3HC3

A reading course in classical (biblical) Hebrew. Sample texts will be read from some or all of the following: the Hebrew Bible, Mishnah, ancient Hebrew inscriptions and the Dead Sea Scrolls.

Two lectures (four hours); one term

**Prerequisite(s):** HEBREW 2B03 or permission of the instructor

**Antirequisite(s):** HEBREW 3A06, RELIGST 3HC3

**Cross-list(s):** HEBREW 3A03

### SCAR 3HD3 - INTERMEDIATE HEBREW II

Formerly RELIGST 3HD3

Further sample texts will be read from some or all of the following: the Hebrew Bible, the Mishnah, ancient inscriptions and the Dead Sea Scrolls.

Two lectures (four hours); one term

**Prerequisite(s):** HEBREW 2B03 or permission of the instructor

**Antirequisite(s):** HEBREW 3A06, RELIGST 3HD3

**Cross-list(s):** HEBREW 3B03

### SCAR 3JF3 - JEWISH LIFE THROUGH FILM

This course will use films to analyze aspects of Jewish life and culture in a wide variety of settings and historical time periods.

Three hours (lecture and discussion); one term

**Prerequisite(s):** RELIG ST 2J03 or RELIGST 3ZZ3 (HIST 3ZZ3) is recommended

### SCAR 3JJ3 - JESUS, JUSTICE AND CONTEMPORARY CULTURE

Formerly RELIGST 2CE3

Beginning with the most famous of Jesus teachings on justice and love, the Sermon on the Mount, this course will examine the influence of that teaching in different times and cultures but will focus especially on current interpretations in relation to contemporary ethical issues.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIGST 2CE3

### SCAR 3LL3 - RELIGION AND HUMAN NATURE

Formerly RELIGST 3LL3

What is the nature of human nature and its fulfilment? A study of recent philosophical, scientific and religious anthropology.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** RELIGST 3LL3

### SCAR 3PA3 - THE BIRTH OF CHRISTIANITY

Formerly RELIGST 2HH3

A study of the controversial role played by Paul in the definition and expansion of early Christianity, based on the Acts of the Apostles and Paul's own extant correspondence.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIGST 2HH3

### SCAR 3R03 - DEATH AND THE AFTERLIFE IN EARLY JUDAISM AND CHRISTIANITY

Formerly RELIGST 3R03

An examination of the variety of ways in which physical death and the afterlife were understood in biblical and post-biblical Judaism as well as in the New Testament and early Christianity. Among the topics to be considered are the



netherworld, immortality and resurrection, as well as the relationship of these concepts to issues of faith and morality.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** RELIGST 3R03

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### SCAR 3RB3 - ETHNICITY, RACE, AND THE BIBLE

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Formerly RELIGST 2RB3

This course will examine the variety of ethnic discourses that exist within the Bible. In what ways did biblical writers construct ethnic identity and how has the Bible been used in modern racial ideologies?

Lectures and discussion (three hours); one term

**Antirequisite(s):** RELIGST 2RB3

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### SCAR 3RL3 - RELIGION AND LAW

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The notion of law has deep roots in religious thought and writing. This course will survey the historical development of law in the western world in connection with various religious traditions, with a focus on Judaism and Christianity. It will also address some contemporary issues and tensions between religion and law in pluralistic, secular societies.

Three hours (lecture and discussion); one term

**Cross-list(s):** ARTSSCI 3RL3

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### SCAR 3S03 - THE EAST ASIAN RELIGIOUS TRADITION

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Formerly RELIGST 3S03

Readings in East Asian religious texts in translation will concentrate on themes such as culture vs. nature, virtue vs. power, social responsibility vs. personal cultivation, bookish learning vs. meditation.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level III and above

**Antirequisite(s):** JAPANST 3S03, RELIGST 3S03

**Cross-list(s):** ARTSSCI 3S03

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### SCAR 3SA6 A/B - INTRODUCTION TO SANSKRIT GRAMMAR

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Formerly RELIGST 3SA6 A/B

Basic course in the elements of Sanskrit grammar. No previous knowledge of Sanskrit is required.

Three lectures; two terms

**Antirequisite(s):** RELIGST 3SA6 A/B

**Cross-list(s):** SANSKRIT 3A06 A/B

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### SCAR 3U03 - THE BUDDHIST TRADITION IN INDIA

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Formerly RELIGST 2BT3

A study of the origins and early development of Indian Buddhism, largely through readings in Buddhist scripture (pre-Mahayana and Mahayana) in translation.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIGST 2BT3, 3U03

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### SCAR 3US3 - USES AND ABUSES OF THE BIBLE

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This course examines the ways the Bible has been invoked over the centuries to support or challenge cultural, social and political ideals, goals, and policies.

Three hours (lecture and discussion); one term

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### SCAR 3UU3 - BUDDHISM IN EAST ASIA

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Formerly RELIGST 3UU3

An examination of myth, history, doctrine, monastic culture, and ritual practices

in East Asian Buddhism.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above, and three units from the Asian Religions Field of Study

**Antirequisite(s):** JAPANST 3UU3, RELIGST 3UU3

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### SCAR 3X03 - MYSTICISM

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Formerly RELIGST 3X03

An examination of mysticism in one or more religious traditions.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** RELIGST 3FA3, 3X03

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### SCAR 3Y03 - LOVE

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Formerly RELIGST 3Y03

A discussion of the variety of accounts of love in Western civilization from the time of the ancient Greeks and the rise of Christianity to modernity.

Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** RELIGST 1E03, 1E06, 3Y03

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### SCAR 3ZZ3 - JUDAISM IN THE MODERN WORLD

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Formerly RELIGST 3ZZ3

Jews and Judaism in a century of catastrophe and renewal. The progress of Emancipation; Jews in Canada and the U.S.; the Jewish catastrophe in Europe; the Jewish state; Jewish identities in literature and the arts.

Two lectures, one tutorial; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** RELIGST 2XX3, RELIGST 3ZZ3

**Cross-list(s):** HISTORY 3ZZ3

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### SCAR 4AE3 A/B - ACADEMIC ENGAGEMENT IN SOCIETY, CULTURE, RELIGION

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Formerly RELIGST 4AE3

This course runs over the Fall and Winter terms in the students graduating year. Three units at Level IV are awarded upon successful completion of the course. Students enrolled in a departmental B.A. Combined Hons. B.A., or Hons. B.A. program complete a variety of tasks that enhance their appreciation of the academic study of religion. The course is administered through Avenue by students departmental faculty mentors.

Independent Study

**Prerequisite(s):** Enrolment in any one of the following: Level IV Combined Honours B. A., Society, Culture & Religion or Religious Studies and Another subject; Level IV Honours Society, Culture & Religion or Religious Studies B.A.; Level III Society, Culture & Religion or Religious Studies B.A.

**Antirequisite(s):** RELIGST 4AE3

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### SCAR 4B06 A/B - READINGS IN SANSKRIT TEXTS

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Formerly RELIGST 4B06

Intermediate course with readings in selected texts.

Three lectures; two terms

**Prerequisite(s):** SANSKRIT 3A06 A/B

**Antirequisite(s):** RELIGST 4B06

**Cross-list(s):** SANSKRIT 4B06 A/B

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### SCAR 4Q03 - ADVANCED READINGS IN SOCIETY, CULTURE AND RELIGION

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Formerly RELIGST 4Q03

Independent study of special topics in Society, Culture and Religion One term

**Prerequisite(s):** Registration in Level III or above of an Honours Society, Culture and Religion program and permission of the instructor  
RELIG ST 4Q03 may be repeated, to a total of six units, if on a different topic

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### SCAR 4R06 A/B - HONOURS THESIS

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Formerly RELIGST 4R06 A/B

Students in this course will work closely with a faculty member who will supervise the students research and honours thesis.

Two terms

**Prerequisite(s):** Registration in Level IV of an Honours Society, Culture and Religion program with a minimum C.A. of 9.5; and permission of the instructor

**Antirequisite(s):** RELIG ST 4J06

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### SCAR 4SC3 - SOCIETY, CULTURE, RELIGION SEMINAR

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Formerly RELIGST 4SC3

Students read the work of, and engage with, a different faculty member from the department each week.

One lecture, one term

**Prerequisite(s):** Enrolment in level III or above in Society, Culture, and Religion or by permission of the instructor

**Antirequisite(s):** RELIGST 4SC3

## Sociology

Courses in Sociology are administered by the Department of Sociology.  
Kenneth Taylor Hall, Room 627, ext. 24481

<http://www.sociology.mcmaster.ca>

### Department Notes

1. Prior to registration, students should consult the Department of Sociology's website or individual course outlines for fuller course descriptions and any changes in the list of courses offered in the upcoming year.
2. SOCIOL 1Z03 and several other courses are divided into independent sections.
3. Priority is given in all Level III courses to Sociology students, and in all Level IV courses to Honours Sociology students.
4. All Level IV courses are normally only open to students registered in a Level IV Honours Sociology program on a first come basis. SOCIOL 4M03, 4MM6 A/B S, and 4N03 require permission of the instructor.
5. Students transferring their degree program to Sociology are required to complete SOCIOL 2Z03 and 3FF3, the required methods courses. Students seeking an exemption, based on equivalent methods courses in other programs not listed by Sociology as antirequisites, must apply for permission from the department.
6. With some exceptions (noted below), the courses on the following lists are open to students in Level IV of an Honours Sociology program:

### Courses

*If no prerequisite is listed, the course is open.*

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### SOCIOL 1C03 - CANADIAN SOCIETY: SOCIAL PROBLEMS, SOCIAL POLICY, AND THE LAW

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An examination of Canadian social policy and the law in intimate relationships and families, work, immigration, health, and the criminal justice system.

Two lectures, one tutorial, one term

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### SOCIOL 1Z03 - AN INTRODUCTION TO SOCIOLOGY

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A survey of the areas of research which interest the sociologist. Interpretation of human action from the standpoint of the group.

Two lectures, one tutorial, one term

**Antirequisite(s):** SOCIOL 1A06 A/B

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### SOCIOL 2BB3 - SOCIOLOGY OF DEVIANCE

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An introduction to the sociological study of deviance covering key concepts, ideas, methods and different forms of deviant behaviour.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

**Antirequisite(s):** SOCIOL 2C06 A/B

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### SOCIOL 2CC3 - CONSTRUCTING DEVIANCE

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An exploration of how individuals and behaviours are defined as deviant and the consequences of these definitional processes.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

**Antirequisite(s):** SOCIOL 2C06 A/B

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### SOCIOL 2DD3 - IMMIGRATION AND THE CANADIAN MOSAIC

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This course overviews contemporary international migration and immigrant integration with emphasis on Canada. Topics include migration theories, immigration policies, socioeconomic integration, and the second generation.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

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### SOCIOL 2EE3 - INTRODUCTION TO INDIGENOUS-SETTLER RELATIONS IN CANADA

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An overview of Indigenous-settler relations in Canada, including the history of colonization and the sociological aspects of contemporary identities, inequalities, conflicts, and social movements.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B or one of INDIGST 1A03, 1AA3 and enrollment in Level II or above

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### SOCIOL 2FF3 - THE SOCIOLOGY OF 'RACE' AND ETHNICITY

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An introduction to the study of race and ethnicity. The course examines theoretical, empirical, and policy issues related to racism, discrimination, identity, multiculturalism, and social integration.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

**Antirequisite(s):** SOCIOL 2E06 A/B

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### SOCIOL 2GG3 - SOCIOLOGY OF EDUCATION

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An exploration of formal schooling and the broader education system in Western society with an emphasis on application of sociological theory to educational practices.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

**Antirequisite(s):** SOCIOL 2P06 A/B

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### SOCIOL 2HH3 - SOCIOLOGY OF GENDER

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An introduction to the sociology of gender, including empirical and theoretical dimensions. The course will emphasize social construction, social institutions,

and cultural dimensions.

Lectures and discussion (three hours); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

**Antirequisite(s):** SOCIOL 2Q06 A/B

### **SOCIOL 2I03 - SOCIOLOGY OF ORGANIZATIONS**

A theoretical and empirical analysis of formal and informal organizational structures and processes in the major sectors of modern industrial society.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

**Antirequisite(s):** LABR ST 2I03, 2I06, 3I03, SOCIOL 2I06

### **SOCIOL 2JJ3 - RACE, CLASS, GENDER, AND SEXUALITY**

The sociology of race, class, gender and sexuality examines structural and cultural inequalities through an intersectional lens.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

### **SOCIOL 2KK3 - INTRODUCTION TO CLASSICAL SOCIOLOGICAL THEORY**

An exploration of theories developed up to the early 20th century (including the ideas of Marx, Durkheim, Weber, and the early theorists of gender or race).

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and registration in any Sociology program

**Antirequisite(s):** SOCIOL 2S06 A/B

### **SOCIOL 2L03 - MEDIA INSTITUTIONS**

An examination of the institutional structure and production processes of the press, television, and radio. Topics include news gathering, television and radio program production and the relationship between media production and management.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

**Antirequisite(s):** CMST 2L03

### **SOCIOL 2LL3 - INTRODUCTION TO CONTEMPORARY SOCIOLOGICAL THEORY**

An exploration of theories developed from the early 20th century to the present (such as the work of neo-Marxists, symbolic interactionists, feminists, and globalization theorists).

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and SOCIOL 2KK3 and registration in any Sociology program

**Antirequisite(s):** SOCIOL 2S06 A/B

### **SOCIOL 2PP3 - SOCIOLOGY OF FAMILIES**

An introduction to theoretical, historical, contemporary, and comparative perspectives on intimate relationships, households, and families.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

**Antirequisite(s):** SOCIOL 2U06 A/B

### **SOCIOL 2Q03 - DYNAMICS AND TRANSITIONS IN INTIMATE RELATIONSHIPS AND FAMILIES**

An analysis of diversity in intimate relationships and families, including relationship formation and dissolution, caregiving, paid and unpaid labour, and social policy.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

**Antirequisite(s):** SOCIOL 2U06 A/B

### **SOCIOL 2R03 - PERSPECTIVES ON SOCIAL INEQUALITY**

This course will introduce the student to major theories of social inequality, such as the Marxian, Weberian and structural-functionalist perspectives.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

### **SOCIOL 2RR3 - CASE STUDIES OF SOCIAL INEQUALITY**

This course will introduce the student to the empirical literature on social inequality. Depending on the year, the focus will be on class, status, power and elites, income, education, region, age, gender and race/ethnicity.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

### **SOCIOL 2SS3 - SOCIOLOGY OF WORK AND OCCUPATIONS**

This course examines the nature and meaning of work in relation to labour market, economic, and demographic changes in Canada over the last century.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

**Antirequisite(s):** SOCIOL 2V06 A/B

### **SOCIOL 2T03 - SOCIOLOGY OF SPORT**

This course provides a detailed theoretical and empirical examination of how sport is culturally organized, experienced and mediated.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

**Antirequisite(s):** KINESIOL 1H03, KINESIOL 3P03

*Not open to students with credit or registration in SOCIOL 3J03 if the topic was Sociology of Sport. Priority will be given to students registered in a Sociology program.*

### **SOCIOL 2TA3 - ISLAM IN NORTH AMERICA**

This course will explore the history and different expressions of North American Islam. Students will compare and contrast different expressions of Islam in North America.

Two lectures, one tutorial; one term

**Cross-list(s):** RELIGST 2TA3

### **SOCIOL 2TT3 - ENVIRONMENTAL SOCIOLOGY**

This course introduces students to sociological perspectives on the relationship between societies and the natural environment. Topics include: resource use, wilderness, pollution, and environmental justice.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment

in Level II or above

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### **SOCIOL 2UU3 - INDIGENOUS ONTOLOGIES AND WAYS OF KNOWING**

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This course will examine the ways in which Indigenous peoples understand themselves as social beings and societies. Indigenous theories and ways of knowing will be drawn from various Indigenous societies throughout North America.

Lectures and discussion (three hours); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B or one of INDIGST 1A03, 1AA3, RECONCIL 1A03 and enrollment in Level II or above

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### **SOCIOL 2Z03 - INTRODUCTION TO SOCIOLOGICAL RESEARCH**

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This course is designed to develop those skills necessary to pursue and understand research. Several general methods of sociological research will be examined.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in a Sociology or Social Work program

**Antirequisite(s):** ANTHROP 2Z03, CMST 2A03, GEO 2HR3, GEOG 2MA3, GERONTOL 2C03, HLTHAGE 2A03, 2A06, 3Z06, HEALTHST 2B03, SOCPSY 2K03

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### **SOCIOL 3A03 - ADVANCED ANALYSIS OF CLASSICAL SOCIOLOGICAL THEORY**

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An advanced examination of classical sociological theory. Work to be discussed might include Marx, Weber, Durkheim, Mead, Cooley, Du Bois and Freud.

Lectures and discussion (three hours); one term

**Prerequisite(s):** SOCIOL 2KK3 and 2LL3 or 2S06 A/B and registration in Level III of any Honours Sociology program

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### **SOCIOL 3AC3 - SOCIOLOGY OF SEXUALITIES**

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An exploration of the social aspects of sexuality and consideration of how sexual experiences are shaped by, and interpreted through, historically specific social contexts.

Three hours (lectures and discussion); one term

**Prerequisite(s):** registration in B.Sc.N., Conestoga campus

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### **SOCIOL 3B03 - SELECTED TOPICS IN THE SOCIOLOGY OF EDUCATION**

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An examination of selected topics in the sociology of education.

Three hours (lectures and discussion); one term

**Prerequisite(s):** SOCIOL 2GG3, 2P06 A/B

SOCIOL 3B03 may be repeated, if on a different topic, to a total of six units.

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### **SOCIOL 3CC3 - SOCIOLOGY OF THE FAMILY AND THE LIFE CYCLE**

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An advanced course allowing detailed study of the family and the life cycle. Special attention will be paid to the mid and later years.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Enrollment in Level II or above.

**Antirequisite(s):** GERONTOL 3M03, HLTHAGE 3P03

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### **SOCIOL 3D03 - SPECIAL TOPICS IN THE SOCIOLOGY OF THE FAMILY**

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An advanced course allowing detailed study of selected topics in the sociology of the family.

Lectures and discussion (three hours); one term

**Prerequisite(s):** One of SOCIOL 2PP3, 2QQ3, 2U06 A/B

*SOCIOL 3D03 may be repeated, if on a different topic, to a total of six units.*

*Priority will be given to students registered in a Sociology program.*

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### **SOCIOL 3FF3 - INTRODUCTORY STATISTICS FOR SOCIOLOGY**

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This course introduces the basic principles of statistics used in sociological research. The focus will be on selecting, applying, and interpreting statistics for data analyses.

Lectures and labs (three hours); one term

**Prerequisite(s):** SOCIOL 2Z03 and registration in Level III of any Honours Sociology program

**Antirequisite(s):** SOCIOL 3H06 A/B

*Not open to students with credit or registration in any Statistics courses with the exception of STATS 1L03, 2D03, 3U03.*

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### **SOCIOL 3G03 - SOCIOLOGY OF HEALTH CARE**

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Selected issues concerning forms of providing health care.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

Priority will be given to students registered in a Sociology program.

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### **SOCIOL 3GG3 - SPECIAL TOPICS IN THE SOCIOLOGY OF DEVIANCE**

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An advanced course allowing detailed study of selected topics in the sociology of deviance. Topics will vary from year to year.

Lectures and discussion (three hours); one term

**Prerequisite(s):** One of SOCIOL 2BB3, 2CC3, 2C06 A/B

*SOCIOL 3GG3 may be repeated, if on a different topic, to a total of six units.*

*Priority will be given to students registered in a Sociology program.*

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### **SOCIOL 3HH3 - SOCIOLOGY OF HEALTH**

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Sociological approaches to the study of health and illness.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

Priority will be given to students registered in a Sociology program.

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### **SOCIOL 3J03 - SPECIAL TOPICS IN SOCIOLOGICAL ANALYSIS I**

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An examination of selected topics of contemporary interest to sociologists.

Students should consult the Department concerning the topics to be examined.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

SOCIOL 3J03 may be repeated, if on a different topic, to a total of six units.

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### **SOCIOL 3K03 - SPECIAL TOPICS IN SOCIOLOGICAL ANALYSIS II**

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Same as SOCIOL 3J03.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

SOCIOL 3K03 may be repeated, if on a different topic, to a total of six units.



### SOCIOL 3KK3 - GENOCIDE: SOCIOLOGICAL AND POLITICAL PERSPECTIVES

An examination of genocide and other extreme crimes against humanity. Lectures and discussion (three hours); one term

**Prerequisite(s):** Registration in Level III or above

**Antirequisite(s):** SOCSCI 2C03

**Cross-list(s):** POLSCI 3KK3

*Priority will be given to students registered in a Political Science or Sociology program.*

*This course is administered by the Department of Political Science.*

### SOCIOL 3MM3 - POLITICAL SOCIOLOGY

This course examines the field of political sociology, including power, the state, policy, and social change.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

Enrolment priority will be given to students registered in a Sociology program.

### SOCIOL 3NN3 - POPULAR CULTURE AND INEQUALITY

How the production, reception, and consumption of art and popular culture are shaped by and reinforce race, class, and gender inequalities.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

### SOCIOL 3003 - QUALITATIVE RESEARCH METHODS

This course will provide a detailed study of selected qualitative methods in Sociology.

Lectures and discussion (three hours); one term

**Prerequisite(s):** SOCIOL 2Z03 and registration in Level III of any Honours Sociology program

**Antirequisite(s):** GERONTOL 3R03, HLTHAGE 3A03, 3B03

### SOCIOL 3P03 - ADVANCED ANALYSIS OF CONTEMPORARY SOCIOLOGICAL THEORY

An advanced examination of contemporary sociological theory, with a possible focus on schools of theoretical thought like critical theory, symbolic interactionism, or feminist theory.

Lectures and discussion (three hours); one term

**Prerequisite(s):** SOCIOL 2KK3 and 2LL3, or 2S06 A/B and registration in Level III of any Honours Sociology program

**Antirequisite(s):** SOCIOL 3A06

### SOCIOL 3Q03 - SOCIOLOGY STUDENTS AND THE WORK WORLD

This course draws on sociological analysis of work, occupations, and organizations to prepare students for seeking employment and developing careers.

Lectures and discussion (three hours); one term

**Prerequisite(s):** One of SOCIOL 1Z03, 1C03 or 1A06 and enrolment in Level 3 or above of any Sociology program.

**Antirequisite(s):** SOCIOL 4HH3

### SOCIOL 3RR3 - IMPRISONMENT

An exploration of the history, politics, and consequences of incarceration on individuals and society.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, 1Z03 or SOCIOL 1A06 and enrolment in Level 3 or above of any Sociology or Honours Social Psychology program.

**Cross-list(s):** SOCPSY 3RR3

### SOCIOL 3SS3 - SOCIOLOGY OF JUDGEMENT

An exploration of sociological perspectives on judgement and connections to inequality, power, and authority.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1Z03, 1C03 or 1A06 and enrolment in Level 3 or above

### SOCIOL 3U03 - SOCIOLOGY OF SEXUALITIES

An exploration of the social aspects of sexuality and consideration of how sexual experiences are shaped by, and interpreted through, historically specific social contexts.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B.

Priority will be given to students registered in a Sociology program.

### SOCIOL 3W03 - HISTORICAL METHODS IN SOCIOLOGY

An examination of methods for incorporating historical data and archival sources into sociological argument.

Three hours (lectures and discussion); one term

**Prerequisite(s):** SOCIOL 2Z03

### SOCIOL 3X03 - SOCIOLOGY OF AGING

This course deals with changing population structure, economic support of the aged, family of later life, the sociology of retirement, widowhood, death, bereavement, and institutionalization.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

*Not open to students registered in a Gerontology program as of September 1998. Priority will be given to students registered in a Sociology program.*

### SOCIOL 3Y03 - SOCIOLOGY OF GLOBALIZATION

An exploration of globalization using a sociological perspective focusing on issues such as the global economy, migration, transnational families, and global identity formations.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1Z03 or 1C03 or 1A06 and enrolment in Level 3 or above of any Sociology program or permission of the Department.

### SOCIOL 3Z03 - ETHNIC RELATIONS

An analysis of political, social and economic change in selected locales.

Three hours (lectures and discussion); one term

**Prerequisite(s):** One of SOCIOL 1C03, SOCIOL 1Z03, 1A06 A/B and enrollment in Level II or above

Priority will be given to students registered in a Sociology program.

### SOCIOL 4A03 - ETHNIC/RACIAL TENSIONS

The course will investigate the processes by which racial and/or ethnic tensions develop in various societies.

Three hours (seminar); one term

**Prerequisite(s):** SOCIOL 3FF3 or 3H06 A/B or; enrolment in Level IV of the Honours Social Psychology program; or permission of the department.

### **SOCIOL 4AA3 - SELECTED TOPICS IN THE SOCIOLOGY OF THE FAMILY**

An intensive examination of selected problems in the sociology of the family. Lectures and discussion (three hours); one term

**Prerequisite(s):** One of SOCIOL 3FF3 or 3H06 A/B or permission of the Department

SOCIOL 4AA3 may be repeated, on a different topic, to a total of six units.

### **SOCIOL 4BB3 - SELECTED TOPICS IN THE SOCIOLOGY OF EDUCATION**

This advanced course offers an intensive examination of selected problems involving the relationship between schooling and society.

Three hours (seminar); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B or permission of the department.

*Not open to students with credit in SOCIOL 4J03 or SOCIOL 4K03 if on a similar topic.*

### **SOCIOL 4DD3 - SOCIAL MOVEMENTS AND SOCIAL CHANGE**

This seminar examines sociological understandings of contentious politics, activism, and social change.

Three hours (seminar); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B; enrolment in the Honours Social Psychology program, or permission of the department.

### **SOCIOL 4E03 - SELF AND IDENTITY**

A consideration of theoretical and empirical questions relating to self and identity viewed from historical, cross-cultural and cross-disciplinary perspectives.

Three hours (seminar); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B and enrolment in Level IV of any Honours Sociology program; enrolment in the Honours Social Psychology program; or permission of the department.

### **SOCIOL 4EE3 - SELECTED TOPICS IN THE SOCIOLOGY OF CULTURE**

A sociological examination of topics related to the production, dissemination, consumption and/or interpretation of culture. Community service learning may be a component of this course.

Three hours (seminar); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B or; enrolment in Level IV of the Honours Social Psychology program; or permission of the department.

SOCIOL 4EE3 may be repeated, if on a different topic, to a total of six units.

### **SOCIOL 4FF3 - APPLICATIONS OF QUANTITATIVE METHODS IN THE SOCIAL SCIENCES**

This course introduces students to more advanced language and methods of quantitative analyses in the social sciences, including an introduction to a statistical software program.

Lectures and labs (three hours); one term

**Prerequisite(s):** SOCIOL 3FF3 and enrolment in Level IV of any Honours Sociology (Specialist Option) program or permission of the Department.

**Antirequisite(s):** SOCIOL 3H06 A/B

### **SOCIOL 4G03 - ADVANCED TOPICS IN THE SOCIOLOGY OF HEALTH AND ILLNESS**

An examination of the social bases of illness. In different years consideration may be given to topics such as gender, social class and occupational and environmental health issues.

Three hours (seminar); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B or permission of the department.

SOCIOL 4G03 may be repeated, if on a different topic, to a total of six units.

### **SOCIOL 4GG3 - SPECIAL TOPICS IN THE SOCIOLOGY OF DEVIANCE**

An advanced course allowing detailed study of selected topics in the sociology of deviance. Topics will vary from year to year.

Three hours (seminar); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B, enrolment in Level IV of the Honours Social Psychology program; or permission of the department.

SOCIOL 4GG3 may be repeated, if on a different topic, to a total of six units.

### **SOCIOL 4J03 - SELECTED TOPICS IN SOCIOLOGY I**

Topics of contemporary interest to sociologists, with emphasis upon current theory and research. Students should consult the Department concerning the topics to be examined.

Three hours (seminar); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B or permission of the department.

SOCIOL 4J03 may be repeated, if on a different topic, to a total of six units.

### **SOCIOL 4K03 - SELECTED TOPICS IN SOCIOLOGY II**

Topics of contemporary interest to sociologists, with emphasis upon current theory and research. Students should consult the Department concerning the topics to be examined.

Three hours (seminar); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B or permission of the Department.

SOCIOL 4K03 may be repeated, if on a different topic, to a total of six units.

### **SOCIOL 4KK3 - SOCIOLOGY THROUGH COMMUNITY ENGAGEMENT AND SERVICE**

Students are offered a reciprocal opportunity to acquire knowledge and develop skills while providing service and assistance to the community.

Seminar (three hours); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B and enrolment in Level IV of any Honours Sociology program

### **SOCIOL 4LL3 - SELECTED TOPICS IN THE SOCIOLOGY OF IMMIGRATION**

This course focuses on a timely sociological topic on immigrants and immigrant children (the second generation), including labour market integration, transnationalism, and gender and migration.

Three hours (seminar); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B or permission of the Department.

### SOCIOL 4M03 - DIRECTED RESEARCH I FOR HONOURS STUDENTS

Directed study of a research problem through published materials and/or field inquiry and/or data analysis. Students will be required to write up the results of their inquiry in scholarly form.

One term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B and permission of the instructor.

### SOCIOL 4MM3 - PUBLIC SOCIAL PSYCHOLOGY

This course examines major figures in social psychology who have had an impact on the public and transformed our culture. It also examines current public debates and controversies about social psychology or particular social psychologists.

Lectures and discussion (three hours); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B and enrolment in any Honours Sociology program; enrolment in the Honours Social Psychology (B.A.) program; or permission of the Department

**Cross-list(s):** SOCPSY 4MM3

### SOCIOL 4MM6 A/B S - DIRECTED RESEARCH FOR HONOURS STUDENTS

Directed study of a research problem through published material and/or field inquiry and/or data analysis. Students will be required to write up the results of their inquiry in scholarly form.

Two terms

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B and enrolment in Level IV of the Honours Sociology (Specialist Option) program and permission of the instructor.

### SOCIOL 4N03 - DIRECTED RESEARCH II FOR HONOURS STUDENTS

Same as SOCIOL 4M03.

One term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B and permission of the instructor.

### SOCIOL 4Q03 - WOMEN, SEXUALITY AND THE WELFARE STATE

This seminar provides a sociological focus on gender, sexuality, social policy, and the welfare state.

Three hours (seminar); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B or permission of the department.

### SOCIOL 4R03 - INDIVIDUAL AND SOCIETY

An intensive examination of selected problems involving the relationship of individuals to social structures.

Lectures and discussion (three hours); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B and enrolment in any Honours Sociology program; enrolment in the Honours Social Psychology program; or permission of the Department.

### SOCIOL 4RR3 - INDIGENOUS PEOPLES AND CANADA

An intensive examination of selected aspects of Indigenous-settler relations in Canada. Topics may include colonization/decolonization, racism/anti-racism, identity politics, Indigenous and treaty rights, Indigenous-settler alliances,

and healing and reconciliation (among others). This course also offers unique opportunities for community engagement.

Three hours (seminar); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B and enrolment in any Honours Sociology program; enrolment in Honours Social Psychology program; enrolment in the Indigenous Studies program; or permission of the department. SOCIOL 2EE3 and/or a background in Indigenous Studies is recommended.

### SOCIOL 4SR3 - TOPICS IN THE SOCIOLOGY OF RELIGION

This course will examine sociological perspectives on Islam. Particular attention will be paid to issues of Muslim authority, identity and religious practices in the diaspora.

Seminar (three hours); one term

**Cross-lists(s):** RELIGST 4SR3

*This course is administered by the Department of Religious Studies.*

### SOCIOL 4SS3 - THE SOCIOLOGY OF THE 1960S

Drawing on the sociology of social movements, culture and reputations, this course looks at the decade of the 1960s in Canada and the United States.

Three hours (seminar); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B and enrolment in any Honours Sociology program or permission of the department.

### SOCIOL 4TT3 - THE SOCIOLOGY OF MASS MEDIA

This course examines selected issues associated with the sociology of mass media.

Three hours (seminar); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B and enrolment in any Honours Sociology program or permission of the department.

### SOCIOL 4U03 - SPECIAL TOPICS IN THE SOCIOLOGY OF WOMEN

An intensive examination of selected problems concerning women. Depending upon the instructor, topics may include: stratification, inequality, political participation, sexuality, health and work.

Three hours (seminar); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B and enrolment in any Honours Sociology program; enrolment in the Honours Social Psychology program; or permission of the department.

SOCIOL 4U03 may be repeated, if on a different topic, to a total of six units.

### SOCIOL 4UU3 - GLOBAL FAMILY AND SEXUAL POLITICS

This course examines how globalization affects the ways in which family and sexualities are imagined, regulated and experienced through a sociological lens.

Three hours (seminar); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B and enrolment in any Honours Sociology program; enrolment in the Honours Social Psychology program; or permission of the department.

### SOCIOL 4V03 - ISSUES IN THE SOCIOLOGY OF OCCUPATIONS AND THE PROFESSIONS

An advanced course allowing detailed study of one or more topics of special interest.

Three hours (seminar); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B and enrolment in any Honours Sociology program; enrolment in the Honours Social Psychology program; or permission of the department.

### SOCIOL 4W03 - SOCIAL PROBLEMS

The focus of the course will be theories concerning social problems or an empirical examination of specific issues that have become the object of public debate and discussion.

Lectures and discussion (three hours); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B and enrolment in any Honours Sociology program; enrolment in the Honours Social Psychology program; or permission of the Department.

### SOCIOL 4XX3 - SOCIOLOGY OF AT-RISK YOUTH

This course focuses on the social attributes and surrounding conditions associated with at-risk youth in educational, criminal justice, and mental health care institutions. The class may involve an academic placement component with the North Hamilton 'Pathways to Education' project.

Three hours (seminar); one term

**Prerequisite(s):** One of SOCIOL 3FF3, 3H06 A/B and enrolment in any Honours Sociology program; enrolment in the Honours Social Psychology program, or permission of the department.

## Software Engineering

Courses in Software Engineering are administered by the Department of Computing and Software.

Information Technology Building, Room 202, ext. 24614

<http://www.cas.mcmaster.ca>

#### Department Notes

- All Software Engineering courses are open to students registered in a Software Engineering or Mechatronics Engineering program, subject to prerequisite requirements. Prior permission of the Department is necessary for other students.
- Please note that not all elective courses will be offered in each academic year.

### SFWRENG 2AA4 - SOFTWARE DESIGN I - INTRODUCTION TO SOFTWARE DEVELOPMENT

Software life cycle, quality attributes, requirements documentation, specifying behavior; classes and objects, interface specification; creation, structural, and behavioral software design patterns; implementation in code, reviews, testing and verification.

Three lectures, one tutorial (two hours); second term

**Prerequisite(s):** SFWRENG 2DM3, 2S03, 2XA3

**Antirequisite(s):** COMPSCI 2ME3, MECHTRON 3K04, SFWRENG 3K04

### SFWRENG 2C03 - DATA STRUCTURES AND ALGORITHMS

Basic data structures: stacks, queues, hash tables, and binary trees; searching and sorting; graph representations and algorithms, including minimum spanning trees, traversals, shortest paths; introduction to algorithmic design strategies; correctness and performance analysis.

Three lectures, one tutorial (one hour); second term

**Prerequisite(s):** SFWRENG 2DM3

**Antirequisite(s):** COMPSCI 2C03

### SFWRENG 2DA4 - DIGITAL SYSTEMS AND INTERFACING

Memory, binary arithmetic, hierarchical design. Hardware/software co-design and application-specific processors. Interfacing to I/O devices.

Three lectures, one lab (three hours); first term

**Co-requisite(s):** SFWRENG 2DM3

**Antirequisite(s):** COMPENG 2DI4, ELECENG 2DI4

### SFWRENG 2DM3 - DISCRETE MATHEMATICS WITH APPLICATIONS I

Functions, relations and sets; the language of predicate logic, propositional logic; proof techniques, counting principles; induction and recursion, discrete probabilities, graphs, and their application to computing.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** MATH 1ZC3

**Antirequisite(s):** COMPSCI 2DM3, SFWRENG 2E03, 2F03

### SFWRENG 2FA3 - DISCRETE MATHEMATICS AND APPLICATIONS II

Predicate logic and formal proofs, grammars and automata, modular arithmetic, and their applications to computing.

Three lectures, one tutorial (one hour); second term

**Prerequisite(s):** SFWRENG 2DM3

**Antirequisite(s):** COMPSCI 2FA3, SFWRENG 2E03, 2F03

### SFWRENG 2GA3 - COMPUTER ARCHITECTURE

Instruction-set architecture, computer arithmetic, datapath and control, pipelining, memory hierarchies, I/O systems, multiprocessor systems, measures of performance.

Three lectures, one tutorial (one hour); second term

**Prerequisite(s):** SFWRENG 2DA4

**Antirequisite(s):** COMPENG 3DR4, 4DM4, COMPSCI 2GA3, SFWRENG 3GA3

### SFWRENG 2MD3 - DATA STRUCTURES, ALGORITHMS, AND LANGUAGE CONCEPTS FOR MECHATRONICS

Advanced programming with emphasis on embedded systems. Program specifications: Pre- and post-conditions, loop and datatype invariants; use of tools to demonstrate correctness. Selecting data structures for implementation of mathematical abstractions. Finite state machines, automata and languages; lexing and parsing. Algorithm analysis (time and space). Modelling of graphs, relations, corresponding algorithms.

Three lectures, one tutorial; second term

**Prerequisite(s):** SFWRENG 2MP3 and registration in a Mechatronics Engineering program

**Antirequisite(s):** COMPENG 2SI4, COMPSCI 2C03, SFWRENG 2C03

### SFWRENG 2MP3 - PROGRAMMING FOR MECHATRONICS

This course focuses on learning programming using the high-level systems programming language C, and on understanding how its features are implemented using the CPU and the memory hierarchy. Mathematical abstractions are implemented using fundamental data structures such as arrays, stacks, queues, etc., with static and dynamic memory allocation.

Three lectures, one tutorial; first term

**Prerequisite(s):** ENGINEER 1D04 or IBEHS 1P10 A/B, and registration in a Mechatronics Engineering program

**Antirequisite(s):** COMPENG 2SH4, COMPSCI 2S03, SFWRENG 2S03

### SFWRENG 2S03 - PRINCIPLES OF PROGRAMMING

Fundamental concepts of programming: expressions, statements, procedures, control structures, iteration, recursion, exceptions; precise memory model of traditional imperative programming languages; basic data structures: records, arrays, dynamic structures; use of libraries.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** ENGINEER 1D04 or IBEHS 1P10

**Antirequisite(s):** COMPENG 2SH4, COMPSCI 2S03, SFWRENG 2MP3



### SFWRENG 2XA3 - SOFTWARE ENGINEERING PRACTICE AND EXPERIENCE: SOFTWARE DEVELOPMENT SKILLS

Unix and shell programming, makefiles, version control; assembly basics, translating high-level language into assembly, parameter passing, arrays, recursion; compiling, debugging, profiling, and software optimizations.

Two lectures, one lab (three hours per week); first term

**Prerequisite(s):** ENGINEER 1D04 or IBEHS 1P10

**Antirequisite(s):** COMPSCI 2XA3

### SFWRENG 2XB3 - SOFTWARE ENGINEERING PRACTICE AND EXPERIENCE: BINDING THEORY TO PRACTICE

Open-ended design of computational solutions to practical problems that involve both theoretical (algorithmic) analysis and implementation; solving computational problems through an experiential approach; revision and version control.

Two lectures, one lab (three hours); second term

**Prerequisite(s):** SFWRENG 2S03, 2XA3

**Co-requisite(s):** SFWRENG 2AA4, 2C03

**Antirequisite(s):** COMPSCI 2XB3, 2XC3

### SFWRENG 3A04 - SOFTWARE DESIGN III - LARGE SYSTEM DESIGN

Sustainable architectures; design for change and expansion; software architecture design space; object oriented analysis and design; architectural styles; methodology of making architecture decisions; project organization.

Three lectures, one tutorial (two hours); second term

**Prerequisite(s):** SFWRENG 3BB4

### SFWRENG 3BB4 - SOFTWARE DESIGN II - CONCURRENT SYSTEM DESIGN

Processes, threads, concurrency; synchronization mechanisms, resource management and sharing; objects and concurrency; design, architecture and testing of concurrent systems.

Three lectures, one tutorial (two hours); first term

**Prerequisite(s):** SFWRENG 2AA4, 2FA3

**Antirequisite(s):** COMPSCI 3SD3

### SFWRENG 3DB3 - DATABASES

Data modeling, integrity constraints, principles and design of relational databases, relational algebra, SQL, query processing, transactions, concurrency control, recovery, security and data storage.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** SFWRENG 2C03 and SFWRENG 2DM3, or registration in Level IV or above of any Mechatronics program

**Antirequisite(s):** COMPSCI 3DB3, SFWRENG 4DB3

### SFWRENG 3DX4 - DYNAMIC SYSTEMS AND CONTROL

Modelling of dynamic continuous physical phenomena in both continuous and discrete time. Control theory, stability analysis and feedback controller design. Application of computer control to continuous processes. System identification.

Three lectures, one lab (three hours); second term

**Prerequisite(s):** SFWRENG 3MX3

**Antirequisite(s):** ELECENG 3CL4, ENGINEER 3L03, IBEHS 4A03, MECHENG 4R03, MECHTRON 3DX4, SFWRENG 3DX3

**Cross-list(s):** MECHTRON 3DX4

### SFWRENG 3FP3 - FUNCTIONAL PROGRAMMING

Functional programming; lists and algebraic data types, pattern matching, parametric polymorphism, higher-order functions, reasoning about programs; lazy and strict evaluation; programming with monads; domain-specific languages.

Three lectures, one tutorial; one term

**Prerequisite(s):** SFWRENG 2DM3, 2FA3

**Antirequisite(s):** COMPSCI 3FP3

Offered on an irregular basis.

### SFWRENG 3GB3 - GAME DESIGN

Game concepts. Creative and expressive play. Storytelling and narratives. User interfaces for games. Gameplay. Core mechanics. Game Balancing. Software architecture of games. Level design. Genres. Physics Engines.

Three lectures, one tutorial (two hours every other week); one term

**Prerequisite(s):** COMPSCI 2ME3 or SFWRENG 2AA4 or 3K04

Offered on an irregular basis.

### SFWRENG 3GC3 - COMPUTER GRAPHICS

Mathematical foundations, the graphics pipeline, geometrical transformations, 3D visualization, clipping, illumination and shading models and the impact of graphics on society.

Three lectures, one tutorial (two hours every other week); one term

**Prerequisite(s):** Registration in a program in Software Engineering

**Antirequisite(s):** COMPSCI 3GC3

Offered on an irregular basis.

### SFWRENG 3I03 - COMMUNICATION SKILLS

Oral and written presentation skills; types and structure of technical documents; software documentation for the user; formulating and presenting proposals.

Three hours (lectures, discussion, group project, seminars); first term

**Prerequisite(s):** Registration in Level II or above of a Software Engineering or Mechatronics Engineering program

**Antirequisite(s):** COMPSCI 2CS3, 3I03

**Cross-list(s):** COMPSCI 3I03

*Not open to students with credit or registration in ISCI 1A24 A/B.*

### SFWRENG 3K04 - SOFTWARE DEVELOPMENT

Software design process. Professional responsibility. Using specifications. Documentation. Module Specification. Module interfaces. Module internal documentation. Coding styles. Portability. Software inspection. Software testing.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** One of COMPENG 2SI4, ELEC ENG 2SI4, SFWRENG 2S03

**Antirequisite(s):** COMPSCI 2ME3, MECHTRON 3K04, SFWRENG 2AA4

### SFWRENG 3MD3 - SAFE SOFTWARE-INTENSIVE MEDICAL DEVICES

Comprehensive overview of and experience with system development and assurance for safety critical software-intensive systems in general, and safe, secure and effective medical devices in particular: System requirements, validation, system design including hardware and software components, software design, implementation, and verification.

Three lectures, one lab (two hours); one term

**Prerequisite(s):** COMPENG 2SI4 or COMPSCI 2C03 or SFWRENG 2C03 or 2MD3

### SWFRENG 3MX3 - SIGNALS AND SYSTEMS

Linear systems, signals, filters; time and frequency domains; single input-single output systems; discrete and continuous time; sampling theorem; Fourier series; Fourier, Laplace, and Z-transforms; stability.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** MATH 2Z03

**Antirequisite(s):** ELECENG 3TP3, MECHTRON 3MX3, IBEHS 3A03

### SWFRENG 3003 - LINEAR OPTIMIZATION

Modelling and solutions for engineering and science problems using linear optimization, including networks, transportation, assignment, and scheduling problems. Solution methods include combinatorial algorithms such as simplex methods, primal-dual formulations, branch and bound formulations for mixed integer programming, and heuristics.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** SFWRENG 2C03 or 3K04

**Antirequisite(s):** COMPSCI 4003

**Cross-list(s):** COMPSCI 4003

### SWFRENG 3RA3 - SOFTWARE REQUIREMENTS AND SECURITY CONSIDERATIONS

Software requirements gathering. Critical systems requirements gathering. Security requirements. Traceability of requirements. Verification, validation, and documentation techniques. Software requirements quality attributes. Security policies. Measures for data confidentiality. Design principles that enhance security. Access control mechanisms.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** SFWRENG 2AA4 or SFWRENG 3K04; SFWRENG 2FA3 or SFWRENG 2MD3

**Antirequisite(s):** COMPSCI 3SR3, 4EF3, SFWRENG 3R03, 4EF3

**Cross-list(s):** COMPSCI 3RA3

### SWFRENG 3S03 - SOFTWARE TESTING

Measurement fundamentals, software measures and metrics, cost and effort estimation, testing strategy, testing plan, testing documentation, slicing and debugging, test coverage, functional testing techniques, system testing techniques, automated testing, maintenance fundamentals, regression testing.

Three lectures, one tutorial (two hours every other week); second term

**Prerequisite(s):** SFWRENG 3BB4 or COMPSCI 3SD3

### SWFRENG 3SH3 - OPERATING SYSTEMS

Processes and threads, synchronization and communication; scheduling, memory management; file systems; resource protection; structure of operating systems.

Three lectures, one lab (three hours every other week); second term

**Prerequisite(s):** One of SFWRENG 2AA4, 3K04; and one of SFWRENG 2MD3, 2C03 or COMPENG 2SI4

**Antirequisite(s):** COMPSCI 3SH3

### SWFRENG 3XA3 - SOFTWARE ENGINEERING PRACTICE AND EXPERIENCE: SOFTWARE PROJECT MANAGEMENT

Open-ended software development emphasizing concurrent system design; measurement, inspection, software metrics, software project management, refactoring; testing methods.

One lecture, two labs (two hours); second term

**Prerequisite(s):** SFWRENG 2AA4

### SWFRENG 4AA4 - REAL-TIME SYSTEMS AND CONTROL APPLICATIONS

Hard and soft real-time systems. Safety classification. Fail-safe design, hazard analysis. Discrete event systems. Modes. Requirements and design specifications. Tasks and scheduling. Clock synchronization. Data acquisition. Applications in real-time control.

Three lectures, one lab (three hours); first term

**Prerequisite(s):** SFWRENG 3BB4 or 3SH3; and SFWRENG 3DX3 or 3DX4, or IBEHS 4A03

**Antirequisite(s):** MECHTRON 4AA4, SFWRENG 4A03, 4AA3, 4GA3

**Cross-list(s):** MECHTRON 4AA4

### SWFRENG 4AD3 - ADVANCED DATABASES

Advanced topics in database systems technology and design. Topics include: query processing; query optimization; data storage; indexing; crash recovery; physical database design; introductory data mining techniques.

Three lectures, one tutorial; one term

**Prerequisite(s):** SFWRENG 3DB3 or 4DB3

**Antirequisite(s):** COMPSCI 4AD3

**Cross-list(s):** COMPSCI 4AD3

Offered on an irregular basis.

### SWFRENG 4C03 - COMPUTER NETWORKS AND SECURITY

Physical networks, TCP/IP protocols, switching methods, network layering and components, network services. Information security, computer and network security threats, defense mechanisms, encryption.

Three lectures, one tutorial (one hour); second term

**Prerequisite(s):** SFWRENG 3BB4 or 3K04, or COMPSCI 3SH3 or SFWRENG 3SH3

**Antirequisite(s):** COMPSCI 3CN3, 4C03, COMPENG 4DN4

### SWFRENG 4E03 - PERFORMANCE ANALYSIS OF COMPUTER SYSTEMS

Use of queuing models and simulation to predict computer system performance and find bottlenecks in a system. Types of models, distributions. Markov models. Modelling storage and network behaviour, locks, critical sections, concurrency. Introduction to analytical system reliability.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** STATS 3Y03 or registration in STATS 3Y03 in the same term

**Antirequisite(s):** COMPSCI 4E03

**Cross-list(s):** COMPSCI 4E03

### SWFRENG 4F03 - PARALLEL COMPUTING

Parallel architectures, design and analysis of parallel algorithms; distributed-memory, shared-memory and GPU computing; communication cost, scalability; MPI, OpenMP and OpenACC; tuning parallel programs for performance.

Three lectures, one tutorial (one hour); one term

**Prerequisite(s):** Credit or registration in SFWRENG 3BB4 or SFWRENG 3SH3.

Completion of SFWRENG 4C03 is recommended.

**Antirequisite(s):** COMPSCI 4CD3

**Cross-list(s):** COMPSCI 4F03

Offered on an irregular basis.

### SWFRENG 4G06 A/B - SOFTWARE DESIGN IV - CAPSTONE DESIGN PROJECT

Student teams prepare the requirements, design, documentation, and implementation of a software system taking economic, health, safety, legal, marketing factors into account. Students must demonstrate a working system

and convincing test results. Software project management.

Lectures, discussion, group project, seminars (three hours); two terms

**Prerequisite(s):** Registration in final level of a Software Engineering program

**Antirequisite(s):** SFWRENG 4G03, 4H03, 4GP6 A/B

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### SFWRENG 4HC3 - HUMAN COMPUTER INTERFACES

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Design of user interfaces. Principles of good interface design. Task-oriented design. User experience design. Inclusive design.

Communicating with graphics. Modes and mode awareness problem. Human cognition (memory, perception, motor systems). Help systems. Interface design tools.

Three lectures, one tutorial (one hour); first term

**Prerequisite(s):** Registration in Level III or above of any Software Engineering program, or registration in an Integrated

Biomedical Engineering and Health Sciences (IBEHS) program and either COMPENG 2S14 or permission of the department

**Antirequisite(s):** COMPSCI 4HC3, SFWRENG 4D03

**Cross-list(s):** COMPSCI 4HC3

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### SFWRENG 4J03 - COMMUNICATIONS SYSTEMS

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Fundamental communications concepts: information, entropy, channel capacity, codes, data compression, adaptive channel equalizers, modulation/demodulation of signals, tracking, Kalman filtering, use of specialized signal processing hardware. Software in communication systems.

Three lectures, one tutorial (one hour); second term

**Prerequisite(s):** SFWRENG 2MX3 or 3MX3; STATS 3N03 or 3Y03 is recommended

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### SFWRENG 4TE3 - CONTINUOUS OPTIMIZATION

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Fundamental algorithms and general duality concepts of continuous optimization. Special attention will be paid to the applicability of the algorithms, their information requirements and computational costs. Practical engineering problems will illustrate the power of continuous optimization techniques.

Three lectures, one tutorial (one hour); one term

**Prerequisite(s):** One of MATH 2Z03 or 2C03

**Antirequisite(s):** COMSPCI 4TE3

**Cross-list(s):** COMPSCI 4TE3

Offered on an irregular basis.

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### SFWRENG 4TH3 - THEORY OF COMPUTATION

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Formal languages, models of computation, decidability, reduction techniques, time and space complexity classes.

Three lectures, one tutorial (one hour); one term

**Prerequisite(s):** SFWRENG 2C03, 2FA3

**Antirequisite(s):** COMPSCI 4TH3

**Cross-list(s):** COMPSCI 4TH3

*Offered on an irregular basis.*

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### SFWRENG 4X03 - SCIENTIFIC COMPUTATION

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Computer arithmetic and roundoff error analysis. Interpolation, integration, solving systems of linear and nonlinear equations. Eigenvalues and singular value decomposition. Numerical methods for ordinary differential equations.

Three lectures, one tutorial (one hour); second term

**Prerequisite(s):** Both MATH 1ZB3 and MATH 1ZC3; or both MATH 1AA3 and 1B03

**Antirequisite(s):** COMPENG 3SK3, 3SK4, COMPSCI 4X03, SFWRENG 3X03

**Cross-list(s):** COMPSCI 4X03

## Software Engineering Technology

Courses in Software Engineering Technology are administered by the Bachelor of Technology Program.

Engineering Technology Building (ETB), Room 509, ext. 26401

<https://www.eng.mcmaster.ca/sept>

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### SFWRTECH 3CS3 - COMPUTER SECURITY

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Network and software security, cryptography algorithms, including symmetric and public-key encryption, malware, user authentication, firewalls, vulnerabilities, policies and best practices, attack and defense strategies.

Three lectures, one term; completely online with in-person exams

**Prerequisite(s):** Registration in Software Engineering Technology or permission of the Chair and registration in level 2 in any program in the DeGroote School of Business for students pursuing the Business Technology Management Certificate.

*Students that do not have a Networking or IT background from college are strongly encouraged to take SFWRTECH 3IT3 before enrolling in this course.*

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### SFWRTECH 3IT3 - FUNDAMENTALS OF NETWORKING

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Introductory and intermediate topics involving Layers 1-4 in the OSI model including Ethernet, IP addressing, subnetting, routing, VLANs, Spanning-Tree Protocol, and network device configuration.

Three lectures, one term; completely online with in-person exams

**Prerequisite(s):** Registration in Software Engineering Technology or permission of the Chair and registration in level 2 in any program in the DeGroote School of Business for students pursuing the Business Technology Management Certificate.

**Antirequisite(s):** COMPTECH 3PR3, 3PD3, SFWRTECH 3PR3

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### SFWRTECH 3OS3 - OPERATING SYSTEMS

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Processes, threads and concurrency, process scheduling, memory management. Protection, access and authentication. File system organization and access methods.

Three lectures; one term; completely online with in-person exams

**Prerequisite(s):** Registration in Software Engineering Technology or permission of the Chair and registration in level 2 in any program in the DeGroote School of Business for students pursuing the Business Technology Management Certificate.

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### SFWRTECH 3PR3 - PROCEDURAL AND OBJECT ORIENTED PROGRAMMING CONCEPTS

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Procedural and Object Oriented programming fundamentals. Concepts are exemplified with C++ and Java programming languages.

Three lectures, one term; completely online with in-person exams

**Prerequisite(s):** Registration in Software Engineering Technology or permission of the Chair and registration in level 2 in any program in the DeGroote School of Business for students pursuing the Business Technology Management Certificate.

**Antirequisite(s):** COMPTECH 3IT3, 3NT3, SFWRTECH 3IT3

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### SFWRTECH 3RQ3 - SOFTWARE REQUIREMENTS AND SPECIFICATION

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Requirements gathering, documentation and validation for computer systems. Modeling paradigms including information, behaviour, domain, function and constraint models. Specification languages.

Three lectures; one term; completely online with in-person exams

**Prerequisite(s):** Registration in Software Engineering Technology or

permission of the Chair and registration in level 2 in any program in the DeGroote School of Business for students pursuing the Business Technology Management Certificate.

Students that do not have a software development background from college are strongly encouraged to take SFWRTECH 3PR3 before enrolling in this course.

### SFWRTECH 4AI3 - ARTIFICIAL INTELLIGENCE

Theories and practice of machine intelligence with focus on statistical learning methods, artificial neural networks, naturally inspired algorithms, deep learning, big data management, and pattern recognition.

Three lectures, one term; completely online with in-person exams

**Prerequisite(s):** Registration in level IV of Biotechnology, Automotive and Vehicle Engineering Technology, Civil Engineering Infrastructure Technology, Manufacturing Engineering Technology, Power and Energy Engineering Technology, and Software Engineering Technology

**Antirequisite(s):** SMRTTECH 4AI3

### SFWRTECH 4CC3 - PARALLEL PROGRAMMING

Models of parallel computation. Performance measurement. Shared memory and synchronization. Parallel data structures, searching and sorting. Scheduling and work distribution.

Three lectures, one term; completely online with in-person exams

**Prerequisite(s):** Registration in Level IV Software Engineering Technology

### SFWRTECH 4CG3 - COMPUTER GRAPHICS

3D graphics platforms. Languages for computer graphics development: Maya API, Unity, CUDA/Open CL, open source software. Creation of 2D and 3D images. GPU architecture considerations.

Three lectures, one term; completely online with in-person exams

**Prerequisite(s):** Registration in Software Engineering Technology.

### SFWRTECH 4DA3 - DATA ANALYTICS AND BIG DATA

Linear approaches to regression and classification - selection and shrinkage methods, linear discriminant approaches, big data system implementations.

Three lectures, one term; completely online with in-person exams

**Prerequisite(s):** ENGTECH 3ST3 or 3ES3, SFWRTECH 4MA3, and registration in Biotechnology or Software Engineering Technology

### SFWRTECH 4DM3 - DATA MINING

Classification, association, prediction and clustering of data. Decision trees. Bayesian probability. Supervised and unsupervised learning.

Three lectures, one lab; one term; completely online with in-person exams

**Prerequisite(s):** SFWRTECH 4DA3 and registration in Software Engineering Technology

### SFWRTECH 4DS3 - DATA STRUCTURES AND ALGORITHMS

*Formerly SFWRTECH 3DS3*

Common abstract data types and associated algorithms. Algorithm design - divide and conquer, greedy algorithms. Algorithm Analysis. Hard problems and NP-completeness.

Three lectures; one term; completely online with in-person exams

**Prerequisite(s):** ENGTECH 3DM3 and registration in Software Engineering Technology

*Students that do not have a software development background from college are strongly encouraged to take SFWRTECH 3PR3 before enrolling in this course.*

### SFWRTECH 4ES3 - REAL-TIME SYSTEMS

Real Time system characteristics. Dynamic responses of physical processes. Real-time system requirements. Real-time operating systems. Scheduling and concurrency.

Three lectures, one term; completely online with in-person exams

**Prerequisite(s):** Registration in Level IV Software Engineering Technology

### SFWRTECH 4MA3 - NUMERICAL LINEAR ALGEBRA AND NUMERICAL OPTIMIZATION

System of linear equations, linear least square systems, eigenvalue problems, nonlinear equations, unconstrained and constrained optimization.

Three lectures, one term; completely online with in-person exams

**Prerequisite(s):** ENGTECH 3MA3 and Registration in Software Engineering Technology

### SFWRTECH 4NN3 - NEURAL NETWORKS AND DEEP LEARNING

Neural network architectures and training, parallel implementations and implementations using accelerated hardware, convolutional neural networks, recurrent neural networks and deep learning.

Three lectures, one term; completely online with in-person exams

**Prerequisite(s):** Registration in Level IV Software Engineering Technology

### SFWRTECH 4NS3 - ADVANCED NETWORK SECURITY

Information security, penetration testing, vulnerability scanning and assessment, malware, system, network, and web-based attacks, social engineering techniques, ethics and legality of hacking.

Three lectures, one term; completely online with in-person exams

**Prerequisite(s):** SFWRTECH 3CS3 and registration in Software Engineering Technology

### SFWRTECH 4SA3 - SOFTWARE ARCHITECTURE

Architectural structures and views. Modularity. Frameworks, design patterns and components. Distributed architectures. Design of software agents.

Modeling, visualization and implementation of architectural components.

Three lectures, one term; completely online with in-person exams

**Prerequisite(s):** SFWRTECH 3RQ3 and registration in Software Engineering Technology

### SFWRTECH 4VE3 - VISUAL EFFECTS AND TECHNOLOGY FOR ANIMATED PRODUCTION

Applications software: Autodesk Maya, Pixars Renderman, Mitsuba, Foundry Nuke, Unity Game Engine. Texturing, cloning, motion tracking, wire and rig removal, rotoscoping. Visual effects.

Three lectures, one term; completely online with in-person exams

**Prerequisite(s):** Registration in Software Engineering Technology

### SFWRTECH 4WP3 - ADVANCED WEB PROGRAMMING

Advanced technologies for web development, apps for mobile, desktop and cloud based systems, client and server side web APIs.

Three lectures; one term; completely online with in-person exams

**Prerequisite(s):** Registration in Software Engineering Technology or permission of the Chair and registration in level 2 in any program in the DeGroote School of Business for students pursuing the Business Technology Management Certificate.

*Students that do not have a Networking or IT background from college are strongly encouraged to take SFWRTECH 3IT3 before enrolling in this course.*



## Spanish

Courses in Spanish are administered within the Department of Linguistics and Languages.

Togo Salmon Hall, Room 629, ext. 24388

<http://linguistics.humanities.mcmaster.ca/>

Former Hispanic Studies (HISPANIC) courses are now listed as Spanish (SPANISH) courses. Students having credit in Hispanic Studies courses may not take the corresponding course under the Spanish designation.

### Notes

1. Students should note that the Department has classified its Spanish language courses under the following categories:

**Introductory Level Language Course:** SPANISH 1Z06 A/B

**Intermediate Level Language Courses:** SPANISH 1A03, 1AA3, 2Z03, 2ZZ3

2. Not all courses are offered on an annual basis. Students should consult the timetable for available courses.

3. Students may be required to take a placement test in the Department of Linguistics and Languages to assess their proficiency in the language.

### Courses

*If no prerequisite is listed, the course is open.*

### SPANISH 1A03 - INTERMEDIATE SPANISH I

The first part of an intensive review of grammatical structures in Spanish. Emphasis will be on composition, expansion of vocabulary and oral practice. Written works in the original will be studied. The sequel to this course is SPANISH 1AA3.

Three hours; one term

**Prerequisite(s):** Grade 12 Spanish U or equivalent

**Antirequisite(s):** SPANISH 2Z03

*Not open to students with credit or registration in SPANISH 1AA3.*

*Not open to native speakers of Spanish.*

*The Department reserves the right to place students in the course most appropriate to their abilities.*

### SPANISH 1AA3 - INTERMEDIATE SPANISH II

The second part of an intensive review of grammatical structures in Spanish. Emphasis will be on composition, expansion of vocabulary and oral practice. Written works in the original will be studied.

Three hours; one term

**Prerequisite(s):** SPANISH 1A03

**Antirequisite(s):** SPANISH 2ZZ3

*Not open to native speakers of Spanish. The Department reserves the right to place students in the course most appropriate to their abilities.*

### SPANISH 1Z06 A/B - BEGINNER'S INTENSIVE SPANISH

This course gives students the ability to express themselves reasonably well in Spanish and acquire the basics of Spanish grammar and gain considerable reading skill. This course is enhanced by a Computer Assisted Language Learning (CALL) module. The sequel to this course is SPANISH 2Z03.

Three hours; two terms

**Antirequisite(s):** Grade 12 Spanish U or equivalent

*Not open to native speakers of Spanish.*

*The Department reserves the right to place students in the course most appropriate to their abilities.*

### SPANISH 2Z03 - INTERMEDIATE SPANISH I

First part of an intensive review of the grammatical structures of Spanish. Emphasis will be on composition, expansion of vocabulary and oral practice. Written works in the original will be studied. The sequel to this course is

SPANISH 2ZZ3.

Four hours; one term

**Prerequisite(s):** SPANISH 1Z06 A/B

**Antirequisite(s):** SPANISH 1A03

*Not open to native speakers of Spanish.*

*The Department reserves the right to place students in the course most appropriate to their abilities.*

### SPANISH 2ZZ3 - INTERMEDIATE SPANISH II

Second part of an intensive review of grammatical structures of Spanish. Emphasis will be on composition, expansion of vocabulary and oral practice. Written works in the original will be studied.

Four hours; one term

**Prerequisite(s):** SPANISH 2Z03

**Antirequisite(s):** SPANISH 1AA3

## Statistics

Courses in Statistics are administered by the Department of Mathematics & Statistics.

Hamilton Hall, Room 218, ext. 27034

<http://www.math.mcmaster.ca/>

### Department Notes

1. Course codes ending with \* indicate that course is not necessarily offered every session; consult the Chair of the Department or the Associate Dean of Science (Academic).

2. Courses in Mathematics and Statistics are not open to students registered in the Bachelor of Technology (B.Tech.) program.

### Courses

*If no prerequisite is listed, the course is open.*

See also courses in *Mathematics*.

### STATS 1L03 - PROBABILITY AND LINEAR ALGEBRA

The algebra of probability, conditional probability and independence, discrete and continuous random variables, mean and variance, matrices, determinants, Cramer's rule, solution of linear equations.

Three lectures, one tutorial; one term

**Prerequisite(s):** OSS Grade 11 Mathematics

*Not open to students with credit in Grade 12 Mathematics of Data Management U or STATS 1CC3, 2B03, 2D03, 2MA3, 2MB3.*

*Not open to students registered in the Faculty of Science or Faculty of Engineering.*

### STATS 2B03 - STATISTICAL METHODS FOR SCIENCE

Applied statistics, with emphasis on inferential methods relevant to the environmental and life sciences. Use of a computer statistics package.

Three lectures, one lab; one term

**Prerequisite(s):** One of Grade 12 Data Management U, STATS 1A03, 1L03 or registration in Level II or above of a program in the Faculty of Science  
*Not open to students with credit or registration in ARTSSCI 2R03, COMMERCE 2QA3, EARTHSC 2MB3, ECON 2B03, ENVIRSC 2MB3, GEOG 2MB3, HTHSCI 1F03, 2A03, KINESIOL 3C03, PNB 2XE3, STATS 2D03, 2MA3, 2MB3.*

### STATS 2D03 - INTRODUCTION TO PROBABILITY

Combinatorics, independence, conditioning; Poisson-process; discrete and continuous distributions with statistical applications; expectation, transformations moment-generating functions joint, marginal and conditional distributions; covariance and correlation; central limit theorem.

Three lectures, one tutorial; one term

**Prerequisite(s):** One of ARTSSCI 1D06 A/B, MATH 1AA3, 1LT3, 1NN3, 1XX3, 1ZB3, 1ZZ5 or ISCI 1A24 A/B

*Not open to students with credit or registration in PSYCH 2RA3.*

### STATS 2MB3 - STATISTICAL METHODS AND APPLICATIONS

Estimation; sampling distributions; confidence intervals; hypothesis testing, power; linear regression; graphical and computational methods.

Three lectures, one tutorial; one term

**Prerequisite(s):** STATS 2D03

*Not open to students with credit or registration in ARTSSCI 2R03 or PNB 3XE3.*

### STATS 3A03 - APPLIED REGRESSION ANALYSIS WITH SAS

Introduction to SAS; linear regression model; least squares method; model fitting and diagnostics; influential analysis; model building; one-way and two-way ANOVA; applications. This course includes a scientific communication component.

Three lectures, one lab; one term

**Prerequisite(s):** ARTSSCI 2R03 or STATS 2MB3

### STATS 3D03 - MATHEMATICAL STATISTICS

Multivariate distributions; distributions related to normal inference; point estimation; sampling distributions; consistency and limiting distributions; interval estimation; hypothesis testing; single parameter maximum likelihood methods; Rao-Cramer Lower Bound and Efficiency.

Three lectures; one term

**Prerequisite(s):** STATS 2D03 and one of ISCI 2A18 A/B, MATH 2A03, 2L03, 2Q04, 2X03, 2ZZ3

### STATS 3DS3 - INTRODUCTION TO DATA SCIENCE THEORY

An introduction to data science theory is provided with some focus on analytics. Topics covered include an introduction to R and other appropriate computational platforms, data types, data manipulation, data frames, data visualization, data reporting, statistical/machine learning, classification, clustering, cross-validation, classification and regression trees, gradient boosting, ridge regression, LASSO, and generalized additive models. Familiarity with some computer package, e.g. SAS, Python or MatLab is required. This course includes a scientific communication component.

Two lectures, one lab (one hour); one term

**Prerequisite(s):** One of ECON 3EE3, PNB 3XE3, SFWRTECH 4DA3, STATS 3A03

### STATS 3G03 - ACTUARIAL MATHEMATICS I

Survival distributions, life tables, life insurance, life annuities, net premiums and reserves.

Three lectures, one tutorial; one term

**Prerequisite(s):** STATS 2D03; and one of MATH 2FM3, 2K03

### STATS 3J04 - PROBABILITY AND STATISTICS FOR CIVIL ENGINEERING

Introduction to probability, data analysis, statistical inference, regression, correlation and analysis of variance, applications to civil and environmental engineering.

Four lectures; one term

**Prerequisite(s):** Registration in Level II or above of any program in Engineering

**Antirequisite(s):** ENGINEER 3JR4, STATS 3N03, 3Y03

### STATS 3PG3 - PROBABILITY AND GAMES OF CHANCE

Probabilistic treatment of games of chance. Selected topics from: conditional expectation, discrete martingales, Markov chains, game theory, house advantage, craps, video poker, gambler's ruin, slots, betting systems. This course includes a scientific communication component.

Three lectures; one term

**Prerequisite(s):** One of ISCI 2A18 A/B, MATH 2A03, 2X03; and STATS 2D03

### STATS 3S03\* - SURVEY SAMPLING

Survey design; simple random sampling; stratified sampling; proportional allocation; ratio estimation; cluster sampling; systematic sampling and sample size determination. Exposure to real surveys.

Three lectures; one term

**Prerequisite(s):** STATS 2D03; and one of ARTSSCI 2R03, STATS 2MB3

### STATS 3ST3 - ACTUARIAL MODELS IN NON-LIFE INSURANCE

An introduction to short term actuarial models in property and casualty insurance. Topics covered include Theory of Credibility, Pricing and Reserving. Credibility: Limited fluctuation (classical) credibility, Bayesian credibility, Bühlmann and Bühlmann-Straub models. Pricing: Rating factors, exposure, experience rating, calculate premiums using the pure premium and loss ratio methods. Reserving: Techniques for estimating unpaid losses from a run-off triangle (deterministic methods as Chain-Ladder, Bornhuetter-Ferguson) and introduction to stochastic reserving.

Three lectures; one term

**Prerequisite(s):** STATS 3A03

### STATS 3U03\* - STOCHASTIC PROCESSES

Random walk, Markov chains, discrete and continuous parameter Markov processes, branching processes, birth and death processes, queuing processes.

Three lectures; one term

**Prerequisite(s):** One of ISCI 2A18 A/B, MATH 2A03, 2X03; and STATS 2D03

### STATS 3Y03 - PROBABILITY AND STATISTICS FOR ENGINEERING

Introduction to probability, data analysis, statistical inference, regression, correlation and analysis of variance.

Three lectures; one term

**Prerequisite(s):** Registration in a program in Engineering above Level I

**Antirequisite(s):** ENGINEER 3JR4, STATS 3J04, 3N03

### STATS 4A03 - TIME SERIES

Stationary, auto-regressive and moving-average series, Box-Jenkins methods, trend and seasonal effects, tests for white noise, estimation and forecasting methods, introduction to time series in the frequency domain. This course includes a scientific communication component.

Three lectures; one term

**Prerequisite(s):** STATS 3A03, 3D03

### STATS 4C03 - GENERALIZED LINEAR MODELS

Normal linear model, exponential family, iteratively-reweighted least squares, logistic regression, Poisson regression and log-linear models, other families of GLM's, analysis of deviance and model checking, residual analysis.

Three lectures; one term

**Prerequisite(s):** STATS 3A03 and STATS 3D03

### STATS 4CI3\* - COMPUTATIONAL METHODS FOR INFERENCE

Monte Carlo methods; bootstrap and jackknife methods; multi-parameter maximum likelihood; computation in nonlinear likelihood inference; The EM Algorithm; sufficiency and its applications; optimal hypothesis tests; Bayesian inference; Markov Chain Monte Carlo.

Three lectures; one term

**Prerequisite(s):** STATS 3D03

**Antirequisite(s):** STATS 3CI3

### STATS 4D03 - INTERMEDIATE PROBABILITY THEORY

Construction of probability spaces and random variables, integration, conditional expectation, law of large numbers, convergence of series, weak convergence, characteristic functions and central limit theorems, martingales.

Three lectures; one term

**Prerequisite(s):** MATH 3A03, or MATH 3IA3; and STATS 2D03

### STATS 4G03 - ADVANCED TOPICS IN ACTUARIAL SCIENCE

Major Topics include: Severity Models, Frequency Models and Aggregate Models in non-life insurance and short term coverages. Survival Models; Mortality Improvement; Long term coverages in health insurance; Recursion; Pensions Plans and Retirement Benefits; Structured Settlements.

Three lectures; one term

**Prerequisite(s):** STATS 3G03

### STATS 4H03 - ACTUARIAL MATHEMATICS II

Multiple life functions, multiple decrement models, valuation theory for pension plans.

Three lectures, one tutorial; one term

**Prerequisite(s):** STATS 3G03

**Antirequisite(s):** STATS 3H03

### STATS 4I03 - INFERENCE

Maximum Likelihood Estimation, Cramer-Rao bound, Likelihood Ratio tests, Multi-parameter likelihood methods, Sufficient Statistics, Completeness and MVUE, Exponential Family, Functions of parameters, Uniformly Most Powerful Tests, Generalized likelihood ratio tests, Quadratic forms, Analysis of variance, Introduction to Bayesian Inference.

Three lectures; one term

**Prerequisite(s):** STATS 3D03

### STATS 4M03 - MULTIVARIATE ANALYSIS

Multivariate distributions: Normal, Wishart, T2 and others; regression; correlation; principal components; general linear hypothesis. This course includes a scientific communication component.

Three lectures; one term

**Prerequisite(s):** MATH 2LA3 or MATH 2R03; and STATS 3D03 (or 3D06)

### STATS 4P03 - ADVANCED APPLIED STATISTICS

Statistical computing; statistical software packages; working with large data sets; exploratory data analysis; graphical methods; statistical consulting practice. This course includes a scientific communication component.

Three lectures; one term

**Prerequisite(s):** Credit or registration in STATS 3A03 or 3D03

### STATS 4T06 A/B - SENIOR RESEARCH PROJECT

A project in statistics to be carried out under the supervision of a faculty member from the Department of Mathematics and Statistics. A written report and oral presentation will be required. This course includes a scientific communication component.

One occasional tutorial; two terms

**Prerequisite(s):** Registration in Level IV of any Honours Mathematics and Statistics program; and a GPA of at least 9.0; and permission of the Chair of the Department

*Not open to students with credit or registration in MATH 4P06 A/B or ISCI 4A12 A/B.*

### STATS 4W03 - READING IN STATISTICS

Directed reading in areas of statistics of interest to the student and the instructor. This course includes a scientific communication component.

**Prerequisite(s):** GPA of at least 7.0 and permission of the Chair of the Department

STATS 4W03 may be repeated, if on a different topic.

### STATS 5GT3 - GRADUATE LEVEL TOPICS IN STATISTICS

Undergraduate students may seek permission to enrol in selected graduate level offerings. Refer to the Graduate Calendar for course information.

**Prerequisite(s):** Permission of the Department of Mathematics and Statistics  
Undergraduate students will be required to meet all academic obligations of the graduate-level course offering.

STATS 5GT3 may be repeated, if on a different graduate level topic.

## Sustainability

Courses with the SUSTAIN designation are administered by the Faculty of Engineering.

### SUSTAIN 1S03 - INTRODUCTION TO SUSTAINABILITY

An introduction to sustainability from an interdisciplinary perspective which examines the historical and societal lenses through which sustainability is viewed. Students will learn terminology, theories and concepts to effectively communicate across disciplines and on various topics of sustainability.

One three hour lecture; one one-hour tutorial; offered in both terms

**Antirequisite(s):** SUSTAIN 2A03

### SUSTAIN 2S03 - EVALUATING PROBLEMS & SUSTAINABLE SOLUTIONS

Students will learn how to identify problems and evaluate sustainable solutions to societal problems from an interdisciplinary perspective. The course will involve active experiential learning which emphasizes actions on local projects.

One three-hour lecture, one one-hour tutorial; offered in both terms

### SUSTAIN 2SS3 - ADVOCATING FOR SUSTAINABILITY

Students will gain knowledge, skills, and abilities to effectively communicate and influence decisions, which they will apply to current sustainability issues within the community. This course is interdisciplinary and experiential.

One three-hour lecture; one term

### SUSTAIN 3S03 - IMPLEMENTING SUSTAINABLE CHANGE

Exploring agency, leadership, and strategy effectiveness within the context of sustainability. The course will include interdisciplinary perspectives,

experiential learning and community engagement projects.

One three-hour lecture, one one-hour tutorial; first term

**Prerequisite(s):** Registration in Level III or above or permission of the Academic Sustainability Programs Office

**Antirequisite(s):** SUSTAIN 3A03

---

### SUSTAIN 3SS3 - FOSTERING SUSTAINABLE COMMUNITIES THROUGH 100IN1DAY HAMILTON

---

Students will gain knowledge, skills and abilities to support collaborative approaches to making positive, sustainable change within the community. They will apply their learning through involvement in 100in1Day Hamilton.

One three-hour lecture; one term

**Prerequisite(s):** Registration in Level III or above or permission of the Academic Sustainability Programs Office

---

### SUSTAIN 4S06 A/B - LEADERSHIP IN SUSTAINABILITY

---

Final-year course where students gain leadership skills and apply them by working in interdisciplinary teams to develop and implement a sustainability-focused project within the community.

One three-hour lecture; both terms

**Prerequisite(s):** Registration in Level IV or above or permission of the Academic Sustainability Programs Office

## Theatre & Film

Courses in Theatre & Film Studies are administered by the School of the Arts. Togo Salmon Hall, Room 414, ext. 27671

<http://sota.humanities.mcmaster.ca/>

### Department Notes

- The following course is open to all campus students but is not an entry point to the program
  - THTRFLM 1H03 - Acting Skills for Life and Work
- The following are courses open as electives to students registered in Level II or above of any undergraduate program.
  - THTRFLM 2CP3 - Culture and Performance
  - THTRFLM 2FA3 - Film Analysis
  - THTRFLM 2MM3 - Movies and Me
  - THTRFLM 3AA3 - Modernist Drama and Theatre in Europe
  - THTRFLM 3DD3 - Contemporary Canadian Drama and Theatre
  - THTRFLM 3FF3 - Early Cinema History
  - THTRFLM 3L03 - Cinema History from WWII
  - THTRFLM 3VS3 - Visual Storytelling
- Courses restricted to students registered in programs in Theatre & Film Studies may be available to qualified students in other programs if space permits. Students interested in such courses should request permission from the program counsellor.
- Students are advised to note carefully the prerequisites for all courses, and take note which courses are offered in alternate years.

### Courses

*If no prerequisite is listed, the course is open.*

---

### THTRFLM 1H03 - ACTING SKILLS FOR LIFE AND WORK

---

Learn the fundamentals of movement and speech training to help negotiate the complexities of everyday life and work. Through lectures, readings, and studio acting exercises students develop physical awareness, sensitivity to others, collaboration skills, verbal and non-verbal communication skills, and techniques to encourage creative thinking. No previous acting experience required.

1 hour lecture, 1 two-hour studio; one term

**Antirequisite(s):** THTRFLM 2AA3

---

### THTRFLM 1T03 - INTRODUCTION TO THEATRE, CINEMA AND SOCIETY

---

An exploration of different forms of theatre and cinema, how they are shaped by the cultures in which they are created, and how they in turn shape our perception and understanding of society.

Two lectures, one tutorial; one term

---

### THTRFLM 2AA3 - ACTING AS DEVSING

---

Students work in studio to explore how the actor's creative process reflects and challenges the norms that structure contemporary social relationships.

Two studios; one term

**Prerequisite(s):** Registration in a program in Theatre and Film Studies, or permission of the program

---

### THTRFLM 2BB3 - DESIGNING AS DEVSING

---

Students work in studio to learn basic techniques for using visual and sound design as a basis for creating performance pieces.

Two studios; one term

**Prerequisite(s):** THTRFLM 1T03 or MMEDIA 1A03, and registration in Level II or above of any program

---

### THTRFLM 2CP3 - CULTURE AND PERFORMANCE

---

A critical examination of performances that produce social and cultural thought and of the artists' strategic practices, particularly in terms of challenges to artistic and social norms.

Three hours (lectures and discussion); one term

**Prerequisite(s):** Registration in Level II or above of any program

---

### THTRFLM 2DP3 - DEVISING PROCESSES

---

Students learn basic processes for scripting devised performance through theatre games, archival research and analytical exercises.

Two studios; one term

**Prerequisite(s):** Registration in a program in Theatre and Film Studies

**Antirequisite(s):** THTRFLM 3G03

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### THTRFLM 2FA3 - FILM ANALYSIS

---

An introduction to an interrelated set of approaches to film study, all of which are defined by their attention to the filmic text and which provide students with a grasp of the fundamentals of film analysis.

Two lectures, plus one weekly film screening; one term

**Prerequisite(s):** Registration in Level II or above

**Cross-list(s):** ARTHIST 2FA3

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### THTRFLM 2MM3 - MOVIES AND ME

---

An examination of popular film as a social practice, considering both how mainstream movies take up social issues and how audiences interact with films and film culture.

Two hour lecture, one film screening; one term

**Prerequisite(s):** Registration in Level II or above

---

### THTRFLM 3AA3 - MODERNIST DRAMA AND THEATRE IN EUROPE

---

This course studies representative dramas and theatre productions that highlight the diversity of plays on the 20th century stage.

One seminar (two hours), plus weekly play readings/screenings (two hours);



one term

**Prerequisite(s):** Registration in Level II or above

*Offered in alternate years.*

---

### THTRFLM 3DD3 - CONTEMPORARY CANADIAN DRAMA AND THEATRE

---

An examination of changing approaches to plays and performances in contemporary Canadian theatre, with an emphasis on post-colonialism, cultural diversity and the performance of gender and class.

Three lectures; one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** ENGLISH 3DD3, THTRFLM 3F03

*Offered in alternate years.*

---

### THTRFLM 3FF3 - EARLY CINEMA HISTORY

---

An introduction to the history of narrative film from its beginnings to the Second World War. It focuses on narrative cinema's development from aesthetic, social, technological and economic perspectives while also touching on a selected number of issues in film theory.

Two lectures, plus one weekly film screening; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Cross-list(s):** ARTHIST 3FL3

**Antirequisite(s):** ARTHIST 2FL3, THTRFLM 2FF3

---

### THTRFLM 3L03 - CINEMA HISTORY FROM WWII

---

An exploration of narrative film from 1941 to the present day, incorporating a study of a variety of narrative cinema styles. Theoretical issues will include questions of cinema's relationship to other art forms, narrative, genre and authorship.

Two lectures, plus one weekly film screening; one term

**Prerequisite(s):** Registration in Level II or above of any program

**Antirequisite(s):** CMST 3XX3

**Cross-list(s):** ARTHIST 3XX3

---

### THTRFLM 3N03 - ARTISTS' ALTERNATIVE FILM AND VIDEO

---

An exploration of artists' film and video produced outside of dominant institutions, including such practices as documentary, autobiography, community projects, experimental film, short film and video art.

Lecture and discussion (two hours), plus one weekly film screening; one term

**Prerequisite(s):** Registration in Level III or above and one of CMST 2BB3 or THTRFLM 2CP3, 2FA3

**Antirequisite(s):** CMST 3UU3

*Offered in alternate years.*

---

### THTRFLM 3OP6 A/B - ORGANIZING THE PERFORMANCE SPACE

---

Students explore the contributions of design, production and stage management to theatrical production through studio exercises and work on department productions.

Two Studios plus practicum work (includes evenings and weekends as determined by production schedules); two terms

**Prerequisite(s):** THTRFLM 2BB3 or 2DP3, and registration in Level II or above  
*Not to be taken concurrently with THTRFLM 4A06 A/B.*

---

### THTRFLM 3P03 - WOMEN AND VISUAL CULTURE

---

Students will explore ideas about representation, spectatorship and production in relation to issues of social difference, such as gender, race and class.

Emphasis is on visuality in forms such as film, video, television, advertising, et

cetera.

Lecture and discussion (two hours), plus one weekly film screening; one term

**Prerequisite(s):** Registration in Level III or above; and one of ARTHIST 2A03, CMST 2BB3, 2G03, 2H03, THTRFLM 1T03, 2FA3, WOMENST 1A03, 1AA3, 2AA3

**Antirequisite(s):** CMST 3BB3

**Cross-list(s):** WOMENST 3BB3

*Not open to students with credit or registration in WOMENST 3B03, if the topic was Images of Women: Reading Art, Media and Popular Culture.*

*This course is administered by Women's Studies.*

---

### THTRFLM 3PC3 - PERFORMANCE AND COMMUNITY ENGAGEMENT

---

Working in collaboration with the Student Success Centre, the class will conduct theatre workshops to gather material about the lived experiences of McMaster students. They will learn how to organize and analyze the material they gather, and use it to create short scenes for the following year's production of the Welcome Week play, IRIS, which is presented to most incoming McMaster undergraduates within days of their arrival on campus.

Two studios (four hours), plus one lecture; one term

**Prerequisite(s):** Registration in Level III or IV of any program

---

### THTRFLM 3PR3 - TEXT-BASED DEVSING: RESEARCH AND DEVELOPMENT

---

Students will learn the basic skills necessary for the research and planning phase of public performance through preparatory work for departmental productions. Students will learn the research and studio skills necessary to devise productions from previously scripted texts. This class will begin the creative process for the departmental production in the Fall term. Studio fees are a course requirement. Check with instructor what these costs are before end of drop and add period.

Three hours (studio and lectures); one term

**Prerequisite(s):** Nine units of Level II Theatre & Film Studies, including one of THTRFLM 2AA3, 2BB3, or 2DP3; or registration in Level III or above of a Multimedia program

*Offered during the Spring/Summer term only.*

Alternates with THTRFLM 3PS3

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### THTRFLM 3PS3 - DEVISING NEW PLAYS: RESEARCH AND DEVELOPMENT

---

Students will learn the research and studio skills necessary to devise new plays. This class will begin the creative process for the departmental production in the Fall term. Studio fees are a course requirement. Check with instructor what these costs are before end of drop and add period.

Three hours (studio and lectures); one term

**Prerequisite(s):** Nine units of Level II Theatre & Film Studies, including one of THTRFLM 2AA3, 2BB3, or 2DP3; or registration in Level III Multimedia

Alternates with THTRFLM 3PR3.

*Offered during the Spring/Summer term only.*

---

### THTRFLM 3S06 - MAJOR PRODUCTION WORKSHOP

---

Students will form the core artistic team for the School's November Major Production. This course is reserved for students with a demonstrated ability to collaborate in creative teams. Students wishing to register in this course must submit an application form to the School of the Arts by the end of April to guarantee consideration for the following year.

Eight hours (including two two-hour studios, one four-hour rehearsal), plus production hours; one term

**Prerequisite(s):** Registration in Level III of any program in Theatre & Film

Studies, or Multimedia, and permission of the School of the Arts.

**Antirequisite(s):** THTRFLM 3S03

### THTRFLM 3SD3 - SCRIPTING THE DEvised PERFORMANCE

A practical study of the structural qualities and social impact of different dramatic forms and their use in scripting performances for specific audiences. Studio (two hours), lecture and discussion (one hour); one term

**Prerequisite(s):** A grade of at least B- in THTRFLM 2AA3, 2BB3, or 2DP3; and registration in Level III or above of a program in Theatre & Film Studies

### THTRFLM 3U03 - PLEASURE AND CRITIQUE IN DRAMATIC PERFORMANCE

An exploration of the relationship between pleasure and critique in a range of dramatic performances for theatre, cinema and related art forms.

Lecture and discussion (three hours); one term

**Prerequisite(s):** THTRFLM 1T03; and registration in Level III or above

### THTRFLM 3VS3 - VISUAL STORYTELLING

This course examines the theories underlying the visual aesthetics of cinema and theatre. These are analyzed alongside narrative structure and put into practice by students in projects.

Three hours (lectures and demonstrations); one term

**Prerequisite(s):** Registration in Level II or above of any program

*Offered in alternate years.*

### THTRFLM 3WW3 - ACTING AND THE VOICE: DEVISING FROM CLASSICAL TEXTS

Using classical texts as a springboard, students will learn to use their voices as an important resource in the devising of new work.

Two studios; one term

**Prerequisite(s):** Registration in a program in Theatre & Film Studies, or permission of the program

Alternates with THTRFLM 3XX3. THTRFLM 2AA3 is recommended.

### THTRFLM 3XX3 - ACTING AND THE BODY: DEVISING PHYSICAL THEATRE

A practical investigation of the ways actors can use their own bodies as a central resource in the devising of new work.

Two studios; one term

**Prerequisite(s):** Registration in a program in Theatre & Film Studies, or permission of the program

Alternates with THTRFLM 3WW3. THTRFLM 2AA3 is recommended.

### THTRFLM 4A06 A/B - THEATRE AND SOCIETY: A PERFORMANCE PROJECT

Students will work in small groups to create and critique public performances. Two lectures, one lab; total of 6 hours

**Prerequisite(s):** Registration in Level IV of an Honours program in Theatre & Film Studies and permission of the School of the Arts. Starting in 2010, students proposing an original script must have taken THTRFLM 3SD3. Admission to THTRFLM 4A06 will be based primarily on academic standing. In addition, students must complete a written application on a form provided by the School of the Arts, which must be submitted in March of the academic year prior to registration. Final selection will be made by Theatre and Film Studies faculty.

### THTRFLM 4C03 - PERFORMANCE AND SOCIETY

Senior Seminar: Contemporary theories about the relationship of performance and social structures.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of an Honours program in Theatre & Film Studies

*Priority will be given to students registered in Level IV of any Theatre & Film Studies program.*

*Offered in alternate years.*

### THTRFLM 4D03 - THEATRE, SOCIETY AND EARLY CINEMA

Senior seminar: A study of the relationship between theatre and film. It is organized by topics that have been the focus of recent scholarship.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of an Honours program in Theatre & Film Studies

Priority will be given to students registered in Level IV of any Theatre & Film Studies program.

### THTRFLM 4E03 - CINEMA AND SOCIETY

Senior seminar: Students work with interdisciplinary theories and examine how selected films produce social meanings.

Seminar (two hours); one term

**Prerequisite(s):** Registration in Level III or IV of an Honours program in Theatre & Film Studies; or registration in Level IV of an Honours program in Communication Studies

*THTRFLM 3FF3 is recommended. Priority will be given first to students registered in Level IV of any Theatre & Film Studies program and then to students registered in Level IV of the Communication Studies program.*

## WHMIS

### WHMIS 1A00 - INTRODUCTION TO HEALTH AND SAFETY

Introduction to safety guidelines at McMaster University, acceptable safety conduct and positive safety attitudes and practices in laboratories and Workplace Hazardous Materials Information System (WHMIS).

*This course is evaluated on a Complete/Fail basis.*

Web modules

**Antirequisite(s):** ART 1HS0, ENGINEER 1A00, ENGTECH 1A00, NURSING 1A00, SCIENCE 1A00

*This requirement must be completed prior to the start of the first lab. Students who fail the quiz must reattempt it and will not be permitted in any course with a lab component or any Level II ART course until the requirement has been successfully completed.*

## Women's Studies

The following courses in Women's Studies are administered by the Office of Interdisciplinary Studies (Togo Salmon Hall Room 721, ext. 27734, <https://gsfr.humanities.mcmaster.ca/minor-in-womens-studies/>): WOMENST 1A03, 1AA3, 2AA3, 3BB3, 4D03.

All other WOMENST courses that appear in this calendar are administered by the cross-listed department.

### Courses

*If no prerequisite is listed, the course is open.*

---

### WOMENST 1A03 - WOMEN, CULTURE, POWER

---

An interdisciplinary introduction to Women's Studies focusing on how women and men shape and are shaped by culture (including popular culture), systems of power and institutional ideologies.

Two lectures, one tutorial (three hours); one term

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### WOMENST 1AA3 - WOMEN TRANSFORMING THE WORLD

---

An interdisciplinary introduction to Women's Studies that explores women's historic and current collective efforts to transform social, economic and political conditions both nationally and globally.

Two lectures, one tutorial (three hours); one term

---

### WOMENST 2AA3 - INTRODUCTION TO FEMINIST THOUGHT

---

An introduction to the history of feminist theorizing, including liberal, radical, socialist, multiracial, poststructural, postcolonial, third wave, queer and global feminist approaches.

Two lectures, one tutorial (three hours); one term

**Prerequisite(s):** Registration in Level II or above

**Antirequisite(s):** ENGLISH 2AA3

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### WOMENST 2B03 - WOMEN IN THE BIBLICAL TRADITION

---

This course will focus on the portrayal of women in the Hebrew Scriptures and the New Testament. Among the texts to be dealt with are examples of biblical narrative and legal material, the gospels, the letters of Paul and extra-biblical material.

Two lectures, one tutorial; one term

**Cross-list(s):** RELIGST 2B03

*This course is administered by the Department of Religious Studies.*

---

### WOMENST 2BB3 - IMAGES OF THE DIVINE FEMININE

---

An examination of some of the ways the divine has been portrayed as feminine in diverse cultures.

Two lectures, one tutorial; one term

**Cross-list(s):** SCAR 2BB3

**Antirequisite(s):** RELIGST 2BB3

*This course is administered by the Department of Religious Studies.*

---

### WOMENST 3BB3 - WOMEN AND VISUAL CULTURE

---

Students will explore ideas about representation, spectatorship and production in relation to issues of social difference, such as gender, race and class.

Emphasis is on visuality in forms such as film, video, television, advertising, et cetera.

Two hour lecture and discussion, plus one weekly film screening; one term

**Prerequisite(s):** Registration in Level III or above; and one of ARTHIST 2A03, CMST 2BB3, 2G03, 2H03, THTRFLM 1T03, 2FA3, WOMENST 1A03, 1AA3, 2AA3

**Antirequisite(s):** CMST 3BB3

**Cross-list(s):** THTRFLM 3P03

*Not open to students with credit or registration in WOMENST 3B03, if the topic was Images of Women: Reading Art, Media and Popular Culture.*

---

### WOMENST 3BW3 - WOMEN IN THE BIBLICAL TRADITION

---

This course will focus on the portrayal of women in the Hebrew Scriptures and the New Testament. Among the texts to be dealt with are examples of biblical narrative and legal material, the gospels, the letters of Paul and extra-biblical material.

Two lectures, one tutorial; one term

**Cross-list(s):** SCAR 3BW3

**Antirequisite(s):** RELIGST 2B03, WOMENST 2B03

*This course is administered by the Department of Religious Studies.*

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### WOMENST 3FF3 - GENDER AND RELIGION

---

An examination of gender in one or more religious traditions.

Two lectures, one tutorial; one term

**Antirequisite(s):** RELIGST 2SS3, 3FF3

**Cross-list(s):** SCAR 3FF3

*This course is administered by the Department of Religious Studies.*

# Aid & Awards

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### OFFICE OF THE REGISTRAR, AID & AWARDS

Gilmour Hall, Room 120

McMaster University

Hamilton, Ontario, L8S 4L8

<https://registrar.mcmaster.ca/financial-aid/>

### SENIOR ASSOCIATE REGISTRAR AID & AWARDS

**Tracie Long**

### ASSISTANT REGISTRAR GOVERNMENT AID PROGRAMS

**Rita Mukherjee**

The Office of the Registrar, Aid & Awards delivers government and University aid and award programs that support access, financial wellness and excellence at the post-secondary level. Government student aid, such as the Ontario Student Assistance Program (OSAP), is administered on behalf of federal and provincial governments. University aid and awards programs include academic grants, awards, bursaries and work programs. For more information about our programs and services, visit <https://registrar.mcmaster.ca/aid-awards/>.

## Regulations for Aid and Awards

The University promotes access to available Aid and Awards and seeks to maximize opportunities for students while ensuring equity and consistency in administration. In doing so, the University operates within the Senate approved University Aid and Awards Policy to ensure its responsibilities to students and donors are met. While all regulations for Aid and Awards are established within this approved policy, the University may choose to offer additional

Aid and Award programs, establish regulations through which to administer these programs, and/or modify existing regulations with Senate approval after the Undergraduate Calendar has been published. It is important to note that Financial Awards are not covered by the University Aid and Awards Policy and are not administered through the Aid and Award regulations that follow. Financial Awards support students in a manner consistent with the goals of the University, but do not necessarily meet all of the policy regulations of established Aid and Award programs. Financial Awards may be administered centrally through the Office of the Registrar, Aid & Awards, through the School of Graduate Studies (SGS), or through designated representatives in University faculties and departments that have established processes to administer their own funds (e.g. Athletics and Recreation). Financial Awards are not Senate-approved awards and thus, are not recognized at convocation or included on University transcripts. Information about Financial Awards is made available through department websites.

The following regulations apply to all Undergraduate Aid and Award Programs (and excludes Financial Awards, as detailed above):

## Application Requirements

Some Aid and Awards require students to submit an application:

1. Application records for Aid and Awards, supporting documentation (e.g. transcripts, letters of reference, income tax notices of assessment, student loan entitlements, etc.) and responses to applications shall be handled by the administering office in accordance with the *Freedom of Information and Protection of Privacy Act (FIPPA)*.
2. Where advertised Aid and Award application deadlines fall on a non-business day (i.e. Saturday, Sunday or University-recognized holiday), the deadline is 8:30 am the next business day.
3. Requirements for Aid and Awards by application typically include -
  - An online application submitted electronically through Mosaic with a completed and signed cover page, or a completed signed paper-based application form
  - A statement of eligibility
  - A curriculum vitae/academic resume
  - A transcript (McMaster University transcripts may be unofficial)
  - In addition, for the types of awards noted below, at least one academic or personal (non-family member) letter of reference may be required -
    - i. University-wide Aid and Awards
    - ii. Aid and Awards with a value exceeding \$2000
    - iii. Renewable Aid and Awards
    - iv. Aid and Awards at the discretion of the Office of the Registrar, Aid & Awards
4. The University may choose to audit and verify any or all information provided to complete an Aid or Award Application.
5. Application records and supporting documentation is used by the Office of the Registrar, Aid & Awards, Award Chairs and Selection Committees for the sole purpose of administering Aid and Award programs, including, but not limited to, determining student eligibility.
6. All application records and supporting documentation submitted by unsuccessful applicants will be retained for a minimum period of twelve months after last use. All application records and supporting documentation submitted by successful applicants will be retained for a minimum period of seven years after last use.
7. All application records and supporting documentation remain the property of McMaster University.

## Gender Criteria

For the purpose of Aid and Award criteria and eligibility, references to "Woman" or "Female" include all students who identify as Woman/Female and references to "Man" or "Male" include all students who identify as a Man or Male.



## Maximums

To ensure a fair and wide allocation of Undergraduate Aid and Awards, the University restricts the number and value of aid and awards which students may receive for an academic year.

An eligible entering student may receive:

- a. One Entrance Award granted solely on the basis of academic merit (e.g. a McMaster Honour Award); and
- b. One Indigenous Student Entrance Award or one Entrance Award granted on the basis of earned merit that requires an additional assessment process, including, but not limited to, application, interview and/or audition; and
- c. One Entrance Academic Grant or Indigenous Student Entrance Academic Grant; and
- d. One Entrance Bursary granted on the basis of earned merit that requires an additional assessment process, including, but not limited to, application, interview and/or audition, and additional bursary funding up to the amount eligible; and
- e. Fall/Winter and Summer Work Program funding; and
- f. Any number of Financial Awards

An eligible in-course or graduating student may receive:

- a. Awards granted on the basis of academic merit, limited to either one award greater than or equal to \$800 (considered a 'major' award) and one academic award less than \$800 (considered a 'minor' award), or two academic awards less than \$800; and
- b. Two awards granted on the basis of earned merit that requires an additional assessment process, including, but not limited to, application, interview and/or audition; and
- c. Academic Awards continued from a previous year; and
- d. Any number of prizes, which include non-monetary awards such as books and medals, and awards of nominal monetary value (currently \$100 or less), whether based on academic merit or an additional assessment process; and
- e. One Travel or Exchange Award; and
- f. One Academic Grant (including any renewable Entrance, Indigenous Student Entrance, or In-Course Academic Grant continued from a previous year); and
- g. One Community Contribution Award; and
- h. One In-Course Bursary granted on the basis of earned merit that requires an additional assessment process, including, but not limited to, application, interview and/or audition, and additional bursary funding (including any renewable Entrance or In-Course Bursary continued from a previous year) up to the amount eligible; and
- i. Fall/Winter and Summer Work program funding; and
- j. Any number of Financial Awards

T4A tax slips are issued to students for all Aid and Award amounts received during the tax year.

It is important to note that Aid and Award income may affect federal and/or provincial student aid (e.g. full-time OSAP) entitlements. Students are advised to review the status of their government student aid applications often and refer to the appropriate government website for further information.

## Review of Aid and Award Decisions

1. Decisions made by Aid and Award selection committees are final. Students may not appeal these decisions.
2. Students who believe an error occurred at the University, that may have impacted an Aid and/or Award decision, are asked to write to the Senior Associate Registrar, Aid & Awards requesting a review of their file.
3. Students who have compelling personal circumstances that preclude them from receiving initial payment and/or renewal of Aid and/or Award funding may submit a petition for special consideration to request that an exception to the policy and/or regulations be made. Petitions should be submitted to the Senior Associate Registrar, Aid & Awards and should include a cover letter explaining the need for special consideration, as well as any

relevant documentation. Petitions must be submitted in a prompt and timely manner and will be accepted no later than one year after the decision being petitioned.

## Privacy

1. The *Freedom of Information and Protection of Privacy Act (FIPPA)* and McMaster University's *Notice of Collection* statement shall govern the information provided to donors and others concerning award recipients, including publications such as convocation programs and Award booklets. As such, the University is permitted to publish an individual's name, Faculty, program, plan, level, and Award information. The University may publish the names of recipients of scholarships listed in the Undergraduate Calendar in the University's convocation program and other Award publications.
2. With permission, the University may also release an Aid recipient's first name, last name, Faculty, program, plan, level, Aid received and amount to the donor(s) of the Aid.
3. With permission, the University may also release an academic grant recipient's first name, last name, email id, faculty, program, plan, level, Academic Grant received and amount to the Faculty for the purpose of Faculty award ceremony invitations and Award booklets.
4. From time to time, the Office of the Registrar, Aid & Awards may reach out to Award recipients with requests for thank you letters, invitations to donor luncheons and events, invitations to discuss summer job opportunities or internships, interviews for McMaster University Advancement or Communications and Public Affairs, etc. Responses to these requests and/or attendance at these functions is entirely voluntary. While a response is appreciated, acceptance or rejection of these offers in no way impacts Aid and Award eligibility.
5. Mandatory annual reporting to Undergraduate Council Awards Committee, Undergraduate Council, and Senate include the release of an Award recipient's first name, last name, Faculty, program, plan, level, Award received and amount, submitted Travel Award reports, Aid and Award summary information and identification of participating University-wide Selection Committee members.
6. Students with concerns regarding Aid and Award privacy, are asked to write to the Senior Associate Registrar, Aid & Awards.

# Aid for Undergraduate Students

## Bursaries

### Entrance Bursaries

#### Entrance Bursary Regulations

1. Entrance Bursaries are non-repayable grants allocated on the basis of demonstrated financial need, which may also include a minimum expectation of academic achievement or other miscellaneous criteria.
2. Entrance Bursaries are available to students admitted on the basis of high school admission requirements.
3. Entrance Bursaries are available to full-time and part-time students entering Level 1 of their first baccalaureate degree program.
4. Entrance Bursaries requiring full-time status are available to students enrolled in a full-time OSAP eligible full-time course load or equivalent in both the fall and winter terms.
5. Students who have enrolled at any post-secondary institution after graduation from high school are not eligible for Entrance Bursaries, unless:
  - i. They are completing a certificate or diploma at McMaster University as a requirement of admission (e.g. the McMaster English Language Diploma), and/or
  - ii. They have withdrawn from post-secondary studies before attending or before the deadline to drop and add courses in their first term of study.
6. Entrance Bursaries are available to students who are Canadian Citizens or Permanent Residents of Canada regardless of where they completed their high school education.
7. Entrance Bursaries are allocated on the basis of financial need, as demonstrated through a completed full-time OSAP application, for the academic year in which the student is entering Level 1 of their program.
8. Entrance Bursaries are allocated in adherence with the Ministry of Colleges and Universities (MCU) policies, procedures and guidelines in place for the given academic year. The MCU Student Access Guarantee (SAG) currently specifies bursary amounts and payment deadlines for students in high tuition programs (e.g. Engineering, Business).
9. Entrance Bursary funds are limited.
10. Students may receive more than one Entrance Bursary to fill their Student Access Guarantee obligation or to meet the total bursary amount for their level of financial need.
11. In some cases, students may receive more than one Entrance Bursary (e.g. where a student meets a particular donor fund requirement or applies via a separate earned merit application process). In these cases, the bursary is awarded to the eligible student who demonstrates the greatest financial need as determined by the Office of the Registrar, Aid & Awards.
12. Entrance Bursaries may specify a minimum admission average requirement and may consider one or more McMaster University calculated admission averages. An admission audition or portfolio score or equivalent may be included in the calculation of an average. Final grades for courses completed after June 30th in the year of admission application will not be considered in assessing eligibility for Entrance Bursaries.
13. Entrance Bursaries may also consider other forms of earned merit. In order to evaluate earned merit, students may need to complete one or more additional requirements including, but not limited to, submitting an application.
14. In order to be considered for an Entrance Bursary by application, students must submit a completed application by the specified deadline date.
15. Entrance Bursary applications which meet eligibility criteria are forwarded to a selection committee for review and ranking.
16. The greater calculated financial need is used to break any tie.
17. Students may receive a maximum of one Entrance Bursary by application.
18. Students must be enrolled in at least the full-time OSAP eligible course load used to determine their eligibility for the Entrance Bursary to have the Entrance Bursary payment processed.
19. All Entrance Bursary payments are disbursed through the McMaster Student Account and are applied to outstanding charges. A few exceptions to this regulation may be approved by the Office of the Registrar, Aid & Awards.
20. All Entrance Bursaries are disbursed September through the end of December.
21. Registration in, or transfer to, another program of study and/or a change in course load may result in forfeiture or adjustment in the value of the Entrance Bursary. Students are advised to consult with the Office of the Registrar, Aid & Awards, prior to making any changes to their program of study or course load.
22. Students withdrawing from courses without failure by default in the Fall term may see an adjustment in the value of their Entrance Bursary or see the full amount returned to the University.
23. Any adjustment made to a student's account, in order to return all or a portion of an Entrance Bursary to the University, will consider the balance available at the time of the adjustment and may put a student's account into deficit.
24. Some Entrance Bursaries may be renewable (see In-Course and Renewal Bursary Regulations).
25. The University may choose not to grant an Entrance Bursary in the absence of a suitable candidate; may choose to limit the number of recipients selected where funding is limited; may choose to limit the number of recipients selected where too few suitable candidates exist; and/or may choose to generate applicant pools for bursaries by application, where complete applications have not been received.
26. The University may remove specific Entrance Bursaries from the University Calendar, may revise the terms and stated value and/or suspend the granting of Entrance Bursaries (e.g. donor funds).
27. Entrance Bursaries supported by donor funds may have additional eligibility requirements.

### Entrance Bursaries

#### Open to Two or More Faculties

##### THE OLGA CWIEK AND BILL WILKERSON BURSARY

Established in 2020 by Olga Cwiek, B.A. Hon. Wilfrid Laurier University and her husband Bill Wilkerson, LL.D.2015, in support of their belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be awarded to students, entering any Level 1 program, who demonstrate financial need and who without support would otherwise not be able to attend.

#### Open to the Faculty of Health Sciences

##### THE RON AND GINA FRASER HEALTH SCIENCES BURSARY

The Ronald K. Fraser Foundation and Gina E. Fraser established The Ron and Gina Fraser Health Sciences Bursary with a mandate to fund university tuition for students in the highest financial need who enter full-time study in the Bachelor of Health Sciences Program. The HWSB and HWCSB will participate in the selection of recipients. The bursary is valued at one year of tuition and is available for the four years in the BHSc program and if the recipient decides to pursue a career in medicine (bursary for a further 3 years) or is accepted into the Graduate Program in Biomedical Engineering (bursary for a further 5 years); on the condition of both continued good academic standing and financial need.

## Open to the Faculty of Humanities

### THE DON AND LOIS GASSE MEMORIAL ENTRANCE BURSARY

Established in 2017 by Dr. Rosanne Gasse, B.A. Hon. (Class of '80), M.A. (Class of '81), Ph.D. (Class of '89), in memory of her parents.

**Requirements:** To be granted to a student entering Level 1 in the Faculty of Humanities who demonstrates financial need. Preference will be given to an Indigenous student.

### THE ROBERT AND RUTH MILLER ENTRANCE BURSARY

Established in 2016 by Ruth Miller (Class of '79), lifetime resident of Burlington who had a career dedicated to education in the Halton School Board; and Robert Miller (Class of '76), who had a career in engineering and business management, to assist students that demonstrate wise use of time, energy and skill.

**Requirements:** To be awarded to a student entering a Level 1 program in the Faculty of Humanities who graduated from a Burlington high school and demonstrates financial need. Preference to be given to students who graduated from M.M. Robinson High School.

**Value:** \$7,500

## In-Course Bursaries

### In-Course and Renewal Bursary Regulations

- In-Course Bursaries are non-repayable grants, allocated on the basis of demonstrated financial need, which may also include a minimum expectation of academic achievement or other miscellaneous criteria.
- In-Course Bursaries are available to full-time and part-time students enrolled in an undergraduate degree program, excluding the Physician Assistant and M.D. Programs. A limited number of bursaries are also available to true part-time students enrolled in diploma and certificate programs offered through McMaster's Centre for Continuing Education, who have completed at least 50% of that course work on a part-time basis.
- In-Course Bursaries requiring full-time status are available to students enrolled in an OSAP eligible full-time course load or equivalent in both the fall and winter terms.
- Second degree students are eligible for In-Course Bursaries
- In-Course Bursaries are available to students who are Canadian Citizens, Permanent Residents, Convention Refugees and Protected Persons of Canada.
- Students who are not Canadian Citizens, Permanent Residents, Convention Refugees or Protected Persons of Canada, who are enrolled in Level 2 or higher, are eligible for a limited number of In-Course Bursaries for International students.
- In-Course Bursaries are allocated on the basis of financial need, as demonstrated through a completed Canadian federal and/or provincial government student aid application (e.g. full-time OSAP), completed standard University need profiles and/or discussions with designated staff on campus (e.g. a Student Loans Officer) who confirm the need for bursary assistance through submission of additional supporting documentation, for the academic year in which the student is being considered.
- In-Course Bursaries are allocated in adherence with the Ministry of Colleges and Universities (MCU) policies, procedures and guidelines in place for the given academic year. The MCU Student Access Guarantee (SAG) currently specifies bursary amounts and payment deadlines for students in high tuition programs (e.g. Engineering, Business).
- In-Course Bursaries for non-SAG students are allocated according to financial need based on government student aid entitlements, or equivalent, with higher bursary amounts assigned to students demonstrating higher levels of financial need. Bursary amounts are set by the Office of the Registrar, Aid & Awards annually.
- In-Course Bursary funds are limited.
- Students may receive more than one In-Course or Renewal Bursary to cover their Student Access Guarantee obligation or up to the total bursary amount for which they are eligible.
- In some cases, students may receive more than one bursary (e.g. where a student meets a particular donor fund requirement or applies via a separate earned merit application process). In these cases, the bursary is awarded to the eligible student who demonstrates the greatest financial need as determined by the Office of the Registrar, Aid & Awards.
- The greater demonstrated financial need is used to break any tie.
- In-Course Bursaries may consider one or more McMaster University calculated averages (e.g. Cumulative Grade Point Average).
- In-Course Bursaries may specify a minimum average requirement.
- In-Course Bursaries may also consider other forms of earned merit. In order to evaluate earned merit, students may need to complete one or more additional requirements including, but not limited to, submitting an application.
- In order to be considered for an In-Course Bursary by application, students must submit a completed application by the specified deadline date.
- In-Course Bursary applications which meet eligibility criteria are forwarded to a selection committee for review and ranking.
- Students must be enrolled in at least the course load used to determine their eligibility for the In-Course Bursary to have the In-Course Bursary payment processed.
- Students must meet the renewal requirements specified in the terms of their Entrance or In-Course Bursary to receive a renewal payment.
- All In-Course Bursary payments are disbursed through the McMaster Student Account and are applied to outstanding charges. A few exceptions to this regulation may be approved by the Office of the Registrar, Aid & Awards.
- MAPS bursary payments are disbursed in the fall, winter and spring/summer terms, once the drop and add period for the term has passed. All In-Course Bursaries are typically disbursed no later than mid-February (the MCU winter term payment deadline).
- Forfeiture of a renewable Entrance or In-Course Bursary also cancels all future instalments of the bursary.
- Students wishing to defer the benefits of bursary renewal to the next academic year should make the request in writing to the Office of the Registrar, Aid & Awards. Approval is not automatic and deferments are not normally granted for more than one academic year.
- Students holding a renewable Entrance or In-Course Bursary who choose to accelerate their program and to complete their degree earlier than normal by completing Spring/Summer courses and who wish to employ the benefits of their renewable bursary to defray the tuition and compulsory fees for those courses should make the request in writing to The Office of the Registrar, Aid & Awards.
- Registration in, or transfer to, another program of study and/or a change in course load may result in forfeiture or adjustment in the value of the In-Course Bursary. Students are advised to consult with the Office of the Registrar, prior to making any changes to their program of study or course load.
- Students who withdraw may see an adjustment in the value of their In-Course or Renewal Bursary or see the full amount returned to the University.
- Any adjustment made to a student's account, in order to return all or a portion of an In-Course or Renewal Bursary to the University, will consider the balance available at the time of the adjustment and may put a student's account into deficit.
- The University may choose not to grant an In-Course Bursary in the absence

of a suitable candidate; may choose to limit the number of recipients selected where funding is limited; may choose to limit the number of recipients selected where too few suitable candidates exist; and/or may choose to generate applicant pools for bursaries by application, where complete applications have not been received.

30. The University may remove specific In-Course Bursaries from the University Calendar, may revise the terms and stated value and/or suspend the granting of In-Course Bursaries (e.g. donor funds).
31. In-Course Bursaries supported by donor funds may have additional eligibility requirements.

## In-Course Bursaries

Application details are available in Mosaic.

### Open to Two or More Faculties

#### THE 4 WINDS BURSARIES

Established in 1997 by John F. Evans, Q.C. and Patricia Peacock-Evans in recognition of John's long-standing association with McMaster as Chair of The President's Club Executive Committee.

**Requirements:** The Bursary is named after the island where the family's cottage is located. A variable number of bursaries to be granted to students who demonstrate financial need.

#### THE ACCESSIBILITY BURSARY

Established in 2015 by Daphne (Class of '87) to celebrate the work done by her father, Dr. Harry Botterell, in Neurosurgery and Paraplegia both during WWII and thereafter in Canada.

**Requirements:** To be granted to a student in any program who demonstrates financial need and is registered with Student Accessibility Services.

#### THE AINSWORTH BURSARIES

Established in 1996. To be granted to undergraduate students in any program who demonstrate financial need.

**Requirements:** Preference to be given to female students.

#### THE PHYLLIS MAY AITKEN BURSARY FUND

Established in 1997 by the bequest of Phyllis May Aitken.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

#### THE JAMES N. ALLAN FOUNDATION BURSARY

Established in 1996 from funds donated by the James N. Allan Foundation, Dunnville, Ontario, in support of its belief that all students should have the opportunity to achieve their educational goals.

**Requirements:** To provide assistance to McMaster students who demonstrate financial need. Preference will be given to students from Haldimand Norfolk County.

#### THE AMEX CANADA BURSARY

Established in 1997 by AMEX Canada Inc. in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need.

#### THE AUBURN INDUSTRIAL SERVICES LTD BURSARY

Established in 1997 by Auburn Industries Services Ltd. under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Auburn Industrial Services Ltd. Award.

#### THE JOY BÂBY BURSARY

Established in 1997 by Joy Bâby under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need.

#### THE CHARLES MURRAY BALL BURSARIES

Established in 1993 by bequest of May Alexandra Ball in memory of her brother Charles Murray Ball.

**Requirements:** To assist students in any program who demonstrate financial need.

#### THE BIRGIT AND ROBERT BATEMAN BURSARY

Established in 1997 by Birgit and Robert Bateman under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student who demonstrates financial need and is enrolled in the Arts and Science program, the Faculty of Social Sciences or the Faculty of Science. Preference to be given to students who are studying Environmental Studies or Environmental Science.

#### THE BEALE-LINCOLN-HALL EXCHANGE PROGRAM BURSARIES

Established in 1996 by Arnold A. Beale in memory of his parents, F. Arnold Beale and Margaret S. Beale and, Mr. and Mrs. Walter Gould Lincoln and Commander Harley H. Hall., U.S.N.

**Requirements:** To be granted to a student who demonstrates financial need and is enrolled in a program in Commerce, Biochemistry, Biology, English, Chemistry, Earth Sciences, History, Materials Science, Mathematics, Physics, Engineering Physics or Religious Studies. Preference will be given to students who are participating in one of McMaster's formal exchange programs, and who have demonstrated a lively interest in the humanities and the human and social implications of scientific developments.

#### THE LARRY BEARE BURSARY

Established in 2011 by Larry Beare, B.A. (Class of '66).

**Requirements:** To be granted to students who demonstrate financial need.

#### THE DR. C. HOWARD AND DR. SHIRLEY F. BENTALL BURSARIES

Established in 1999 by Dr. C. Howard Bentall (Class of '37) and Dr. Shirley F. Bentall (Class of '46) under the McMaster Student Opportunity Fund initiative.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

#### THE BETZNER FAMILY MEMORIAL BURSARIES

Established in 1996 by the Betzner Family of Dundas, Ontario.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

#### THE BEVAN FAMILY FIRST GENERATION BURSARY

Established in 2008 by George A. Bevan, B.A. (Class of '48) and his wife Simone L. Bevan (B.A. University of Toronto).

**Requirements:** To be granted to students entering any Level 1 program with a final admission average of 85 percent or greater, and who demonstrate financial need. Preference to be given to students who are the first in their family to attend a post-secondary institution and whose parents are not university graduates.

#### THE BIRKS FAMILY FOUNDATION BURSARY FUND

Established in 1987 by The Birks Family Foundation in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries to be granted to students annually who demonstrate financial need.

#### THE DAVID H. BLANCHARD BURSARY

Established in 2007 by David H. Blanchard, B.A. (Class of '75) because of his belief in the value of education.

**Requirements:** To be granted to students enrolled in the Faculty of Social Sciences or the Faculty of Science who demonstrate financial need. Preference will be given to students enrolled in the School of Geography and Earth Sciences.

#### THE BOWES FAMILY BURSARIES

Established in 1996 by Eleanor and Terrence Aurini of Cambridge.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need. Preference to be given to female students.



**THE BRANTFORD ALUMNI BRANCH BURSARY**

Established in 2000 by the Brantford Alumni Branch of the McMaster Alumni Association under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Brantford Alumni Branch Award.

**THE ERIC JOHN BRETZLER BURSARY**

Established in 1997 by family and friends in memory of Eric John Bretzler (Class of '92).

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need. Preference will be given to students associated with the McMaster Students Union.

**THE PAULA BURKE BURSARY**

Established in 2012 in memory of Paula Burke, a teacher who made significant contributions to her community through her work with challenged children.

**Requirements:** To be granted annually to a student enrolled in any program who demonstrates financial need. Preference will be given to a student who has shown leadership and participation in McMaster student life.

**THE BURSARIES FOR IN-COURSE VISA STUDENTS**

Established in 1982 by the University.

**Requirements:** To assist visa students in any program.

**THE BURSARIES FOR VISA STUDENTS**

Established in 1999.

**Requirements:** A variable number of bursaries to be granted to visa students in any program who demonstrate financial need.

**THE BUSINESS MANAGEMENT SERVICES BURSARIES**

Established in 1996 by staff of McMaster's Business Management Services who through their leadership, guidance and support, enable the University community to deploy its financial resources to the greatest advantage.

**Requirements:** A variable number of bursaries to be granted to students in any program who demonstrate financial need.

**THE JAMES CALVIN BURSARIES**

Established in 1997 by bequest of James Calvin.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

**THE CAMCO INC. BURSARIES**

Established in 1997 by Camco Inc. in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

**THE BETTY TAYLOR CAMPBELL BURSARIES**

Established in 1998 by William F. Campbell of Ottawa, Ontario in memory of his wife Betty Taylor Campbell, a 1937 McMaster graduate, an Olympic medallist in 1936 and a 1990 inductee to the Athletics Hall of Fame.

**Requirements:** To be granted to students who demonstrate financial need. Preference will be given to the recipient of the Betty Taylor Campbell Scholarship.

**THE CANADIAN FEDERATION OF UNIVERSITY WOMEN (BURLINGTON) ELEANOR EWING BURSARY**

Established in 1997 by the Canadian Federation of University Women (Burlington) under the McMaster Student Opportunity Fund initiative, in honour of Eleanor Ewing, who was instrumental in establishing the Burlington Chapter of the Canadian Federation of University Women.

**Requirements:** To be granted to a full-time student in any program who demonstrates financial need. Preference to be given to a mature female student.

**THE CANON CANADA INC., BUSINESS SOLUTIONS DIVISION BURSARY**

Established in 1997 by Canon Canada Inc. - OE Division, and augmented in 2005, in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries will be granted annually to

McMaster students who demonstrate financial need and are enrolled in an Earth and Environmental Sciences program, the Honours Geography and Environmental Studies program or an Engineering and Society program.

**THE CAPE CLASS OF '76 AND MARY KEYES BURSARY**

Established in 2009 in honour of Mary Keyes and the Combined Pass Arts & Physical Education Program (CAPE) Class of '76.

**Requirements:** To be granted to a Level 4 student who demonstrates financial need. Preference will be given to a student who demonstrates athletic achievement in any inter-University sport.

**THE ELVA CARROL BURSARY**

Established in 1996 by Elva Carrol under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be awarded to a female athlete who participates on an inter-university team and demonstrates financial need. Preference will be given to the recipient of The Elva Carrol Award.

**THE CFUW-HAMILTON BURSARY**

Established in 1997 by the CFUW-Hamilton in support of the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student in any academic program who demonstrates financial need.

**THE CHAN YIN CHAK BURSARY**

Established in 1997 by Tak Chan in honour of his great grandfather, Mr. Chan Yin Chak.

**Requirements:** This bursary will be used to help defray expenses of Level 3 Commerce students or M.B.A. students, who demonstrate financial need, and are participating in one of the international exchange programs at the DeGroote School of Business.

**THE ANNE AND HAROLD CHALK MEMORIAL BURSARIES**

Established by bequest of Anne Maria Luise Chalk and Harold Henry Chalk of Ottawa.

**Requirements:** A variable number of bursaries to be granted to students in any program who demonstrate financial need.

**THE CHAWKERS FOUNDATION BURSARIES**

Established in 1996 by The Chawkers Foundation, Ottawa, Ontario in support of its belief that all students should be able to pursue their educational goals.

**Requirements:** To provide assistance to students who demonstrate financial need.

**Value:** \$1,800

**THE CHUNG FAMILY BURSARY**

Established in 2007 by Dr. Wilfred Chung, B.Sc. (Class of '75) and family.

**Requirements:** To be granted to a student in any program who demonstrates financial need.

**THE CIBC BURSARIES**

Established in 1997 by the Canadian Imperial Bank of Commerce under the McMaster Student Opportunity Fund initiative.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

**THE SAM M. CINO BURSARY**

Established in 1997 by Sam Cino in support of McMaster students.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need.

**THE CITY OF HAMILTON BURSARIES**

Established in 1959 by the City of Hamilton to commemorate the visit of Her Majesty Queen Elizabeth II and His Royal Highness Prince Philip to Hamilton in July 1959.

**Requirements:** To assist Hamilton students who demonstrate financial need.

**THE HUGH CLARK BURSARIES**

Established in 1997 by Hugh Clark in support of McMaster students.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of the Hugh Clark Scholarship.

**THE CLASS OF '35 BURSARIES**

Established in 1985 by the Year '35 in honour of their 50th class reunion and augmented in 1996 in conjunction with the McMaster Student Opportunity Fund initiative.

**Requirements:** To be awarded to a student in good academic standing who is a Canadian citizen or permanent resident.

**THE CLASS OF '46 GOLDEN ANNIVERSARY BURSARIES**

Established by the Year '46 in honour of their fiftieth reunion on June 1, 1996.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program at McMaster who demonstrate financial need and are in good academic standing.

**THE CLASS OF '47 GOLDEN ANNIVERSARY BURSARIES**

Established in 1997 by the Class of '47 in honour of their 50th Anniversary Reunion.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

**THE CLASS OF '49 GOLDEN ANNIVERSARY BURSARIES**

Established by the Class of '49 in honour of their 50th Anniversary Reunion in 1999.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

**THE CLASS OF '51 GOLDEN ANNIVERSARY BURSARIES**

Established by the Class of '51 in honour of their 50th Anniversary Reunion in 2001.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

**THE CLASS OF '53 BURSARY FOR PART-TIME STUDENTS**

Established in 2004 by the Class of '53.

**Requirements:** A variable number of bursaries to be granted to part-time students enrolled in any program who demonstrate financial need.

**THE CLASS OF '54 BURSARY**

Established in 2009 by the Class of '54 in honour of their 55th Anniversary.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program and who demonstrate financial need.

**THE CLASS OF '57 BURSARIES**

Established in 1997 by the Class of '57 in honour of their 40th Anniversary Reunion.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

**THE CLASS OF '58 BURSARY**

Established by the Class of '58.

**Requirements:** To be granted to students in Level 2 or above in the Faculties of Social Sciences, Humanities, Science or the School of Nursing who demonstrate financial need. Preference to students with Grade Point Averages of 7.0 or greater.

**THE CLASS OF '59, 50TH ANNIVERSARY BURSARY**

Established by the Class of '59 in honour of their 50th Anniversary.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

**THE CLASS OF '60 GOLDEN ANNIVERSARY BURSARIES**

Established by the Class of '60 in honour of its 50th reunion.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

**THE CLASS OF '63, 50TH ANNIVERSARY BURSARY**

Established in 2008 by the Class of '63 in honour of their 50th Anniversary.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need.

**THE CLASS OF '65, 50TH ANNIVERSARY BURSARY**

Established in 2015 by the Class of '65 in honour of their 50th reunion.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need.

**THE CLASS OF 1966, 50TH ANNIVERSARY BURSARY**

Established in 2016 by the Class of '66 in honour of their 50th reunion.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need.

**THE COCCO FAMILY BURSARY**

Established by Dom Cocco, B.Com. (Class of '83).

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need and who require assistance with disability-related costs approved by Student Accessibility Services.

**THE JANET HOLDER AND NEAL COCKSHUTT BURSARY**

Established in 2004 by Janet Holder, M.B.A. (Class of '83) and Neal Cockshutt in honour of Ignatius Cockshutt, founder of Cockshutt Farm Equipment Co. Ltd.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference to be given to students from Brant County.

**THE DORIS PARTRIDGE COLE BURSARY**

Established in 1981.

**Requirements:** This bursary is to be granted to a worthy student in memory of Doris Partridge Cole (Class of '45).

**THE COLLEGIATE GUARDIAN BURSARY**

Established in 2016 by a student to support other students in their pursuit of academic success.

**Requirements:** To be granted to a student who demonstrates financial need. Preference will be given to a student who is an expectant mother or who has pre-school age children.

**THE COMPUSMART BURSARIES FUND**

Established in 1997 by JMG Compusmart in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted annually to students who demonstrate financial need. Preference will be given to McMaster students enrolled in a program in Computer Science or Computer Engineering.

**THE CONNOR, CLARK & LUNN BURSARY**

Established in 1996 by Connor, Clark & Lunn in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to a McMaster student in any program who demonstrates financial need.

**THE CATHERINE COOPER BURSARY**

Established in 2018 by her children Kimberly, James, Mat, David, and Nathan, in memory of their mother, Catherine Cooper, who encouraged her children to pursue their goals through lifelong learning.

**Requirements:** To be granted to students who demonstrate financial need

**THE SUSAN COOPER-TWISS BURSARY**

Established in 2013 by Susan Cooper-Twiss (Class of '66) to support students in pursuit of their educational goals.

**Requirements:** To be granted to students enrolled in the Faculty of Social Sciences or Faculty of Humanities who demonstrate financial need.

**THE IAN AND JILL COWAN BURSARY**

Established in 1997 by Ian Cowan (Class of '71) and Jill (nee Robinson) Cowan (Class of '74) in support of McMaster students.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need.

**THE CROSS COUNTRY BURSARY**

Established in 1997 by coaches, former team members and supporters of the Men's and Women's Varsity Cross Country running teams under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student who demonstrates financial need and who is a member of the varsity men's or women's cross country team.

**THE ARCHIBALD R. CROZIER BURSARIES**

Established in 1992 in memory of Archibald (Archie) Crozier (Class of '35), former professional football player and Chair of the Ontario Energy Board for 17 years.

**Requirements:** To be granted to a student who has demonstrated financial need and a sense of social awareness and shown interest in, and concern for, others. It is hoped that recipients, after graduation, will reimburse the fund to the extent of their award so that increasing numbers of students may be assisted.

#### **THE THOMAS DALY AND ANITA LEVIN BURSARIES**

Established in 1996 by family, friends and colleagues of Thomas Daly.

**Requirements:** A variable number of bursaries to be granted to students in any undergraduate program who demonstrate financial need.

#### **THE SAM DARRAGH GENERAL ATHLETIC BURSARY**

Established in 1997 by friends of Sam Darragh under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in any academic program who demonstrates financial need and who is a member of any inter university team at McMaster.

#### **THE SAM DARRAGH MEMORIAL BURSARY**

Established in 1997 by friends of Sam Darragh under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need and who has demonstrated outstanding athletic achievement in intersarsity football.

#### **THE EDWARD FRANK DAVIS MEMORIAL BURSARIES**

Established in 1996 by bequest in memory of Edward Frank Davis under the McMaster Student Opportunity Fund initiative.

**Requirements:** A variable number of bursaries to be granted to students enrolled in Level 1 who demonstrate financial need and a commitment to community involvement. Preference will be given to the recipient of the Edward Frank Davis Memorial Award.

#### **THE GORDON H. DEAN BURSARIES**

Established in 1996 by Gordon H. Dean of Stoney Creek.

**Requirements:** To be granted to a student who demonstrates financial need. Preference will be given to a student enrolled in Level 3 of a program in Arts and Science or Level 3 of a program in the Faculty of Humanities.

#### **THE DR. RUDOLF DE BUDA BURSARY**

Established in 1997 under the McMaster Student Opportunity Fund initiative.

**Requirements:** Preference will be given, if financial need is demonstrated, to the recipient of The Dr. Rudolf de Buda Scholarship.

#### **THE JOHN DEERE BURSARIES**

Established in 1997 by John Deere in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need.

#### **THE DEBORAH AND TERENCE DEMPSEY BURSARY**

Established in 2005 under the Ontario Trust for Student Support program to ensure that all students have the opportunity to pursue their educational goals.

**Requirements:** To be granted to students in any Faculty who demonstrate financial need.

#### **THE WILLIAM A. DETENBECK BURSARIES**

Established in 1996 by William Detenbeck in honour of the Detenbeck Family.

**Requirements:** A variable number of bursaries to be granted to students who demonstrate that they are residents of an Indigenous community in Canada and who demonstrate financial need.

#### **THE DETENBECK FAMILY BURSARIES**

Established in 2005 by bequest of Patricia Detenbeck (Class of '32).

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need.

#### **THE GUNTER DIEHL BURSARY**

Established in 2018 by friends and colleagues of Gunter Diehl in honour of his retirement, with thanks for his 40 years of dedicated service to Housing and Conference Services and in recognition of his commitment to foster parenting with the Hamilton Children's Aid Society.

**Requirements:** Two bursaries valued at \$500 each to be granted annually, one to a student living in residence, and one to a student who is current or former crown ward, who demonstrate financial need.

#### **THE DOFASCO INC. BURSARIES**

Established in 1996 by Hamilton-based Dofasco Inc., one of Canada's and North America's leading steelmakers in support of students pursuing their post-secondary studies at McMaster.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

#### **THE DUNDAS BURSARY**

Established in 1996 from funds donated by The H.G Bertram Foundation for the purpose of providing students with an opportunity to achieve their educational goals.

**Requirements:** To provide assistance to McMaster students in financial need. Preference will be given to students from the Dundas area. Preference will be given to the recipient of the Dundas Scholarship.

#### **THE MICHAEL EARL MEMORIAL BURSARY**

Established in 1991 by family and friends in memory of Michael Earl. In 1997, the Graduating Class in Psychology further augmented this bursary as part of the McMaster Student Opportunity Fund initiative.

**Requirements:** This bursary is granted to a student enrolled in a Psychology program who demonstrates financial need.

#### **THE CYRUS EATON FOUNDATION BURSARY**

Established in 2000 by the Cyrus Eaton Foundation of Cleveland, Ohio, in support of McMaster students.

**Requirements:** To be granted to a student in any program who demonstrates financial need. Preference will be given to students from Nova Scotia.

#### **THE GEORGE AND MARGARET EDRUPT BURSARY**

Established in 1997 by Sandra Edrupt in honour of her parents George and Margaret Edrupt under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student who demonstrates financial need and is enrolled in either the Faculty of Business or the Computer Science program in the Faculty of Science.

#### **THE EVANS, PHILP BURSARIES**

Established in 1996 by the partners of Evans, Philp in support of McMaster students.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

#### **THE EILEEN GRAY FARLEY BURSARY**

Established in 1998 by Eileen Gray Farley (Class of '43 and winner of the D.E. Thompson Scholarship) in grateful memory of Mr. D.E. Thompson who established the D.E. Thompson Scholarship of 1909.

**Requirements:** To be granted to students in any program who demonstrate financial need.

#### **THE DONALD A. FEATHER BURSARY**

Established in 2003 by family in honour of Donald A. Feather, B.A. (Class of '64) under the McMaster Student Opportunity Fund II initiative in support of his belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to a student in any Faculty who demonstrates financial need.

#### **THE SHELLY FERGUSON BURSARY**

Established in 2020 by Shelly Ferguson, B.A. Hon. (Class of 2004) in recognition of the potential and talents of all students.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to students who are mothers of preschool children.

#### **THE EDITH E. FERRIE BURSARIES**

Established in 1965 by the late Edith E. Ferrie. To be granted to students in any program who demonstrate financial need.

**THE STEFANIE ANN FIORINI-KINLEY BURSARY**

Established in 2012 by Dr. Nancy Walker in memory of her sister, Stefanie Ann Fiorini-Kinley (Class of '95).

**Requirements:** To be granted to an undergraduate student who demonstrates financial need and a desire to help others through community service.

**THE FIRST GENERATION BURSARY**

Established in 2016 by the Coca-Cola Foundation to support first generation students at McMaster University.

**Requirements:** To be granted to an undergraduate student in any program who demonstrates financial need. Preference to be given to a student who is the first generation in their family to attend post-secondary studies.

**THE FIRST ONTARIO CREDIT UNION BURSARY**

Established in 1989 by members in celebration of 50 years of service in the Hamilton area.

**Requirements:** Two or three bursaries to be granted to students in any program who, are from the Regional Municipality of Hamilton-Wentworth, City of Burlington or Town of Haldimand-Norfolk, who have demonstrated financial need.

**Value:** \$700 each

**THE FIRST STUDENT CANADA BURSARIES**

Established in 1996 by Laidlaw Inc. a major provider of transportation services to school boards, municipalities and the general public throughout Canada and the United States, in support of students pursuing their post-secondary studies at McMaster.

**Requirements:** A variable number of bursaries to assist students in any program who demonstrate financial need.

**THE W.H. FLEMING BURSARIES**

Established in 2005 by bequest of W.H. Fleming.

**Requirements:** To be granted to graduate or undergraduate students in any program who demonstrate financial need.

**THE MAUREEN M. FOLLIOTT BURSARY**

Established in 2013 by Donald Folliott, B.A. (Class of '64) in memory of his wife Maureen M. Folliott.

**Requirements:** To be granted to students in any program who demonstrate financial need.

**THE FORRESTER/GREGORY BURSARY**

Established in 1997 by Shelley Forrester and Douglas Gregory in support of McMaster students.

**Requirements:** To be granted to a student in any program who demonstrates financial need.

**THE JOHN C. FORSTER BURSARIES**

Established by bequest of John Clifton Henry Forster of Windsor, Ontario.

**Requirements:** A variable number of bursaries to be granted to students in any program who demonstrate financial need.

**THE EMMA FOX BURSARIES**

Established in 1961 by the Wallingford Hall Committee of which Emma Fox was treasurer from 1918 to 1958.

**Requirements:** To assist female students in any program.

**THE WAYNE C. FOX BURSARIES**

Established in 1999 by Wayne C. Fox in support of his belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries will be granted to students who demonstrate financial need and are enrolled in the Faculty of Humanities or the Faculty of Social Sciences or the Commerce program at the DeGroote School of Business.

**THE FREEMAN FAMILY FOUNDATION BURSARY FUND FOR STUDY AT THE HEBREW UNIVERSITY OF JERUSALEM**

Established in 1997 under the McMaster Student Opportunity Fund initiative in the belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted, on the recommendation of the Religious

Studies Selection Committee, to graduate and undergraduate students who demonstrate financial need and have enrolled in term(s) of study at the Hebrew University of Jerusalem. Applicants must have lived in Ontario for 12 consecutive months directly prior to commencing full-time post-secondary studies. Students should contact the Department of Religious Studies.

**THE GENERAL ELECTRIC CANADA INC. BURSARY**

Established in 1997 by General Electric Canada Inc. under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need.

**THE GWEN GEORGE UNDERGRADUATE BURSARIES**

Established in 1997 in loving memory of Gwen George by her family and friends under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students in any undergraduate program who have demonstrated financial need. Preference to be given to students who have demonstrated leadership and service to McMaster University and/or the Hamilton-Wentworth, surrounding or world communities.

**THE PETER GEORGE BURSARIES**

Established in 2010 by colleagues, friends, and family of Peter George in recognition of his remarkable 45-year tenure at McMaster University, including 15 years as President and Vice-Chancellor.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need.

**THE DR. GEORGE P. GILMOUR '21 MEMORIAL BURSARY**

Established in 2006 by the families of Marnie Gilmour-Fisher (Class of '50) and Gwen Gilmour-Laurie (Class of '54) to honour their father's achievements as Chancellor of Mc-Master University from 1941 to 1950 and President and Vice Chancellor from 1950 to 1961.

**Requirements:** To be granted to students in any Faculty who demonstrate financial need.

**THE GRAND & TOY BURSARIES**

Established in 1996 by Grand & Toy in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

**THE LELAND GREGORY BURSARIES**

Established in 1997 by the bequest of Leland Andrew Gregory.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

**THE JAMES R. (JAMIE) GREILICH MEMORIAL BURSARY**

Established in 1991 in memory of Jamie Greulich (Class of '88) by the Operating Committee on the Disabled through its Awareness Week Activities.

**Requirements:** To be granted to a disabled student in any program who demonstrates financial need. Students should have registered with Student Accessibility Services.

**THE GUARDIAN CAPITAL INC. BURSARIES**

Established in 1996 by Guardian Capital in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries to be granted to students in any program who demonstrate financial need.

**THE GWD FOUNDATION FOR KIDS BURSARY**

Established in 2013 by the GWD Foundation for Kids.

**Requirements:** To be granted to students in any program who demonstrate financial need. Preference will be given to students from Halton Region.

**THE HADRIAN MANUFACTURING INC. BURSARY**

Established in 2016 by Hadrian Manufacturing to support students in achieving their educational goals.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need.



**THE DR. KENNETH HALL BURSARY**

Established in 2018 by family and friends in honour of the awarding of an honorary degree from McMaster University to Dr. Kenneth Hall.

**Requirements:** To be granted to students enrolled in Level 2 or above in a Geography or Environmental Sciences program who demonstrate financial need.

**THE HAMILTON ALUMNI BRANCH BURSARIES**

Established in 1997 by the McMaster Alumni Association, Hamilton Branch, in honour of the long-standing accomplishments of the Hamilton Alumni Branch.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need. Preference will be given to students graduating from a high school in the Hamilton-Wentworth Region.

**THE HAMILTON CITIZENS' MEMORIAL BURSARIES**

Established in 1947 by the Hamilton Citizens' Committee for War Services.

**Requirements:** Proceeds to be used to assist undergraduate students who are residents of the Hamilton-Wentworth Region.

**THE HAMILTON COMMUNITY FOUNDATION BURSARIES**

Established in 1996-97 by Hamilton Community Foundation from the income of funds generously donated by citizens of this community, notably the late sisters Genevieve Chaney and Cordelia Ensign, and the late Mr. Ross F. Webb.

**Requirements:** A variable number of bursaries to be awarded to full-time students, enrolled in any year of any undergraduate program, who have graduated from publicly-funded secondary schools in Hamilton-Wentworth and who demonstrate financial need. The criteria established for these bursaries are consistent with the intention of the original donors.

**THE HAMILTON PORCELAINS BURSARY**

Established in 1997 by Hamilton Porcelains Limited in the belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need.

**THE HAMILTON SPECTATOR BURSARY**

Established in 1997 by The Hamilton Spectator in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to a McMaster student enrolled in any program who demonstrates financial need.

**THE HAMLIN FAMILY FOUNDATION BURSARY**

Established in 2004 by The Hamlin Family Foundation under the McMaster Student Opportunity Trust Fund II initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need.

**THE MARGARET HARGREAVES BURSARIES**

Established in 1997 by Susan Hargreaves Walker in loving memory of her mother, Margaret Hargreaves.

**Requirements:** A variable number of bursaries to be granted to Social Sciences and Humanities students who demonstrate financial need. Preference will be given to mature, female students.

**THE MEL AND MARILYN HAWKRIGG PART-TIME STUDENT BURSARIES**

Established in 2007 by the McMaster Association of Part-Time Students in honour of Dr. Melvin and Mrs. Marilyn Hawkrigg to mark his retirement as Chancellor of the University (1998-2007).

**Requirements:** To be granted to students currently enrolled, on a part-time basis, in a degree, diploma or certificate program who demonstrate financial need.

**THE DAMIAN MIGUEL HEADLEY BURSARY**

Established in 1997 by family and friends in memory of Damian Miguel Headley (Class of '89) under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Damian Miguel Headley Award.

**THE MIKE AND MURIEL HEDDEN BURSARIES**

Established in 1996 by Muriel Hedden in memory of her husband, D.M.

(Mike) Hedden, former Vice-President (Administration), who faithfully served McMaster for over 25 years.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

**THE RUDY HEINZL BURSARY**

Established in 1996 by family, friends and colleagues upon his retirement as Dean of Student Affairs in recognition of 32 years of dedicated service to students and to the McMaster University Community.

**Requirements:** To be granted to students in any program who demonstrate financial need. Preference will be given to the recipient of The Rudy Heinzl Award.

**THE HENDERSON FAMILY BURSARY**

Established in 2016 by Trevor Henderson, B.A. (Class of '92 & '93), and Meredith (Henderson) Rainey, B.A.Hon. (Class of '95), in memory of their parents Edward and Marilyn.

**Requirements:** To be awarded to students enrolled in the Faculty of Humanities or the Faculty of Social Sciences who demonstrate financial need.

**THE EDWIN W. HILBORN BURSARY**

Established in 1965 by bequest of Edwin W. Hilborn.

**Requirements:** To be granted to a student in any program.

**THE MARY A. HILL BURSARY**

Established in 1976 by bequest of Mary A. Hill.

**Requirements:** To be granted to a female student in any program who demonstrates financial need. Preference to be given to one who has graduated from a secondary school in Hamilton.

**THE LLOYD ANDREW HILLGARTNER BURSARIES**

Established in 1997 by bequest of Lloyd Andrew Hillgartner.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

**THE JANITZA HITCHEN BURSARY**

Established in 2006 by Alan Hitchen in memory of his wife, Janitza.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need.

**THE WILLIAM NEIL HOTRUM BURSARIES**

Established in 2004 by Mr. William Neil Hotrum under the McMaster Student Opportunity Trust Fund II initiative in support of his belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to students who demonstrate financial need. Preference will be given to (i) students from the Hamilton area and (ii) students from a single parent family.

**THE INGLIS BURSARIES**

Established in 1996 by Paul F. Inglis of Mississauga.

**Requirements:** A variable number of bursaries to be granted to students enrolled in a program in Commerce or Engineering Management who demonstrate financial need. Preference to be given to students enrolled in Engineering Management.

**THE INTERNATIONAL SCIENCE AND ENGINEERING FAIR 1995 BURSARY**

Established in 2005 by the Board of the International Science and Engineering Fair 1995 under the Ontario Trust for Student Support initiative.

**Requirements:** A variable number of bursaries to be granted to students enrolled in Level 1 in the Faculties of Science or Engineering who demonstrate financial need. Preference will be given to students who have participated in local science fairs.

**THE INTER-RESIDENCE COUNCIL BURSARY**

Established in 1996 by the Inter-Residence Council in support of McMaster students.

**Requirements:** To be granted to a student in any program who demonstrates financial need.

**THE MUNICIPAL CHAPTER OF HAMILTON IODE LEGACY BURSARY**

Established in 2012 by IODE Hamilton in honour of their national women's charitable organization established in 1900 dedicated to improving the quality of life for children, youth and those in need through educational, social service and citizenship programs.

**Requirements:** To be granted to a student or students enrolled in Level 3 of any program who demonstrate financial need. Preference will be given to students who have graduated from a Hamilton secondary school.

**THE IVEY BURSARY**

Established in 1997 under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be awarded to students who demonstrate financial need.

**THE IVISON FAMILY BURSARY FUND**

Established in 1998 by Don and Betty Ivison in support of McMaster students under the McMaster Student Opportunity Fund initiative.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Faculty of Engineering, the Faculty of Business or the Schools of Medicine and Rehabilitation Science in the Faculty of Health Sciences who demonstrate financial need.

**THE STUART AND MARJORIE IVISON BURSARIES**

Established in 1997 by Donald Ivison (Class of '53) and Betty Ivison (Class of '52) in honour of his parents Stuart and Marjorie Ivison (Class of '28 (Arts)).

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to recipients of The Stuart and Marjorie Ivison Award.

**THE CLIFFORD JACKSON MEMORIAL BURSARIES**

Established in 1997 by family and friends in memory of Clifford Jackson. A variable number of bursaries to be granted annually to students in any program who demonstrate financial need.

**Requirements:** Preference will be given to children and grandchildren of employees and retirees of The Hamilton-Wentworth Regional Police.

**THE JADDCO ANDERSON BURSARY**

Established in 1997 by Jaddco Anderson Limited in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need.

**THE DHANNA SINGH JAGPAL MEMORIAL BURSARY**

Established in 2014 in loving memory of Dhanna Singh Jagpal.

**Requirements:** To be awarded to a student who is the first in their family to attend university, enrolled in Level 2 and above, and demonstrates financial need.

**THE JONES-TURNER BURSARY**

Established in 1997 by Sheila Lang (Class of '53) in honour of her family's long-standing association with the University.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need.

**THE DR. RONALD V. JOYCE BURSARIES**

Established in 2003 by Dr. Ronald V. Joyce (Class of '98) to support students at McMaster.

**Requirements:** A variable number of bursaries to be granted to undergraduate students in any program who demonstrate financial need.

**THE JUNIOR LEAGUE OF HAMILTON/BURLINGTON, INC. BURSARY**

Established in 1997 by the Junior League of Hamilton-Burlington, Inc. under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Junior League of Hamilton/Burlington, Inc. Award.

**THE MURIEL MCBRIEN KAUFFMAN BURSARIES**

Established in 1997 by the Muriel McBrien Kauffman Foundation in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries to be granted annually to

students enrolled in any program who demonstrate financial need.

**THE VIENO MARIA KAUHANEN MEMORIAL BURSARIES**

Established in 2010 by Irene Eleonor (Kauhanen) Townsend, B.A. (Class of '57) in memory of her mother, Vieno Maria Kauhanen.

**Requirements:** To be granted to female students in their first year in the Faculties of Humanities or Social Sciences who demonstrate financial need. Preference to be given to students who have demonstrated active involvement in their community.

**THE ROBERT ALAN KENNEDY BURSARIES**

Established in 1997 by Robert Alan Kennedy under the McMaster Student Opportunity Fund initiative.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

**THE KEW BURSARIES**

Established in memory of Lloyd Daniel Kew and Delores Shirley Kew.

**Requirements:** A variable number of bursaries to be granted to students who demonstrate financial need.

**THE MARY KEYES MEMORIAL BURSARY**

Established in 2002 by family and friends as a tribute to Dr. Mary E. Keyes, long-time teacher, coach, administrator and mentor at McMaster University.

**Requirements:** To be granted to a student who demonstrates financial need with a minimum 8.0 Grade Point Average in any program. Preference to be given to students who show leadership and participation in McMaster student life.

**THE KHAKI UNIVERSITY AND YOUNG MEN'S CHRISTIAN ASSOCIATION MEMORIAL BURSARIES**

Established in 1921 by the Khaki University of Canada and the Young Men's Christian Association.

**Requirements:** To assist students in any program who demonstrate financial need.

**THE DAVID KINSLEY MEMORIAL BURSARY**

Established in 2000 by family, friends, colleagues and former students of David Kinsley, Professor of Religious Studies at McMaster University from 1969 to 2000.

**Requirements:** To be granted to part-time students who have completed at least Level 1 of an undergraduate program in either the Faculty of Social Sciences or the Faculty of Humanities. Preference to be given to students who have attained a minimum Grade Point Average of 7.0.

**THE KIWANIS CLUB OF HAMILTON EAST BURSARY**

Established in 1997 by the Kiwanis Club of Hamilton East under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need. Preference to be given to members and former members of the Hamilton East Kiwanis Boys' and Girls' Club.

**THE KNIGHT FAMILY BURSARY**

Established in 2017 as a tribute to the generous spirit of Dorothy M.L. and Peter S. Knight who, despite never having the opportunity to benefit from higher education, did everything they could to support others in their educational pursuits.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

**THE RICHARD KONRAD BURSARIES**

Established in 1997 by Richard Konrad under the McMaster Student Opportunity Fund initiative in the belief that all students should have the opportunity to achieve their academic goals.

**Requirements:** A variable number of bursaries to be granted based upon demonstrated financial need in each of the following areas:

- The Richard Konrad Bursaries for students enrolled in any program.
- The Richard Konrad Bursaries for physically challenged students registered with Student Accessibility Services who are enrolled in any program.

**THE MIRIAM & JAMES KRAMER BURSARY**

Established in 2017 by Miriam and James Kramer to assist students in continuing their studies.

**Requirements:** To be awarded to undergraduate students enrolled in any program who demonstrate financial need.

**THE RAYMOND C. LABARGE MEMORIAL BURSARIES**

Established in 1973 by friends and associates in memory of Raymond C. Labarge (Class of '36) of Ottawa.

**Requirements:** A variable number of bursaries to be granted to students enrolled in Level 3 or 4 of any program who demonstrate financial need. A minimum Grade Point Average of 8.0 is required.

**THE BETTY MAY LAMB MEMORIAL BURSARY**

Established in 1991 by family, friends, colleagues in memory of Betty May Lamb, an employee at McMaster University for 22 years, most recently as Executive Assistant to the Faculty Association from 1988-91.

**Requirements:** To assist students in any program who demonstrate financial need.

**THE LANCASTER GROUP INC. BURSARY**

Established in 1997 under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need.

**THE LANDMARK CONSULTING GROUP BURSARIES**

Established in 1996 by The LANDMARK Consulting Group Inc. in support of its belief that all students should have the opportunity to pursue their educational aspirations.

**Requirements:** A variable number of bursaries to be granted to students in any program who demonstrate financial need.

**THE LANG FAMILY BURSARIES**

Established in 1996 by H. Murray Lang (Class of '44) of Etobicoke, Ontario in honour of his family's connection to McMaster.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

**THE JAMES R.A. LANGS STUDENT EXCHANGE PROGRAM BURSARIES**

Established in 1996 by family in memory of James R.A. Langs (Class of '37), a Hamilton business leader and great supporter of the Hamilton Community.

**Requirements:** A variable number of bursaries to be granted to students enrolled in a program in Humanities who demonstrate financial need and who are participating in a formal McMaster Exchange Program.

**THE GARY LAUTENS MEMORIAL BURSARIES**

Established in 1996 by Mrs. Jackie Lautens, the Toronto Star, family and friends, in memory of Gary Lautens (Class of '50), columnist and editor of the Toronto Star (1962-92), the Hamilton Spectator (1950-62) and the McMaster Silhouette (1948-50), remembered as a journalist with wit and insight.

**Requirements:** A variable number of bursaries to be granted to students in any program who demonstrate financial need. Preference will be given to the recipient of The Gary Lautens Memorial Scholarship.

**THE LEFLAR FOUNDATION BURSARY**

Established in 1997 by The Leflar Foundation in support of its belief that all students should be able to pursue their educational goals.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference to be given to students who are from the Owen Sound area.

**THE BERTRAM LEGGAT MEMORIAL BURSARIES**

Established in 1996 by his family and friends in memory of Bertram Leggat, Q.C., as a tribute to his dedication to the community, his esteem in the legal profession and his devotion to his family.

**Requirements:** A variable number of bursaries to be granted to students who demonstrate financial need.

**THE LINCLUDEN MANAGEMENT BURSARIES**

Established in 1997 by Lincluden Management Ltd. under the McMaster Student Opportunity Fund initiative.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

**THE RUSSELL AND ELIZABETH LINDLEY BURSARIES**

Established in 2006 in memory of Russell and Elizabeth Lindley.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need.

**THE LIONS CLUB OF ANCASTER RAY JOHNSON MEMORIAL BURSARY**

Established in 1997 by the Ancaster Lions Club under the McMaster Student Opportunity Fund initiative and to exemplify the Lions international objective to take an active interest in the civic, cultural, social and moral welfare of the community.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need. Preference to be given to students who currently reside in the town of Ancaster.

**THE SADIE LUDLOW BURSARIES**

Established in 1996 by family and friends of Sadie Ludlow, former McMaster employee from 1957 to 1977, and an outstanding athlete who loved sports.

**Requirements:** A variable number of bursaries to be granted to students who have demonstrated financial need and involvement in either McMaster intervarsity football or intervarsity women's tennis.

**THE LYNDEN LIONS CLUB BURSARY**

Established in 1997 by the Lynden Lions Club under the McMaster Student Opportunity Fund initiative to exemplify the Lions international objective to take an active interest in the civic, cultural, social and moral welfare of the community.

**Requirements:** To be granted to a student enrolled in any program who has displayed commendable service to the community-at large. Preference to be given to students who currently reside in the Lynden or Troy area.

**THE MAC10 YOUNG ALUMNI BURSARY**

Established in 2014 through donations by McMaster's young alumni to honour their time at McMaster and support future generations of students.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program, Level 2 or above who demonstrate financial need.

**THE ALEC JOHN ROYSTON MACMILLAN MEMORIAL BURSARY**

Established in 1996 by his family in memory of Alec John Royston MacMillan under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students in any program who demonstrate financial need. Preference will be given to the recipients of The Alec John Royston MacMillan Memorial Awards.

**THE PAUL R. MACPHERSON BURSARY**

Established in 1998 by Paul R. MacPherson (Class of '57) and augmented in 2003 under the McMaster Student Opportunity Fund II initiative in support of his belief that all students should be able to pursue their educational goals.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to (i) students from Bracebridge and Muskoka Lakes Secondary School and (ii) Indigenous students from a First Nations community in Ontario.

**THE MAKSTEEL BURSARY**

Established in 1997 by Maksteel Inc. in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need.

**THE MALLOCH FOUNDATION BURSARIES**

Established in 1996 by the Malloch Foundation, Hamilton, in the belief that all students should be able to achieve their educational goals.

**Requirements:** A variable number of bursaries to be granted to students in any program who demonstrate financial need. Preference to be given to students from the Hamilton area.

**THE MANULIFE FINANCIAL BURSARIES**

Established in 1997 by Manulife Financial under the McMaster Student Opportunity Fund initiative.

**Requirements:** A variable number of bursaries to be granted to students who demonstrate financial need and are enrolled in the Faculty of Business or the Faculty of Health Sciences.

#### **THE PAUL MARANGER BURSARY**

Established in 2016 by Paul Maranger, B.Com. (Class of '89), MBA, to inspire students to passionately pursue their goals and create a future that is uniquely theirs.

**Requirements:** To be awarded to students enrolled in any program who demonstrate financial need.

#### **THE KAREN M. MASON AND ROSS H. MASON BURSARY**

Established in 2009 by Karen and Ross Mason, B.A. (Class of '59).

**Requirements:** To be granted to students in any program who demonstrate outstanding athletic participation and financial need.

#### **THE RONALD E. MATERICK/TISHMAN BURSARY**

Established in 1996 by Ronald E. Materick (Class of '70).

**Requirements:** To be granted to an undergraduate student who demonstrates financial need.

#### **THE DOROTHY DEAN MATHESON MEMORIAL BURSARY**

Established in 2004 by bequest of Kenneth Matheson, in memory of Dorothy Dean Matheson (Class of '84).

**Requirements:** To be granted to female part-time students who demonstrate financial need.

#### **THE MATTHEWS HALL BURSARY**

Established in 1999 by past residents of Halcyon House under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need. Preference to be given to a student in residence at Matthews Hall.

#### **THE LINDA MATTHEWS BURSARIES**

Established in 1996 by Linda Matthews (Class of '69).

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need. Preference to be given to female students.

#### **THE NEIL D. MCARTHUR BURSARIES**

Established in 1997 by the Anne and Neil McArthur Foundation in memory of Mrs. McArthur's parents, Joseph and Josephine Hrynyszak.

**Requirements:** To be granted to students in any program who demonstrate financial need. Preference to be given to students enrolled in either the Faculty of Science or the Faculty of Engineering.

#### **THE KATHLEEN AND DENNIS MCCALLA BURSARIES**

Established in 2003 by Kathleen and Dennis McCalla, former Dean, Faculty of Science and later Vice-President, Faculty of Health Sciences at McMaster University.

**Requirements:** To be granted to students who demonstrate financial need and are enrolled in a program in Science, Humanities, or Arts and Science. Preference will be given to students with a minimum admission average of 80% and who are from Grey or Bruce Counties.

**Value:** Minimum \$1,000

#### **THE DR. BRIAN MCCANN MEMORIAL BURSARY**

Established in 2004 by friends, colleagues and former students in memory of Dr. Brian McCann.

**Requirements:** To be granted to a student in the School of Geography and Earth Sciences who demonstrates financial need and is enrolled in a course offered by the School with an additional cost for a field component.

#### **THE ANDREW MCFARLANE BURSARIES**

Established in 1988 by bequest of Andrew McFarlane of Hamilton.

**Requirements:** To be granted to a student or students who are in good standing and have demonstrated financial need.

#### **THE MCLAY BURSARY**

Established in 1997 by David and Jean McLay under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student in any program who demonstrates financial need and who is participating in one of McMaster's formal exchange programs. Preference to be given to students who have been active in international clubs and associations.

#### **THE MCLEAN FAMILY EXCHANGE BURSARIES**

Established in 1997 by the McLean Family under the McMaster Student Opportunity Fund initiative, in gratitude for the learning and relationship enrichment which they obtained first at McMaster University, and subsequently through international travel.

**Requirements:** To be granted to students who wish to participate in exchange programs, who demonstrate financial need and who are enrolled in Level 2 or 3 of a program. Preference to be given to international exchanges, for students from the Faculty of Engineering or the Faculty of Humanities with a GPA above 7.0 at the most recent review and who have shown leadership and involvement in university and/or community activities.

#### **THE MCMASTER UNIVERSITY'S 125TH ANNIVERSARY BURSARY**

Established in 2012 in honour of McMaster University's 125th Anniversary.

**Requirements:** A variable number of bursaries to be granted to students who demonstrate financial need. Preference given to students graduating from high schools in the Hamilton-Wentworth region.

#### **THE MCMASTER ALUMNAE CENTENNIAL BURSARY**

Established in 1988 by the McMaster Women's Alumnae, Hamilton Branch.

**Requirements:** To be granted to a student in his or her graduating year who is a Canadian citizen or permanent resident and who exhibits financial need. Preference will be given to a single parent.

#### **THE MCMASTER ALUMNI ASSOCIATION BURSARY**

Established in 1997 by the McMaster Alumni Association in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries will be granted annually to McMaster students who demonstrate financial need.

#### **THE MCMASTER ALUMNI CLASS BURSARY FUND**

Established in 2016 by McMaster Alumni.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program and who demonstrate financial need.

#### **THE MCMASTER ASSOCIATION OF PART-TIME STUDENTS BURSARIES**

Established in 1988 in celebration of McMaster's Centennial to assist students currently enrolled in a degree or certificate program who, without such assistance, would be unable to continue their studies.

**Requirements:** Consideration may also be given to students who would not otherwise enrol without such assistance.

#### **THE MCMASTER ASSOCIATION OF PART-TIME STUDENTS 20TH ANNIVERSARY BURSARIES**

Established in 1999 by the McMaster Association of Part-Time students to commemorate its 20th anniversary. The bursary was further augmented by friends and colleagues of Helen Barton, MAPS' first President and founding member, in recognition of her 27 years of service and retirement as Senior Associate Registrar at McMaster.

**Requirements:** To be granted to students currently enrolled, on a part-time basis, in a degree program, who demonstrate financial need.

#### **THE MCMASTER ASSOCIATION OF PART-TIME STUDENTS 25TH ANNIVERSARY BURSARIES**

Established in 2004 by the McMaster Association of Part-Time Students (MAPS) to commemorate its silver anniversary.

**Requirements:** To be granted to students currently enrolled, on a part-time basis, in a degree program, who demonstrate financial need.

#### **THE MCMASTER ASSOCIATION OF PART-TIME STUDENTS 30TH ANNIVERSARY BURSARY**

Established in 2008 by the McMaster Association of Part-time Students (MAPS) to commemorate 30 years of MAPS Board leadership and growth along with the 30th Anniversary of MAPS.



**Requirements:** To be granted to students currently enrolled on a part-time basis who demonstrate financial need. Preference to be given to students in a diploma or certificate program.

#### **THE MCMASTER ATHLETIC COUNCIL (MAC) BURSARY**

Established in 1997 by the Men's Athletic Council and the Women's Intercollegiate Athletics Council under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need and who is a member of any inter-university team at McMaster. Preference will be given to the recipient of the McMaster Athletic Council Award.

#### **THE MCMASTER UNDERGRADUATE BURSARIES**

Established in 1996 by McMaster University.

**Requirements:** To be granted to students in any undergraduate degree program who demonstrate financial need.

#### **THE MCMASTER MEN'S ATHLETICS BURSARY**

Established by past and present student-athletes and friends of McMaster Interuniversity Athletics.

**Requirements:** To assist students in any academic program who demonstrate financial need and who demonstrate outstanding athletic participation in men's interuniversity athletics.

#### **THE MCMASTER MEN'S BASKETBALL BURSARY**

Established by past and present student-athletes and friends of McMaster Men's Basketball.

**Requirements:** To assist students in any academic program who demonstrate financial need and who demonstrate outstanding athletic participation in the sport of men's basketball.

#### **THE PACE CREDIT UNION BURSARY**

Established in 1997 by McMaster Savings and Credit Union Limited (presently known as PACE Credit Union) in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted annually to McMaster students enrolled in any program who demonstrate financial need.

#### **THE MCMASTER SQUASH AND GOLF BURSARY**

Established by past and present student-athletes and friends of McMaster Golf and Squash.

**Requirements:** To assist a student in any academic program who demonstrates financial need and who demonstrates outstanding athletic participation in the sport of golf or squash.

#### **THE MCMASTER STUDENT OPPORTUNITY FUND BURSARIES**

Established in 1996 by McMaster University from general donations to the University bursary program and matching funding provided through the Ontario Student Opportunity Trust Fund initiative.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

#### **THE MCMASTER STUDENT OPPORTUNITY FUND II BURSARIES**

Established in 2003 by McMaster University from general donations to the University bursary program and matching funding provided through the Ontario Student Opportunity Trust Fund II initiative.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

#### **THE MCMASTER STUDENTS' UNION BURSARIES**

Established in 1982 by the McMaster Students' Union.

**Requirements:** To assist those undergraduate MSU members who demonstrate financial need.

#### **THE MCMASTER UNIVERSITY FACULTY ASSOCIATION BURSARY**

Established in 1997 by the McMaster Faculty Association under the McMaster Student Opportunity Fund initiative based on the assumption that all students should have access to educational opportunities.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need.

#### **THE MCMASTER WOMEN'S BASKETBALL BURSARY**

Established by past and present student-athletes and friends of McMaster Women's Basketball.

**Requirements:** To assist a student in any academic program who demonstrates financial need and who demonstrates outstanding athletic participation in the sport of women's basketball.

#### **THE MCMASTER WOMEN'S VOLLEYBALL BURSARY**

Established by past and present student-athletes and friends of McMaster Women's Volleyball.

**Requirements:** To assist a student in any academic program who demonstrates financial need and who demonstrates outstanding athletic participation in the sport of women's volleyball.

#### **THE MCQUIGGE FAMILY BURSARY**

Established in 2016 by Karen McQuigge (Class of '90) and Nancy McQuigge (Class of '93) to support students to pursue their academic and professional goals.

**Requirements:** To be granted to a student enrolled in a History or Nursing program who demonstrates financial need.

#### **THE A.J. MELLONI MEMORIAL FUND**

Established in 1999.

**Requirements:** To be granted to a student in any program.

#### **THE MELOCHE MONNEX INC. BURSARY**

Established in 1997 by Meloche Monnex Inc. under the McMaster Student Opportunity Fund initiative in the belief that students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need.

#### **THE MÉTIS NATION OF ONTARIO BURSARY**

Established in 2014 by the Métis Nation of Ontario to encourage and support undergraduate students in any program.

**Requirements:** To be awarded to Métis students who demonstrate financial need.

#### **THE EDNA C. AND FRANK CHARLES MILLER BURSARY**

Established in 1997 by Frank C. Miller in memory of his parents, Edna C. and Frank Charles Miller, in support of McMaster students.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need.

#### **THE DR. F. A. MIRZA BURSARY**

Established in 1997 under the McMaster Student Opportunity Fund initiative.

**Requirements:** Preference will be given, if financial need is demonstrated, to the recipient of The Dr. F.A. Mirza Scholarship.

#### **THE SUSAN MOELLERS BURSARY**

Established in 2011 by Susan Moellers, M.B.A. (Class of '82).

**Requirements:** To be granted to undergraduate students in any program who demonstrate financial need.

#### **THE JAMES C. MOORE MEMORIAL BURSARY**

Established in 1989 by family and friends in memory of James C. Moore.

**Requirements:** To be granted to a student in Humanities or Social Sciences who demonstrates financial need and involvement in student government.

#### **THE WALLACE R. MORRIS BURSARY FUND**

Established in 1997 by bequest of Wallace Ronald Morris.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

#### **THE WILLIAM MORRIS FAMILY BURSARIES**

Established in 2010 by family and friends in honour of William Morris, B.A. (Class of '56) to commemorate his 50th anniversary as a respected member of the Law Society of Upper Canada and to honour his years of service to the City of Hamilton.

**Requirements:** To be granted to students who demonstrate financial need. Preference will be given to students from the Hamilton area.

**THE JOHN DOUGLAS MOYER BURSARY**

Established in 1986 by bequest of John Douglas Moyer.

**Requirements:** To assist needy students.

**THE MULDOON FAMILY BURSARY**

Established in 2016 by Greg (Class of 2003) and Erin (Class of 2003) Muldoon.

**Requirements:** To be awarded to a student who has completed Level 1 and is enrolled in either the Faculty of Business or the Faculty of Science and who demonstrates financial need.

**THE HELEN K. MUSSALLEM BURSARY**

Established in 1996 by Dr. Helen K. Mussallem (C.C., B.N., Ed.D., LL.D (Queen's), D.Sc., D.St.J., F.R.C.N., M.R.S.H.) under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Helen K. Mussallem Award.

**THE MARJORIE AND BILL NELSON BURSARY**

Established in 1997 by Marjorie and Bill Nelson under the McMaster Student Opportunity Fund initiative in support of the Hamilton community, and in support of the efforts of McMaster University to ensure that all students have the opportunity to achieve their educational goals.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need.

**THE NELSON STEEL BURSARY**

Established in 1997 by Nelson Steel in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to students in any program who demonstrate financial need.

**THE NHLA-NY RANGER ALUMNI ASSOCIATIONS (PAT HICKEY AND HARRY HOWELL) BURSARY**

Established in 1999 by The NHL Players' Association Alumni.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need and who has demonstrated outstanding athletic achievement in an intersarsity sport.

**THE AUSTIN NORONHA BURSARY**

Established in 2016 by Austin Noronha, a dedicated and generous McMaster staff member, to support and encourage McMaster students to attain their educational goals.

**Requirements:** To be awarded to students enrolled in any program who demonstrate financial need.

**THE LILLIAN AND LEROY PAGE BURSARIES**

Established in 1997 by the Lillian and Leroy Page Foundation to enable students to pursue their educational goals.

**Requirements:** A variable number of bursaries to be granted to students from the Hamilton-Wentworth Region who demonstrate financial need. Preference to be given to students in the Faculty of Science.

**THE THOMAS ALEXANDER PAIN BURSARY**

Established by past and present student-athletes and friends of McMaster Football.

**Requirements:** To assist students in any academic program who demonstrate financial need and who demonstrate outstanding participation in the sport of football.

**THE PARNOJA FAMILY BURSARY**

Established in 2009 by Erik Parnoja in support of his belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who have achieved a minimum Grade Point Average of 7.0 and demonstrate financial need.

**THE PART-TIME STUDENTS BURSARIES**

Established in 2019 by McMaster University.

**Requirements:** To be granted to part-time students enrolled in any undergraduate degree program who demonstrate financial need.

**THE DR. JOHN H. PASSMORE BURSARY**

Established in 2004 by Dr. John H. Passmore (Class of '33) under the McMaster Student Opportunity Trust Fund II initiative.

**Requirements:** To be granted to students enrolled in the Faculty of Science or the Faculty of Social Sciences who demonstrate financial need. Preference will be given to students who are studying Environmental Studies.

**THE PETRO-CANADA BURSARIES**

Established in 1996 by Petro-Canada, the largest Canadian-owned oil and gas company and one of the country's leading refiners and marketers of petroleum products, in support of its belief that all students should have the opportunity to pursue their educational aspirations.

**Requirements:** A variable number of bursaries to be granted to students in any program who demonstrate financial need.

**THE ROBERT AND RUTH PHILIP STUDENT BURSARIES**

Established in 1996 by Robert and Ruth Philip of Hamilton, Ontario.

**Requirements:** A variable number of bursaries to be granted to students in any program who demonstrate financial need.

**THE PIONEER ENERGY LP BURSARY**

Established in 1997 by the Pioneer Group of Companies Inc. under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Pioneer Group Inc. Award.

**THE GORDON AND JANE PRICE BURSARY**

Established in 1997 by their sons in honour of Gordon and Jane Price under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Gordon and Jane Price Award.

**THE LES PRINCE BURSARIES**

Established in 1996 in memory of Leslie A. Prince, dedicated teacher, coach and administrator at McMaster University remembered for his outstanding leadership and service in Athletics and Recreation, Student Life as well as the community-at-large.

**Requirements:** To assist student-athletes who demonstrate financial need. Preference to be given to students who demonstrate qualities of leadership and service to the community through programs such as *The Marauder Outreach Program and Community Service*.

**THE PROCOR BURSARIES**

Established in 1997 by Procor Ltd. in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to students enrolled in Engineering or Commerce who demonstrate financial need and undertake service to McMaster University and the community-at-large.

**THE QUEEN ELIZABETH II INTERNATIONAL TRAVEL BURSARY**

Established in 2015 by Arnold Beale, B.Sc. (Class of '68), B.A. (Class of '83) in honour of Her Majesty Queen Elizabeth II, who became the longest-reigning British monarch on September 9, 2015.

**Requirements:** To be granted to an undergraduate student participating in an international exchange program who demonstrates financial need. Preference will be given to a student travelling to a Commonwealth country.

**THE GORDON RAYMOND BURSARY**

Established in 1996 by the McMaster Association of Part-time Students and other friends and colleagues under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to part-time students in any program who demonstrate financial need. Preference will be given to the recipient of The Gordon Raymond Award.

**THE RBC FINANCIAL GROUP BURSARY**

Established in 1997 by the Royal Bank of Canada in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries to be granted to McMaster students who demonstrate financial need.

#### **THE REDPATH SUGARS BURSARY**

Established in 1997 by Redpath Sugars, Division of Redpath Industries Limited, in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need.

#### **THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH BURSARIES**

Established in 1997 by the Regional Municipality of Hamilton-Wentworth in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries will be granted to students enrolled in any program who demonstrate financial need. Preference will be given to students who permanently reside in the Hamilton-Wentworth Region.

#### **THE REISE FAMILY BURSARIES**

Established in 2009 by Leo Reise, B. A. (Class of '72) and Geraldine Reise.

**Requirements:** To be granted to students in any program who demonstrate financial need.

#### **THE RETIRED TEACHERS OF ONTARIO (RTO/ERO), DISTRICT 13 BURSARY IN HEALTH, AGING AND SOCIETY**

Established in 2017 by the Retired Teachers of Ontario, District 13, Hamilton-Wentworth, Haldimand in honour of the Provincial RTO/ERO's 50th Anniversary.

**Requirements:** To be awarded to a student studying in the Department of Health, Aging and Society who demonstrates financial need.

#### **THE RICOH CANADA INC. BURSARIES**

Established in 1996 by Ricoh Canada Inc. in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries to be granted to students who demonstrate financial need and are enrolled in the Faculty of Business or the Faculty of Engineering.

#### **THE JAMES AND ELIZABETH ROBERTS BURSARIES**

Established in 1957 by R.H. Roberts in memory of his parents.

**Requirements:** To assist any male student of good academic standing.

#### **THE HUGH AND ALICE ROBERTSON MEMORIAL BURSARIES**

Established in 1997 by R. G. Hamish Robertson in honour of his parents Hugh and Alice Robertson under the McMaster Student Opportunity Fund initiative.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

#### **THE ROBERTSON-YATES CORPORATION BURSARIES**

Established in 1996 by the Robertson-Yates Corporation of Hamilton in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries to be granted to students enrolled in a program in Business or Engineering who demonstrate financial need.

#### **THE ROLLS' FAMILY BURSARY**

Established in 2016 by the Rolls family.

**Requirements:** To be granted to students enrolled in Level 2 or above, in a program in the Department of English and/or the School of Nursing, who demonstrate financial need.

#### **THE RANDOLPH E. ROSS MEMORIAL BURSARY**

Established in 1998 by family and friends in memory of Dr. Randolph E. Ross, who was a dedicated and cherished faculty member for over 25 years at McMaster University.

**Requirements:** To be granted to a student enrolled in the School of Business or the Engineering and Management Program. Preference will be given to a McMaster student participating in an international exchange program.

#### **THE HELEN LENORE ROSZELL MEMORIAL BURSARIES**

Established in 2000 by bequest of Helen Lenore Roszell.

**Requirements:** A variable number of bursaries to be granted to students in any program who demonstrate financial need.

#### **THE ROTARY CLUB OF ANCASTER BURSARY**

Established in 1997 by the Rotary Club of Ancaster under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Rotary Club of Ancaster Award.

#### **THE ROTARY CLUB OF BURLINGTON CENTRAL BURSARY**

Established in 1997 by the Rotary Club of Burlington Central under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students who are enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Rotary Club of Burlington Central Award.

#### **THE ROTARY CLUB OF HAMILTON BURSARY**

Established in 1997 by the Rotary Club of Hamilton under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Rotary Club of Hamilton Award.

#### **THE ROTARY CLUB OF HAMILTON A.M. BURSARY**

Established in 1997 by The Rotary Club of Hamilton A.M. under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Rotary Club of Hamilton A.M. Award.

#### **THE ROYAL & SUNALLIANCE BURSARIES**

Established in 1997 by Royal & SunAlliance Canada in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries will be granted annually to McMaster students who demonstrate financial need.

#### **THE ELEANOR AND WILFRED RYDER BURSARY**

Established in 1999 by Marvin Ryder in honour of Eleanor and Wilfred Ryder.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to students from Oxford County or Norfolk County.

#### **THE HELEN SANSONE BURSARIES**

Established in 1996 by bequest of Helen Sansone of Hamilton, Ontario.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

#### **THE SATURN OF HAMILTON EAST BURSARY**

Established in 1996 by SATURN of Hamilton East under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Saturn of Hamilton East Achievement Award.

#### **THE GINO AND ROBERTA SCAPILLATI BURSARY**

Established in 2004 by Gino Scapillati (Class of '81) and Roberta Scapillati (Class of '79) under the McMaster Student Opportunity Fund II initiative.

**Requirements:** To be granted to a student enrolled in the Faculty of Business or Faculty of Social Sciences who demonstrates financial need.

#### **THE ROBERT H. AND LILLIAN SCULLION BURSARY**

Established in 2016 in memory of Robert Hugh (Class of '51) and Lillian Scullion by Roy and Anne Mason.

**Requirements:** To be granted to a student who demonstrates financial need. Preference to be given to a student active in community service.

#### **THE MYKOLA SEMENIUK BURSARIES**

Established in 1991 by bequest of Mykola Semeniuk.

**Requirements:** To assist students who demonstrate financial need and augmented in 1996 in conjunction with the McMaster Student Opportunity Fund initiative.

**THE LOUIS SR. AND ROSITA SERAFINI BURSARY**

Established in 2004 by Louis Jr. and Lori Ann Serafini, graduates of McMaster University, in honour of Louis Sr. and Rosita Serafini under the McMaster Student Opportunity Fund II initiative.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need.

**THE ROSA MAUDE SHEARDOWN BURSARY**

Established in 1997 by Gordon R. Baker, Q. C. in honour of his foster mother, Rosa Maude Sheardown, and her belief in the importance of education and providing a helping hand to others.

**Requirements:** To be granted to students in any Faculty who demonstrate financial need. Preference to be given to students from single-parent families, foster or group homes, disadvantaged backgrounds or King Township.

**THE GERALD AND VERNA SIMPSON BURSARY**

Established in 1997 under the McMaster Student Opportunity Fund initiative.

**Requirements:** Preference will be given, if financial need is demonstrated, to the recipient of The Gerald and Verna Simpson Scholarship.

**THE MEENA AND NARESH SINHA BURSARY**

Established in 1996 by Meena and Narish Sinha under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of the Meena and Narish Sinha Award.

**THE ALBERT EDWARD SMITH AND JEAN MCTAVISH SMITH BURSARY**

Established in 1998 by Mrs. Jean McTavish Smith (Class of '31), in memory of Albert Edward Smith (Class of '29) under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student in any program who demonstrates financial need.

**THE SAM SMURLICK BURSARY**

Established in 1978 by the Smurlick family in memory of Sam Smurlick (Class of '35).

**Requirements:** To be granted to a student in any program who demonstrates financial need.

**THE LORNA AND DAVID SOMERS BURSARY**

Established in 1997 by Lorna Somers (Class of '81) and David Somers (Class of '88) under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students in any program who demonstrate financial need. Preference will be given to the recipient of The Lorna and David Somers Award.

**THE SOMERVILLE BURSARY**

Established in 1997 under the McMaster Student Opportunity Fund initiative.

**Requirements:** Preference will be given, if financial need is demonstrated, to a recipient of The Somerville Scholarships.

**THE DENNIS SOUDER BURSARY**

Established in 2009 by Dennis Souder, B.A. (Class of '70).

**Requirements:** To be granted to a student in any program who demonstrates financial need. Preference will be given to a student from Cambridge, ON.

**THE SOUDER FAMILY BURSARY**

Established in 2013 by the Souder Family.

**Requirements:** To be granted to a student in any program who demonstrates financial need. Preference will be given to a student from Cambridge, ON.

**THE BILL STANKOVIC BURSARIES**

Established in 2012 by Dr. Bill Stankovic (Class of '67).

**Requirements:** To be granted to full-time students in any program who demonstrate financial need. Preference will be given to students who have shown leadership and participation in McMaster student life.

**THE LILLIAN R. STEGNE MEMORIAL BURSARIES**

Established in 1990 in memory of Lillian Rose Stegne (Class of '62) by family, friends and colleagues.

**Requirements:** To be granted to students enrolled in any program who are

registered with SAS and who demonstrate financial need.

**THE ADAM SUDAR PRINTMAKING BURSARY**

Established in 1997 in memory of Adam Sudar by his friends under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students in any program who demonstrate financial need. Preference will be given to the recipient of The Adam Sudar Printmaking Award.

**THE SWYTCH DELIVERY SOLUTIONS INC. BURSARY**

Established in 2006 by Swytch Delivery Solutions Inc. in support of students attending McMaster University.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need.

**THE TARBUTT CONSTRUCTION LTD. BURSARY**

Established in 1997 by Tarbutt Construction Ltd. under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need.

**THE TD BANK FINANCIAL GROUP BURSARIES**

Established in 1999 by the TD Bank Financial Group in support of its commitment to helping students succeed in their post-secondary studies.

**Requirements:** A variable number of bursaries to be granted to students in any program who demonstrate financial need. Preference to be given to students enrolled in the Earth and Environmental Sciences, the Honours Geography and Environmental Studies or an Engineering and Society Program.

**THE RUBY TEDDER BURSARY**

Established in 2006 by the bequest of Ruby Tedder as a memorial to Victor Tedder, Lillian Ruby Tedder, Thomas Tedder and Robert Tedder.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need.

**THE THIS IS CANADA FUND**

Established in 2018 by Frank Palin, B.Sc. Honours Biology (Class of '92), B.Sc. Honours Geography (Class of '95), in support of his belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to international students enrolled in any program who demonstrate financial need.

**THE BRENT & DIANE THOMSON BURSARY**

Established in 2012 by Brent Thomson, B.Com. (Class of '74) and his wife Diane, to help those who wish to further their education.

**Requirements:** To be granted to a student in any program who demonstrates financial need.

**THE STEPHEN F.H. THRELKELD BURSARY**

Established in 1997 by friends and colleagues of Stephen F.H. Threlkeld under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Stephen F.H. Threlkeld Award.

**THE MARJORIE (COCHRANE) TICE BURSARY**

Established in 2006 by Peggy, B.A. (Class of '75 and '95) and Bob, M.B.A. (Class of '81) Savage to honour the memory of Marjorie (Cochrane) Tice.

**Requirements:** To be granted to students in any program who demonstrate financial need.

**THE GUY TIRIMACCO MEMORIAL BURSARY**

Established in 2007 by Terri, Sarah and Jessica in memory of Guy, B.A. (Class of '81), a loving husband and father, a great role model, mentor, teacher, coach, musician and avid golfer.

**Requirements:** To be granted to students enrolled in any Faculty who demonstrate financial need. Preference will be given to students from Hamilton.

**THE TTK INC. BURSARY**

Established in 1997 by TTK Inc. under the McMaster Student Opportunity Fund initiative.



**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The TKK Inc. Awards.

#### **THE GRAHAM RONALD TOOP BURSARY**

Established in 1997 under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be awarded to students in any program who demonstrate financial need. Preference will be given, if financial need is demonstrated, to the recipient of The Graham Ronald Toop Scholarship.

#### **THE TOWNSHIPS OF NORTH DUMFRIES AND WOOLWICH IN WATERLOO REGION AND TOWNSHIP OF CENTRE WELLINGTON AND CITY OF GUELPH IN WELLINGTON COUNTY BURSARY**

Established in 2005 under the Ontario Trust for Student Support program to ensure that all students have the opportunity to pursue their educational goals.

**Requirements:** To be granted to students in any Faculty who demonstrate financial need. Preference will be given to students residing in the Townships of North Dumfries and Woolwich in Waterloo Region and Township Centre Wellington and City of Guelph in Wellington County.

#### **THE TRAVELLERS GUARANTEE COMPANY OF CANADA BURSARY**

Established in 1997 by London Guarantee Insurance in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries to be granted annually to McMaster students who demonstrate financial need.

#### **THE RAY AND JOYCE TRULL BURSARY**

Established in 1998 by Roger and Janet Trull and their children in honour of Ray and Joyce Trull.

**Requirements:** To be granted to a student in any program who demonstrates financial need.

#### **THE ROGER TRULL BURSARY**

Established in 1997 by friends and colleagues under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Roger Trull Award.

#### **THE GEORGE ELIAS TUCKETT BURSARIES**

Established in 2005 in memory of George Elias Tuckett, a prominent Hamilton businessman and community leader who founded the oldest tobacco manufacturing company in Canada - a company that has been part of Imperial Tobacco since 1930.

**Requirements:** To be granted to students in any Faculty who demonstrate financial need.

#### **THE EDITH H. TURNER FOUNDATION BURSARIES**

Established in 1996 by The Edith H. Turner Foundation in support of students pursuing their post-secondary studies at McMaster.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need.

#### **THE TYNOWSKI BURSARY**

Established in 1997 under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be awarded to students in any program who demonstrate financial need. Preference will be given, if financial need is demonstrated, to the recipient of The Tynowski Scholarship.

#### **THE UBS GLOBAL ASSETS MANAGEMENT (CANADA) COMPANY BURSARY**

Established in 1997 by the UBS Global Assets Management (Canada) Company under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The UBS Global Assets Management (Canada) Company Award.

#### **THE STELCO BURSARY FUND**

Established in 1996 by Stelco- a market-driven, technologically advanced group of businesses committed to maintaining leadership roles as steel producers and fabricators-in support of students who, without financial aid, would be

unable to pursue their educational goals.

**Requirements:** To be granted to students who demonstrate financial need and are enrolled in the Faculties of Business, Engineering or Science. Preference will be given to students who are enrolled in the Department of Materials Science and Engineering.

#### **THE VALLEY CITY BURSARY**

Established in 1996 by Valley City in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to a student in any program who demonstrates financial need.

#### **THE HOWARD ROWE VARDY MEMORIAL BURSARY**

Established in 2019 by the Estate of Howard Rowe Vardy, B.A.Hon. (Class of '47).

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need.

#### **THE FILOMENA AND FERDINANDO VISOCCHI BURSARY**

Established in 2003 by their children and family in honour of Filomena and Ferdinando Visocchi under the McMaster Student Opportunity Fund II initiative.

**Requirements:** To be granted to a student in any program who demonstrates financial need.

#### **THE SYLVIA AND BRIAN WALKER BURSARIES**

Established in 1996 by Sylvia (Hunt) and Brian Walker.

**Requirements:** To be granted to a student enrolled in Humanities I or Nursing I who demonstrates financial need. Preference to be given to students who have demonstrated leadership and involvement in university and community activities.

#### **THE WALLINGFORD HALL BURSARIES**

Established through anonymous donations.

**Requirements:** To assist students in any program who demonstrate financial need.

#### **THE G.S. WARK LTD. BURSARY**

Established in 1996 by G.S. Wark Ltd. General Contractors, in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be awarded to a student in any program who demonstrates financial need.

#### **THE SAM WATSON MEMORIAL BURSARY**

Established in 1996 by his wife Irene M. Watson and friends of Samuel Watson under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Sam Watson Memorial Award.

#### **THE SAM AND IRENE WATSON BURSARY FUND**

Established in 1998 by the estate of Irene Mary Watson.

**Requirements:** To be granted to students who demonstrate financial need and who have completed their second year with a Grade Point Average of at least 8.0 in the Arts and Science Program or any of the Faculties of Business, Engineering, Humanities, Science and Social Sciences.

Value: \$2,000

#### **THE ROSS FAWCETT WEBB BURSARY FUND**

Established in 1983 by the Hamilton Community Foundation in memory of Ross Fawcett Webb.

**Requirements:** To be granted in the second term of study (any level) to a student who demonstrates financial need and is enrolled in any program at McMaster. Applicants must be Canadian Citizens or hold permanent resident status in Canada.

#### **THE ARTHUR AND MARGARET WEISZ BURSARY**

Established in 2004 by Arthur Weisz (LL.D. 2004) and Margaret Weisz under the McMaster Student Opportunity Fund II initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need.

**THE LLOYD WERDEN MEMORIAL BURSARIES**

Established in 1996 by bequest of Lloyd Werden of Bonavista in the Township of Louth in the County of Lincoln, former Physician.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need.

**THE WESCAST INDUSTRIES BURSARY**

Established in 1997 by Westcast Industries Inc. under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Westcast Industries Continuous Learning Award.

**THE WESTINGHOUSE CANADA INC. BURSARIES**

Established in 1996 by Westinghouse Canada Inc. in support of students who, without financial support, would be unable to pursue their educational goals.

**Requirements:** A variable number of bursaries to be granted to students in a program in the Faculty of Business and the Faculty of Engineering who demonstrate financial need.

**THE ALLAN AND JOY WILLIAMS BURSARY**

Established in 1996 by Mary Williams (Class of '87), Anne Williams (Class of '89) and Ellen and Dan Walker under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Allan and Joy Williams Award.

**THE MARJORIE AND BRIGGS WILLIAMS BURSARY**

Established in 2009 by The Marjorie and Briggs Williams Foundation Fund.

**Requirements:** To be granted to students in any program who demonstrate financial need.

**THE WRIGHT FAMILY BURSARY**

Established in 2003 by Thomas C. Wright, M.B.A. (Class of '72) under the McMaster Student Opportunity Fund II initiative.

**Requirements:** To be granted to a student in the Faculty of Business or the Faculty of Science who demonstrates financial need.

**THE YATES BURSARIES**

Established in 1963 by bequest of William Henry Yates of Hamilton.

**Requirements:** To assist students in any program.

**THE GLADYS A. YOUNG BURSARY**

Established in 1997 under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be awarded to students in any program who demonstrate financial need. Preference will be given, if financial need is demonstrated, to the recipient of The Gladys A. Young Scholarship.

**THE ZENON ENVIRONMENTAL BURSARY**

Established in 1997 by Zenon Environmental Inc. under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Zenon Environmental Award.

**THE ZONTA CLUB OF HAMILTON I BURSARIES**

Established in 1997 by the Zonta Club of Hamilton I in support of the McMaster Student Opportunity Fund initiative and in the belief that all students, particularly women in non-traditional fields, should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to a student who demonstrates financial need and is enrolled in the Faculty of Engineering, or in Business or is enrolled in a course in Indigenous Studies. Preference to be given to female students.

**THE ZOOM MEDIA INC. BURSARY**

Established in 1997 by Zoom Media Inc. in support of McMaster students under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to the recipient of The Zoom Media Award.

**Open to the Arts & Science Program****THE ARTS AND SCIENCE BURSARIES**

Established in 2019 by McMaster University.

**Requirements:** To be granted to students enrolled in the Arts and Science Program who demonstrate financial need.

**THE ARTS AND SCIENCE CLASS OF '97 BURSARY**

Established in 1997 by The Arts and Science Class of '97 under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student in the Arts and Science program who demonstrates financial need.

**THE BAIN-PEART BURSARIES**

Established in 2018 by the Estate of Helen Jean Bain.

**Requirements:** To be granted to students enrolled in Level 2 or above in an Arts & Science Program who demonstrate financial need.

**THE LOUILA BRAYFORD MEMORIAL BURSARY**

Established in 1998 by Mrs. Janet Leenaars in memory of her late mother, Mrs. Louila Brayford (nee Bingham, Class of '34).

**Requirements:** To be granted to a student enrolled in the Arts and Science Program who demonstrates financial need. Preference will be given to a student enrolled in a course in Mathematics.

**THE GEORGE P. GILMOUR MEMORIAL BURSARY**

Established in 1997 by the Class of '62 in support of McMaster students.

**Requirements:** To be granted to a student enrolled in the Arts and Science Program who has demonstrated financial need. Preference will be given to the student who wins the George P. Gilmour Memorial Scholarship.

**THE JOHNS FAMILY BURSARIES**

Established by Martin W. Johns and family.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Arts and Science Program who demonstrate financial need.

**THE JENNIFER YOUNG MEMORIAL BURSARY**

Established in 2015 by family, peers and community in honour of Jennifer Young, (Class of '07 & '09). Jennifer was passionate about fitness and wellness, she excelled in math and science and her professional interests were in population modelling and policy planning for the Department of Fisheries and Oceans.

**Requirements:** To be awarded to a student who is enrolled in an Arts and Science program and demonstrates financial need. Preference will be given to female students who demonstrate keen interest in math.

**Open to the DeGroot School of Business****THE GARY ALLEN MEMORIAL BURSARY**

Established in 1987 by friends and family of the late Gary Allen (Class of '84) and augmented in 1996 in conjunction with the McMaster Student Opportunity Fund initiative, to assist a Commerce student in Year III or IV whose major area of study is accounting and who demonstrates financial need.

**Requirements:** Preference will be given to a mature student.

**THE CATHERINE BENTZEN-BILKVIST MEMORIAL BURSARY**

Established in 2017 by family and friends of Catherine Bentzen-Bilkvist, B.A. (Class of '75), B.A. Hon. (Class of '81), M.A. (Class of '86), to honour her memory.

**Requirements:** To be granted to a student in a Bachelor of Commerce program who demonstrates financial need.

**THE DAVID CLARK BURSARIES**

Established in 1996 by David I. Clark and Marilyn D. Eustace.

**Requirements:** A variable number of bursaries to be granted to students enrolled in a program in Commerce who demonstrate financial need.

Preference to be given to students demonstrating interest in Asian Studies.

**THE DAUGHTERS OF THE EMPIRE CLUB, HAMILTON LTD. BURSARIES**

Established in 1996 in honour of The Daughters of the Empire Club, Hamilton, Limited (1911-1996) in support of its belief that all students should have the opportunity to pursue their educational aspirations.

**Requirements:** A variable number of bursaries to be granted to students in financial need. Preference to be given to women enrolled in the Faculty of Business.

**THE DEGROOTE COMMERCE CLASS OF '82 BURSARY**

Established in honour of the 30th anniversary of the Commerce Class of '82.

**Requirements:** A variable number of bursaries to be awarded to students enrolled in a Commerce program in the DeGroot School of Business who demonstrate financial need.

**THE DEGROOTE SCHOOL OF BUSINESS BUSINESS ADVISORY COUNCIL BURSARY**

Established in 1997 by the DeGroot School of Business Business Advisory Council under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student who demonstrates financial need and is enrolled in Business I or in the first year of the M.B.A. program at the DeGroot School of Business.

**THE STEPHEN DULMAGE BURSARY**

Established in 2005 by Stephen Dulmage, B.A. (Class of '64).

**Requirements:** To be granted to students enrolled in the Bachelor of Commerce program in the DeGroot School of Business who demonstrate financial need.

**THE SANDRA STEPHENS "BRIGHTER WORLD" MEMORIAL BURSARY**

Established in 2020 in loving memory of Sandra Stephens.

**Requirements:** To be granted to students enrolled in Level 3 or above in the Faculty of Business who demonstrate financial need. Preference will be given to students who demonstrate leadership and community engagement within McMaster.

**THE FACULTY OF BUSINESS BURSARIES**

Established in 1997 under the McMaster Student Opportunity Fund initiative with proceeds from the Fundraising Auction held at Vineland Estates Winery Ltd.

**Requirements:** To be granted to students enrolled in the Faculty of Business who demonstrate financial need.

**THE FINANCIAL EXECUTIVES INSTITUTE BURSARY**

Established in 1997 by the Hamilton Chapter of the Financial Executives Institute in support of its belief that all students should have the opportunity to achieve their educational goals.

**Requirements:** To be granted to a student enrolled in Level 2 of the Commerce program who demonstrates financial need, has attained a minimum GPA of 6.0 and who plans to major in Accounting and/or Finance. The bursary is renewable for up to two additional years on condition that the student continues to demonstrate financial need and maintains a minimum GPA of 6.0 in the Commerce program.

**THE GARY GRAHAM BURSARY**

Established in 1997 by Gary Graham under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student who demonstrates financial need and is enrolled in Business I, or in the first year of the M.B.A. program at the DeGroot School of Business.

**THE HAMILTON CHAPTER OF THE HUMAN RESOURCES PROFESSIONALS ASSOCIATION BURSARY**

Established in 1999 by the Hamilton Chapter of the Human Resources Professionals Association under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a Level 3 or Level 4 Commerce student taking two or more of the Human Resource and Management Area courses who demonstrates financial need.

**THE M.A. (JACK) HASSAL BURSARY**

Established by the Hamilton and District Chartered Accountants Discussion Group in 1982 in memory of M.A. (Jack) Hassal.

**Requirements:** To assist a student in Commerce who is a Canadian citizen or permanent resident of Canada. It is hoped that recipients, after graduation, will reimburse the fund to the extent of their award so that the fund may assist increasing numbers of students.

**THE HAVILL FAMILY BURSARY**

Established in 2011 by Charles (Chuck) Havill, B. Com. (Class of '77) in honour of his father, George Havill, M.B.A. (Class of '69).

**Requirements:** To be awarded to a student enrolled in the Bachelor of Commerce program in Level 3 or 4 whose major area of study is accounting and who demonstrates financial need.

**THE JOHANNES MICHAEL HOLMBOE MEMORIAL BURSARY**

Established in 2004 by bequest of Ruth Anna Holmboe in memory of her husband Johannes Michael Holmboe.

**Requirements:** To be granted to students enrolled in the Faculty of Business who demonstrate financial need.

**THE MARK JANTZI MEMORIAL BURSARY**

Established in 2004 by Paul and Hanne Jantzi under the McMaster Student Opportunity Fund II initiative, in memory of their son Mark Jantzi, an Honours Commerce 2002 graduate who passed away tragically in a car accident at the age of 25.

**Requirements:** This bursary is in support of the belief that all students should have the opportunity to pursue their educational goals. To be granted to students who demonstrate financial need and are enrolled in the DeGroot School of Business.

**THE JAN KELLEY MARKETING BURSARY**

Established in 1997 by Kelley Advertising Inc., founded in Hamilton in 1913.

**Requirements:** This bursary to be granted to a student enrolled in Business I, or in the first year of the M.B.A. program at the DeGroot School of Business who demonstrates financial need.

**THE KNAP MARSHALL BURSARY**

Established in 2005 under the Ontario Trust for Student Support initiative.

**Requirements:** To be granted to students enrolled in the DeGroot School of Business who demonstrate financial need and who have demonstrated outstanding athletic achievement in an intervarsity sport.

**THE BERNIE MORELLI MEMORIAL BURSARY**

Established in 2016 in memory of respected Hamilton councillor Bernie Morelli (Class of '67).

**Requirements:** To be awarded to a student enrolled in the DeGroot School of Business who demonstrates financial need and resides in the City of Hamilton. Preference will be given to those who attended an inner city high school.

**THE KPMG BURSARIES**

Established in 1996 by KPMG in support of its belief that students should have the opportunity to pursue their educational aspirations.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Faculty of Business who demonstrate financial need.

**THE KEVIN LENGYELL BURSARY**

Established in 2006 by Kevin Lengyell, B.Com. (Class of '82).

**Requirements:** To be granted to students who have completed Level 2 or Level 3 of the Bachelor of Commerce program who demonstrate financial need. Preference to be given to students from the Region of Waterloo.

**THE MINICH FAMILY BURSARIES**

Established in 1996 by E. A. Minich and family. A variable number of bursaries to be granted to students enrolled in Business I who demonstrate financial need.

**Requirements:** Preference to be given to students who demonstrate a lively interest in the University and community through their involvement in extracurricular activities.

**THE CAROL R. MITCHELL BURSARY**

Established in 2005 by Carol R. Mitchell, M.B.A. (Class of '82).

**Requirements:** To be granted to students enrolled in the Bachelor of Commerce program in the DeGroote School of Business who demonstrate financial need.

**THE CLAIRE AND JOHN NOVAK BURSARY**

Established in 1997 by Bruce Cumming (Class of '73) and Marie Cumming in honour of Claire and John Novak.

**Requirements:** To be granted to a student enrolled in the Faculty of Business who demonstrates financial need.

**THE DR. ALFRED AND LAURA OAKIE BURSARIES**

Established in 1996 by Dr. Alfred U. Oakie.

**Requirements:** A variable number of bursaries to be granted to students enrolled in Business I who demonstrate financial need.

**THE LYNDA QUINN BURSARY**

Established in 2008 by Lynda Quinn, B.Com. (Class of '86).

**Requirements:** To be granted to students enrolled in the DeGroote School of Business who demonstrate financial need.

**THE PAUL RAY & ALEXANDER BISHOP BURSARY**

Established in 2016 by Paul Ray, B.Com.H (Class of '07) and Alexander Bishop, MA (Class of '08) to support students in achieving their educational goals.

**Requirements:** To be granted to students enrolled in the Bachelor of Commerce program who demonstrate financial need. Preference will be given to students whom identify as LGBTQ+.

**THE CARMEN AND DOROTHY RYDER BURSARY**

Established in 1997 by Marvin Ryder under the McMaster Student Opportunity Fund initiative in honour of Carmen and Dorothy Ryder.

**Requirements:** To be granted to a student enrolled in the Faculty of Business who demonstrates financial need. Preference to be given to a student entering Level 3 or 4.

**THE SCOTIAMCLEOD BURSARIES**

Established in 1997 by ScotiaMcLeod in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries to be granted to students enrolled in any program who demonstrate financial need. Preference to be given to students enrolled in the Faculty of Business.

**THE TERRY SEAWRIGHT BURSARY**

Established in 1996 by Terry Seawright, Lecturer in the Faculty of Business.

**Requirements:** To be granted to a student in the Commerce Program who demonstrates financial need. Preference to be given to the student who has completed COMMERCE 2MA3 and attained a grade of at least B.

**THE ETTIE AND ISRAEL SHRAGIE BURSARY**

Established in 2009 by Mark Lighter and Maureen Shragie, in honour of Ettie and Israel Shragie.

**Requirements:** To be granted to students in The DeGroote School of Business who have achieved a minimum Grade Point Average of 7.0 and demonstrate financial need.

**THE MOSSADIQ AND YASMIN UMEDALY BURSARIES**

Established in 1999 by Mossadiq, M.B.A. (Class of '74) and Yasmin Umedaly under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in Business I or first year of the M.B.A. program who demonstrate financial need.

**THE WENTWORTH STRATEGY GROUP BURSARY**

Established in 2019 by Mark John Stewart, B.A. Hon (Class of 2006), M.B.A. (Class of 2010), Managing Director of Wentworth Strategy Group and former President of the McMaster Alumni Association.

**Requirements:** To be granted to a student enrolled in the Honours Bachelor of Commerce in Integrated Business and Humanities program who demonstrates financial need. Preference will be given to students who demonstrate leadership and community engagement.

**THE WHITLEY FAMILY BURSARY**

Established in 2016 by the Whitley Family.

**Requirements:** To be granted to a student in the Bachelor of Commerce program who demonstrates financial need.

**THE HELEN AND JACK WIDNER BURSARY**

Established in 2016 by Marvin Ryder (Class of '84), in honour of Helen and Jack Widner.

**Requirements:** To be granted to a student enrolled in Level 3 in the Faculty of Business who demonstrates financial need.

**THE JAMES MASON YOUNG BURSARY**

Established in 1996 by James Mason Young in honour of his family's long-standing association with McMaster University.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Faculty of Business who demonstrate financial need. Preference to be given to students participating in a formal McMaster Exchange Program.

**Open to the Faculty of Engineering****THE ROSE (NÉE D'ALESSIO) AND PAUL ALLISON BURSARY**

Established in 2004 by Rose (née D'Alessio) Allison, B. Eng. (Class of '81) and Paul Allison, B. Eng. Mgt. (Class of '80) and M.B.A. (Class of '81) in support of their belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to students enrolled in the Faculty of Engineering who demonstrate financial need.

**THE ANDREW FOUNDATION BURSARIES**

Established in 1997 by the Andrew Foundation under the McMaster Student Opportunity Fund initiative.

**Requirements:** A variable number of bursaries to be granted to students enrolled in a program in Engineering who demonstrate financial need. Preference to be given to students who are studying Electrical Engineering or Mechanical Engineering.

**THE A.H. ATKINSON BURSARIES**

Established in 1989 by the A.H. Atkinson Education Fund Inc. of Hamilton and augmented in 1996 in conjunction with the McMaster Student Opportunity Fund initiative.

**Requirements:** A variable number of bursaries to be awarded to undergraduate students in a full-time program in Engineering who demonstrate financial need.

**THE BACHELOR OF TECHNOLOGY BURSARY**

Established in 2009.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Bachelor of Technology Program who demonstrate financial need.

**THE BARTEK BURSARIES**

Established in 1996 by Bartek Ingredients Inc. of Stoney Creek in support of McMaster students.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Faculty of Engineering who demonstrate financial need. Preference to be given to students currently on the Deans' Honour List.

**THE JUNE BROWNE BURSARY**

Established in 2011 by Kevin Browne B.Sc. (Class of 2007), M.Sc. (Class of 2009) and Ph.D. (Class of 2016) in honour of his grandmother, June Browne.

**Requirements:** To be granted to students registered in Level 2 or above in a program in the Department of Computing and Software who demonstrate financial need.

**THE CAMP XIII ENGINEERING BURSARY**

Established in 2011 by Camp XIII, McMaster University in celebration of its 50th Anniversary through contributions from alumni, friends and Camp XIII funds in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to students enrolled in the Faculty of Engineering who demonstrate financial need.



**THE CANADIAN SOCIETY FOR MECHANICAL ENGINEERING BURSARY**

Established in 1997 by The Canadian Society for Mechanical Engineering in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to a student enrolled in the Faculty of Engineering who demonstrates financial need. Preference will be given to a student enrolled in Mechanical Engineering.

**THE CRS ROBOTICS CORPORATION BURSARIES**

Established in 1997 by CRS Robotics Corporation Inc. in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Faculty of Engineering who demonstrate financial need.

**THE ENGINEERING AND SOCIETY TRAVEL BURSARY**

Established in 1994 by the Department of Engineering and Society. To assist students with travel costs associated with their summer placement in the Engineering and Society program.

**Requirements:** To be granted to a student who demonstrates financial need and is enrolled in the Faculty of Engineering. Applications will be reviewed by the Director, Engineering and Society and the Office of the Registrar, Aid & Awards.

**THE ENGINEERING BURSARY FUND**

Established in 2014.

**Requirements:** To be granted to students in the Faculty of Engineering who demonstrate financial need.

**THE ENGINEERING CLASS OF '97 LEGACY BURSARY**

Established in 1997 by the graduating class in Engineering under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in the Faculty of Engineering who demonstrates financial need.

**THE GENERAL CONTRACTORS ASSOCIATION OF HAMILTON BURSARIES**

Established in 1997 by the General Contractors Association of Hamilton under the McMaster Student Opportunity Fund initiative.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Faculty of Engineering who demonstrate financial need.

**THE GENNUM CORPORATION BURSARIES**

Established in 1997 by the Gennum Corporation in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries to be granted to students who are enrolled in the Faculty of Engineering and who demonstrate financial need.

**THE GRAY FAMILY BURSARY**

Established in 1997 by Donald Gray (Class of '70) and Glenn Gray (Class of '73) and Kerry Gray (Class of '77 and '82 (M.B.A.)) under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a third year student enrolled in the Engineering and Management program who demonstrates financial need. Preference to be given to students who permanently reside in the Hamilton-Wentworth Region.

**THE HATCH ASSOCIATES BURSARY**

Established in 1997 by Hatch Associates in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to a student enrolled in the Faculty of Engineering who demonstrates financial need.

**THE IODE JIM THOMSON ENGINEERING BURSARY**

Established in 2007 by the Imperial Order of the Daughters of the Empire (IODE)-Angela Bruce Chapter in memory of Jim Thomson.

**Requirements:** To be granted to a student enrolled in the Faculty of Engineering who demonstrates financial need. Preference will be given to students from Oakville.

**THE E. ANTHONY JAMES BURSARY**

Established in 2017 by E. Anthony James, B.Eng. Civil Engineering (Class of '73), in recognition of the excellent education that McMaster University provided him.

**Requirements:** To be granted to students in the Faculty of Engineering who demonstrate financial need.

**THE JNE CONSULTING AND ARCELORMITTAL DOFASCO BURSARY**

Established in 2019 by JNE Consulting in honour of the 25 Year Anniversary of the Engineering Partnership between JNE Consulting and ArcelorMittal Dofasco.

**Requirements:** To be granted to students enrolled in a Bachelor of Engineering program who demonstrate financial need.

**THE EMMANUEL AND GERTRUDE JAMES BURSARY**

Established in 2010 by Emmanuel James Jr. (Class of '73) in honour of his parents, Emmanuel Sr. and Gertrude James.

**Requirements:** To be granted to students who demonstrate financial need and are enrolled in the Department of Civil Engineering.

**THE SZE-WAI LEE MEMORIAL BURSARY**

Established in 1997 under the McMaster Student Opportunity Fund initiative in honour of Sze-Wai Lee.

**Requirements:** To be granted to a student enrolled in the Faculty of Engineering who demonstrates financial need and has shown involvement in support of the community, particularly multicultural events.

**THE LIBURDI ENGINEERING LIMITED BURSARY**

Established in 1997 by Liburdi Engineering Limited under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in an Engineering program who demonstrates financial need.

**THE ALBERT LOVAS MEMORIAL BURSARY**

Established in 2008 by Reta Lovas, Glenn Gray (McMaster Class of '73) and Susan Gray (Mohawk Class of '72).

**Requirements:** To be granted to students enrolled in a Bachelor of Technology program who demonstrate financial need. Preference to be given to students residing in the City of Hamilton.

**THE MCMASTER ENGINEERING SOCIETY BURSARY**

Established in 1999 by the McMaster Engineering Society.

**Requirements:** To be granted to a student in the Faculty of Engineering who demonstrates financial need.

**THE MERITOR AUTOMOTIVE INC. BURSARY**

Established in 1999 by Meritor Automotive Inc. under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in a Mechanical Engineering program who demonstrates financial need.

**THE ANN MINER MEMORIAL BURSARY**

Established in 2005 in memory of Ann Miner by her brother Jim Sweetman (Class of '77) and his wife Sheila.

**Requirements:** To be granted to students enrolled in a program in Chemical Engineering in the Faculty of Engineering who demonstrate financial need.

**THE ROBERT JOHN MORRIS BURSARIES**

Established in 1996 by family, friends and colleagues of Robert John Morris.

**Requirements:** A variable number of bursaries to be granted to students who demonstrate financial need and are enrolled in the Faculty of Engineering. Preference will be given to in-course recipients and/or entrance level recipients of The Robert John Morris Awards in the year they receive the award.

**THE ARCHIE MOUGHALIAN BURSARIES**

Established by bequest in 1998.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Faculty of Engineering who demonstrate financial need.

**THE NCR (WATERLOO) BURSARY**

Established in 1998 by NCR (Waterloo) under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in an Engineering and Management program who demonstrates financial need.

**THE ORLICK INDUSTRIES LIMITED BURSARIES**

Established in 1997 by Orlick Industries in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries to be granted to students enrolled in a Mechanical Engineering program who demonstrate financial need.

**THE OTIS CANADA BURSARIES IN ENGINEERING AND MANAGEMENT**

Established in 1996 by OTIS Canada Inc., the world's largest elevator company with over 50,000 employees and more than 1,700 worldwide locations.

**Requirements:** A variable number of bursaries to be granted to students enrolled in Level 2 of a program in Engineering and Management who demonstrate financial need. Preference to be given to students who demonstrate a lively interest in the university and community through their involvement in extracurricular activities.

**THE PATRIOT FORGE INC. BURSARY**

Established in 1997 by Patriot Forge Inc. in support of McMaster students.

**Requirements:** To be granted to a student enrolled in the Faculty of Engineering who demonstrates financial need. Preference will be given to a student enrolled in Mechanical, Chemical or Materials Engineering.

**THE MARC ANDRE ADRIEN PINEAULT BURSARY**

Established in 1995 by family and friends in memory of Marc Pineault and augmented in 1996 in conjunction with the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in a program in Engineering who demonstrates financial need. Preference will be given to a student who is involved in one of the following University activities or issues: the McMaster Choir, varsity wrestling, karate club, the environment or social justice.

**THE EVELYN QUIRT MEMORIAL BURSARY**

Established in 2016 by Jennifer Chapin (Class of 2003).

**Requirements:** To be awarded to a student enrolled in the Faculty of Engineering who demonstrates financial need. Preference to be given to a female student.

**THE LEO W. SETO BURSARY**

Established in 2003 by Leo W. Seto, B.Eng.Mgt. (Class of '87) and M.Eng. (Class of '90) under the McMaster Student Opportunity Fund II initiative.

**Requirements:** To be granted to a student in the Faculty of Engineering who demonstrates financial need.

**THE LESLIE W. AND ELIZABETH SHEMILT BURSARY**

Established in 1997 under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student who demonstrates financial need and is enrolled in an Engineering program.

**THE SHOUKRI ENGINEERING AND SOCIETY BURSARY**

Established by Dr. Mamdouh Shoukri, M.Eng. (Class of '74), Ph.D. (Class of '77), alumnus and former Dean of the Faculty of Engineering at McMaster University.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Mechanical Engineering and Society Program who demonstrate financial need.

**THE FRANK STERN/STERN LABORATORIES BURSARY**

Established in 2005 in memory of Frank Stern, Chairman and CEO of Stern Laboratories Inc.

**Requirements:** To be granted to students enrolled in a program in Mechanical Engineering who demonstrate financial need.

**THE TURKSTRA LUMBER BURSARY**

Established in 1996 by the Turkstra Lumber Company Limited.

**Requirements:** A variable number of bursaries to be granted to students enrolled in an Engineering and Society program who demonstrate financial need. Preference will be given to students who attain a Fall-Winter Average of at least 7.0 at the most recent review.

**THE CAROLE J. WILSON BURSARY**

Established in 2018 by Carole J. Wilson, B.Eng.Mgt. (Class of '84) and MBA (Class of '92) to inspire women to pursue an education in engineering and achieve their full potential.

**Requirements:** To be granted to students enrolled in the Faculty of Engineering who demonstrate financial need and are Canadian citizens. Preference given to female students who are enrolled in underrepresented programs.

**THE ZEUNER FAMILY BURSARY**

Established in 2018 by Alf Zeuner, B.Eng. (Class of '80) and M.Eng. Engineering Physics (Class of '84) in honour of the Zeuner Family.

**Requirements:** To be awarded to a student entering a full-time program in the Faculty of Engineering who demonstrates financial need. Preference is to be given to a student who permanently resides in Hamilton. This award is renewable for three years at the same value, provided the student remains enrolled full-time in the Faculty of Engineering.

**Open to the Faculty of Health Sciences****THE ANGELA DALZIEL AXELSON BURSARY IN NURSING**

Established in 2006 by Angela (Bonnie) Dalziel Axelson, B.Sc.N. (Class of '62) to mark the 45th anniversary of her graduation.

**Requirements:** To be awarded to a student enrolled in the Nursing program who demonstrates financial need.

**THE BACHELOR OF HEALTH SCIENCES (HONOURS) BURSARY**

Established in 2004 by the Bachelor of Health Sciences (Honours) Program in the Faculty of Health Sciences through the generosity of its alumni and friends under the McMaster Student Opportunity Fund II initiative.

**Requirements:** To be granted to a student in the Bachelor of Health Sciences (Honours) program who demonstrates financial need.

**THE MARY BRIDGMAN MEMORIAL NURSING BURSARY**

Established in 2011 by Donald Honey in memory of his wife, Mary Bridgman, B.Sc.N. (Class of '60) to recognize her lifelong commitment to educating students in the Nursing profession.

**Requirements:** To be granted to a student in the School of Nursing who demonstrates financial need.

**THE LOIS AILEEN MENZIES BROWN BURSARY**

Established to honour Lois Aileen Menzies Brown, mother and wife, in recognition of the health care provided to her family in association with members of the McMaster Health Sciences team.

**Requirements:** To be granted to students enrolled in the Faculty of Health Sciences who demonstrate financial need.

**THE ED BUFFETT BURSARY**

Established in 1997 under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in a program in Health Sciences who demonstrate financial need. Preference will be given to students who have demonstrated leadership in their school and community.

**THE CIBC NURSING BURSARIES**

Established in 2009 by CIBC in support of its commitment to breast cancer care.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the School of Nursing who demonstrate financial need. Preference will be given to students with a specific interest in breast cancer through oncology placements and/or community involvement.

**THE COMMUNITY NURSING REGISTRY - HAMILTON BURSARIES**

Established in 2000 by the Community Nursing Registry - Hamilton in support of students pursuing a professional career in nursing.

**Requirements:** A variable number of bursaries to be granted to students enrolled in Level 2 in the School of Nursing in the Faculty of Health Sciences who demonstrate financial need. Preference will be given to students who demonstrate volunteer service in the area of health care.

**THE STRUMMER CYPHER POND MEMORIAL BURSARY IN MIDWIFERY**

Established in 2005 in memory of Strummer Cypher Pond by her parents, family, and friends, in recognition of the tremendous support and care provided to them by their midwives.

**Requirements:** To be granted to a student enrolled in the final clinical year of the Midwifery Education Program who demonstrates financial need to help defray the cost of tuition.

**THE JEAN, MARTHA AND LAURIE DOUCET MEMORIAL BURSARIES**

Established in 1998 by the family in memory of Jean, Martha and Laurie Doucet for their years of service and commitment to the nursing profession.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the School of Nursing at both the undergraduate and graduate level and who demonstrate financial need. Preference will be given to students from the Regional Municipality of Niagara.

**THE ELEANOR ENKIN MIDWIFERY BURSARY**

Established in 2004 by Dr. Murray Enkin in support of Midwifery students.

**Requirements:** To be granted to Midwifery students who have completed at least Level 1 with notable academic standing and demonstrate financial need.

**THE ALLAN FANG AND ALANNA JIN BURSARY FOR NEW CANADIANS**

Established in 2014 by Allan Fang, MBA (Class of '03) and Alanna Jin, B.Sc. (Class of '04) to express gratitude for their time at McMaster as new Canadians.

**Requirements:** To be awarded to a student in Level 2 or above in the Faculty of Health Sciences who demonstrates financial need and has attained a minimum Cumulative Average of 10.0. Preference will be given to students who have obtained Canadian citizenship within the past 15 years.

**THE MARGO AND FRASER FELL BURSARIES**

Established in 1999 by Margot (Class of '52) and Fraser Fell (Class of '49).

**Requirements:** A variable number of bursaries to be granted to students enrolled in the School of Nursing in the Faculty of Health Sciences who demonstrate financial need.

**THE JACK AND THELMA HEATH MEMORIAL BURSARIES**

Established in 1985 by Norton Canada Inc. in memory of Jack and Thelma Heath, former employees of the Company, who were tragically killed in a boating accident.

**Requirements:** The fund provides up to four awards to assist students, with demonstrated financial need, in Level 3 or 4 of the B.Sc.N. program (basic and/or post-diploma stream).

**THE FACULTY OF HEALTH SCIENCES BURSARIES**

Established in 2019 by McMaster University.

**Requirements:** To be granted to students enrolled in the Faculty of Health Sciences who demonstrate financial need.

**THE HAZEL MAY HINKS BURSARIES**

Established in 1996 by bequest of Hazel May Hinks of Burlington, Ontario.

**Requirements:** A variable number of bursaries to be granted to students enrolled in a program in Nursing who demonstrate financial need. Preference will be given to students who have graduated from a high school located in the City of Burlington.

**THE IDA MARIETTA HOUSTON BURSARY**

Established in 2007 by Ida Marietta Houston. To be granted to a student who has completed Level 2 in the School of Nursing and demonstrates financial need.

**Requirements:** Preference will be given to a student with a particular interest in palliative or end-of-life care.

**THE IODE JEAN HENDERSON NURSING BURSARY**

Established in 2007 by the Imperial Order of the Daughters of the Empire (IODE)-Angela Bruce Chapter in memory of Jean Henderson.

**Requirements:** To be granted to a student enrolled in the B.Sc.N. program who demonstrates financial need. Preference will be given to a student from Oakville.

**THE HENRY AND FRANCES JEKEL BURSARY**

Established in 2012 by Henry and Frances Jekel to provide financial assistance to students wishing to pursue a career in nursing.

**Requirements:** To be granted to students enrolled in the School of Nursing who demonstrate financial need.

**THE KENTS FAMILY BURSARY**

Established in 1997 by the Kents Family under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student who demonstrates financial need and is enrolled in the School of Medicine, the School of Nursing or the School of Rehabilitation Science.

**THE PHILLIP GORDON KETTLE BURSARY**

Established in 1996 in memory of Phillip Gordon Kettle.

**Requirements:** To be granted to a student enrolled in a Nursing program who demonstrates financial need. Preference to be given to a student studying herbal medicine as alternative therapies.

**THE LOUCKS FAMILY BACHELOR OF HEALTH SCIENCES BURSARY**

Established in 2000 by Mr. Ron Loucks and family in recognition of their support of Bachelor of Health Sciences students.

**Requirements:** To be granted to Bachelor of Health Sciences students who have completed at least Level 1 with notable academic standing and demonstrated financial need

**THE HARRISON MAYNARD MEMORIAL BURSARY IN MIDWIFERY**

Established in 2005 in memory of Harrison Maynard by his family and friends.

**Requirements:** To be granted to students enrolled in Level 2 or above of the Midwifery Education Program who demonstrate financial need.

**THE JANET MCKNIGHT MEMORIAL BURSARIES**

Established in 1996 in memory of Janet McKnight by the Pember Family.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the final level of the Nursing program who demonstrate financial need.

**THE MCMASTER NURSING ALUMNI CLASS BURSARY FUND**

A variable number of bursaries to be granted.

**Requirements:** To be granted to students enrolled in a Nursing program and who demonstrate financial need.

**THE MCMASTER WOMEN'S CLUB BURSARY**

Established in 1983 by the McMaster Women's Club and augmented in 1996 in conjunction with the McMaster Student Opportunity Fund initiative.

**Requirements:** To assist a student beyond Level 1 in the University's Bachelor of Science in Nursing program.

**THE KATHERINE M. COLLYER MCNALLY BURSARY**

Established in 1997 by her children in honour of Katherine M. Collyer McNally under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student who demonstrates financial need and is enrolled in Level 2 or above in the Midwifery, Physiotherapy or Nursing program.

**THE MDS INC. BURSARY**

Established in 1997 by MDS Inc., under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in the Faculty of Health Sciences who demonstrates financial need.

**THE MIDWIFERY BURSARY**

Established in 1999 by the Midwifery Education Program to support Midwifery students.

**Requirements:** To be granted to Midwifery students with notable academic standing and demonstrates financial need.

**THE RUTH MURRAY MEMORIAL BACHELOR OF HEALTH SCIENCES BURSARY**

Established in 1999 by Mr. Alex Murray and family in memory of Ruth Murray and in recognition of their support to Bachelor of Health Sciences students.

**Requirements:** To be granted to Bachelor of Health Sciences students

who have completed at least Level 1 with notable academic standing and demonstrated financial need.

#### **THE PERC AND JOAN NORMAN NURSING BURSARY**

Established in 2005 by Perc and Joan Norman in support of students pursuing a career in healthcare.

**Requirements:** To be granted to students who demonstrate financial need and are enrolled in the Nursing program.

#### **THE NURSING CLASS OF '69 BURSARY**

Established in 2009 by the Nursing Class of 1969 in honour of their 40th anniversary.

**Requirements:** To be granted to students enrolled in Level 3 or 4 in the School of Nursing who demonstrate financial need.

#### **THE NURSING CLASS OF '86 BURSARY FUND**

Established in 2006 by the Nursing Class of 1986 in honour of their 20th reunion.

**Requirements:** To be granted to students enrolled in the School of Nursing who demonstrate financial need.

#### **THE NURSING PROGRAM BURSARY**

Established in 1997 in recognition of the contribution of McMaster students under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in the Nursing program who demonstrate financial need. Preference will be given to the recipient of the Nursing Program Award.

#### **THE OAKRUN FARM BAKERY BURSARY**

Established in 2004 by Oakrun Farm Bakery, under the McMaster Student Opportunity Trust Fund II initiative.

**Requirements:** To be granted to students enrolled in the Faculty of Health Sciences who demonstrate financial need. Preference to be given to a student in the Hamilton area.

#### **THE LORI OSTRANDER MEMORIAL BURSARY**

Established in 2017 by the bequest of Dr. Albert Ostrander in memory of his late wife, Mrs. Lori Ostrander (nee Maude Lorene Hewitt), who completed her nursing training at Hamilton General Hospital in the 1940s.

**Requirements:** To be granted to students enrolled in the School of Nursing who demonstrate financial need.

#### **THE O'SHAUGHNESSY BURSARY**

Established in 1986 by the family and friends of the late Margaret O'Shaughnessy, RN.

**Requirements:** This bursary is to be used to alleviate financial need for students pursuing an education in Nursing (basic or post-diploma stream) in Level 2, 3, or 4.

#### **THE E.J. RANKIN BURSARY**

Established in 2016 from the Estate of Eleanor Jean Rankin (Class of '83).

**Requirements:** To be granted to full time undergraduate and graduate students enrolled in the School of Nursing who demonstrate financial need. Funding allocation to undergraduate and graduate students to be recommended by the Associate Dean, Nursing.

#### **THE WALLACE M. RANKIN BURSARY IN THE SCHOOL OF NURSING**

Established in 2006 by an anonymous donor.

**Requirements:** To be granted to students in the School of Nursing who demonstrate financial need.

#### **THE ANITA ROBERTSON BURSARY**

Established in 2019 from the Estates of Anita Robertson, B.Sc.N. (Class of '89) and Joseph Robertson.

**Requirements:** To be granted to students enrolled in the School of Nursing who demonstrate financial need.

#### **THE JOAN ROYLE NURSING BURSARY**

Established in 2019 by Joan Royle (Class of '58), former School of Nursing faculty member, in honour of her time at McMaster.

**Requirements:** To be granted to an undergraduate student who has completed Level 2 or above of a Nursing program and who demonstrates financial need.

#### **THE SCHOOL OF NURSING BURSARY**

Established in 2004 by the School of Nursing through the generosity of its alumni and friends under the McMaster Student Opportunity Fund II initiative.

**Requirements:** To be granted to a student in the School of Nursing who demonstrates financial need.

#### **THE SOROPTIMIST INTERNATIONAL OF HAMILTON - BURLINGTON MIDWIFERY BURSARY**

Established in 2015 by S.I. of Hamilton-Burlington who are committed to improving the lives of women and girls in our community and around the world.

**Requirements:** To be granted to students in the Midwifery program who demonstrate financial need. Preference will be given to a female student.

#### **THE AUDREY AND BOB WAUGH BURSARY**

Established in 1997 by Audrey and Bob Waugh under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in the Faculty of Health Sciences who demonstrates financial need. Preference to be given to a student involved in Gerontological research.

#### **THE DR. JANET WEISZ BURSARY**

Established in 2004 by Dr. Janet Weisz, under the McMaster Student Opportunity Trust Fund II initiative.

**Requirements:** To be granted to students enrolled in the Faculty of Health Sciences who demonstrate financial need.

### **Open to the Faculty of Humanities**

#### **THE JENNIFER AND THEODORE ARCAND ENGLISH BURSARY**

Established in 1997 by Theodore Arcand (Class of '57), in memory of his wife, Jennifer (Class of '57), whose interest was Baroque English poetry.

**Requirements:** To be granted to an undergraduate or graduate student enrolled in a program in English, who demonstrates financial need.

#### **THE ESTELLE AND CHUB BAXTER BURSARY**

Established in 2003 by Estelle and Chub Baxter under the McMaster Student Opportunity Fund II initiative.

**Requirements:** To be granted to a student in the Faculty of Humanities who demonstrates financial need. Preference will be given to a student enrolled in an Art History program in the School of the Arts.

#### **THE MARJORIE E. (WATSON) BEATTIE BURSARY**

Established in 1997 by William W. Beattie (Class of '68) in honour of his mother, Marjorie E. (Watson) Beattie (Class of '33), under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in any program who demonstrates financial need. Preference to be given to students enrolled in the Faculty of Humanities.

#### **THE FRED AND NORMA BIDWELL BURSARY**

Established in 2007 by Norma Bidwell, B.A. (Class of '38).

**Requirements:** To be granted to a student enrolled in Level 3 or 4 in the Faculty of Humanities who demonstrates financial need. Preference will be given to a student in the Department of Communication Studies and Multimedia.

#### **THE SYLVIA BOWERBANK MEMORIAL BURSARY**

Established in 2005 by family and friends in memory of Dr. Sylvia Bowerbank.

**Requirements:** To be granted to female students enrolled in the Department of English and Cultural Studies who demonstrate financial need. Preference will be given to female students who reside in a native community in Canada.

#### **THE WILLIAM DAVID BROADHEAD MEMORIAL BURSARY**

Established in 2003 by family in memory of William David Broadhead (Class of '39) under the McMaster Student Opportunity Fund II initiative.

**Requirements:** To be granted to a student in the Faculty of Humanities who demonstrates financial need. Preference will be given to a student enrolled in a program in the Department of English and Cultural Studies.



**THE BARBARA BROWN BURSARY**

Established in 2019 by Barbara Brown, B.A. (Class of '66) in gratitude for the bursary she received as a student and in the spirit of extending that gift to others.

**Requirements:** To be granted to students enrolled in the Faculty of Humanities who demonstrate financial need.

**THE MARIE IRELAND BUSH MEMORIAL BURSARIES**

Established in 1996 by Helen Ireland Caldwell in memory of Marie Ireland Bush, (Class of '48) and dedicated teacher, who instilled in her students a love of learning.

**Requirements:** A variable number of bursaries to be granted to students enrolled in a program in English who demonstrate financial need.

**THE HELEN CALDWELL BURSARY**

Established in 2000 by Helen Caldwell (Class of '42, Faculty of Humanities.)

**Requirements:** To be granted to a student enrolled in a Women's Studies course who demonstrates financial need.

**THE NORMAN NATHANIEL CASKEY BURSARIES**

Established in 1996 by June Caskey of Hamilton in memory of her father.

**Requirements:** A variable number of bursaries to be granted to students enrolled in a program in Music who demonstrate financial need.

**THE DAVID COOK CANADIAN LITERATURE BURSARY**

Established in 2016 in honour of David Cook who was a devotee of Canadian Literature and long-time librarian at McMaster University.

**Requirements:** To be awarded to students enrolled in the Department of English and Cultural Studies who demonstrate financial need. Preference will be given to students with an interest in English Literature.

**THE GERALDINE LORETTA COSFORD BURSARIES**

Established in 1997 by Geraldine Loretta Cosford under the McMaster Student Opportunity Fund initiative.

**Requirements:** A variable number to be granted to students enrolled in the Faculty of Humanities who demonstrate financial need. Preference to be given to students who have completed Level 1.

**THE SUZANNE E. CRAVEN BURSARY**

Established in 1997 by Mrs. Suzanne Craven in support of McMaster students.

**Requirements:** To be granted to students enrolled in the Faculty of Humanities who demonstrate financial need.

**THE EARL FRANKLIN DAMUDE BURSARY**

Established in 1993 by Dr. Christa Saas, in memory of Earl Franklin Damude (Class of '36.)

**Requirements:** To be granted to a student who demonstrates financial need and has completed Level 2 of a program in English or History.

**THE DARVILLE BURSARY**

Established in 2004 by Jack S. Darville (Class of '68) under the McMaster Student Opportunity Fund II initiative.

**Requirements:** To be granted to a student in the Faculty of Humanities who demonstrates financial need. Preference will be given to a student enrolled in a music or art program in the School of the Arts.

**THE MARGERY E. DIXON MEMORIAL BURSARY**

Established in 2003 in loving memory of Margery E. Dixon (Class of '35) by Geraldine Phenix under the McMaster Student Opportunity Fund II initiative.

**Requirements:** A variable number of bursaries to be granted to students in the Faculty of Humanities who demonstrate financial need. Preference will be given to students enrolled in a program in the Department of English and Cultural Studies.

**THE ALAN AND CLAIRE EATOCK BURSARIES**

Established in 1999 by Alan Eatock (Class of '47) and Claire Eatock under the McMaster Student Opportunity Fund initiative.

**Requirements:** A variable number of bursaries to be granted to students in the Faculty of Humanities who demonstrate financial need.

**THE ENERSYSTEM INSULATION LTD. BURSARY**

Established in 1997 by EnerSystem Insulation Ltd. in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to a student enrolled in a program in French who demonstrates financial need.

**THE FESTITALIA CORPORATION BURSARY**

Established in 1997 by the Festitalia Corporation under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted, in alternating years, to a student who demonstrates financial need and is enrolled in the Department of Linguistics and Languages, specializing in Italian, or is enrolled in the School of the Arts.

**THE JIM & MARGARET GIBSON ENGLISH & CULTURAL STUDIES BURSARY**

Established in 2020 by the Estate of Margaret Janet Wilson Gibson B.A. (Class of '89), in memory of Jim and Margaret Gibson.

**Requirements:** To be granted to students enrolled in Level 3 or above of an English and Cultural Studies program in the Faculty of Humanities who demonstrate financial need.

**THE JIM & MARGARET GIBSON MEMORIAL BURSARY**

Established in 2020 by the Estate of Margaret Janet Wilson Gibson B.A. (Class of '89), in memory of Jim and Margaret Gibson.

**Requirements:** To be granted to students enrolled in Level 3 or above in the Faculty of Humanities who demonstrate financial need. Preference will be given to students with an interest in German Studies or those enrolled in German courses.

**THE MICHAEL GILLESPIE BURSARY**

Established in 2010 by Michael Gillespie.

**Requirements:** To be awarded to an undergraduate student enrolled in the Faculty of Humanities who demonstrates financial need.

**THE GUENTHER FAMILY BURSARY**

Established in 2012 by Jack and June Guenther (Class of 1949) in honour of their family.

**Requirements:** A variable number of bursaries to be awarded to students enrolled in the Faculty of Humanities who demonstrate financial need.

**THE BILL AND HELEN HAIGHT BURSARY**

Established in 2004 by Helen (Class of '49) and Bill Haight under the McMaster Student Opportunity Fund II initiative.

**Requirements:** To be granted to students enrolled in the Faculty of Humanities who demonstrate financial need. Preference to be given to students in Level 2 or 3 of a Music program.

**THE HALL FAMILY BURSARY**

Established in 2004 by Frederick A. Hall under the McMaster Student Opportunity Fund II initiative.

**Requirements:** To be granted to a student enrolled in the Faculty of Humanities who demonstrates financial need.

**THE HAMILTON COMMUNITY FOUNDATION MUSIC BURSARY**

Established in 2013 by the Hamilton Community Foundation with bequests from Irene Norris and Merle Williams.

**Requirements:** To be granted to students enrolled in a Music program who demonstrate financial need.

**THE HAMILTON PERFORMING ARTS BURSARY**

Established in 1997 by the Hamilton Performing Arts Foundation Inc. under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students enrolled in Level 2 or above of a program in the School of the Arts, who has shown service to the community-at-large and who demonstrates financial need. Preference to be given to students who are currently on the Deans' Honour list.

**THE HARWOOD BURSARIES**

Established in 1990 by bequest of Dr. William Harwood of Hamilton in memory of his beloved wife Grace and devoted daughter Willa Ruth Laurie (Class of '50).

**Requirements:** A variable number of bursaries to be granted to students studying Music who demonstrate financial need.

**Value:** Not to exceed \$1,000

#### **THE ORRA ROSE HENAN BURSARY**

Established in 2014 through the bequest of Orra Rose Henan (Class of '53).

**Requirements:** To be granted to students enrolled in the Faculty of Humanities who demonstrate financial need.

#### **THE GENERAL HUMANITIES BURSARY FUND**

The General Humanities Bursary Fund, established in 1997 by Humanities alumni.

**Requirements:** Will be granted to undergraduate students at McMaster enrolled in any Humanities program who demonstrate financial need.

#### **THE JULIA HURTIG BURSARY**

Established by family and friends of the late Julia Hurtig in 1985.

**Requirements:** This bursary will be granted to a student entering Level 2 of the Faculty of Humanities, in good standing, who has made a special contribution to the McMaster community through involvement in University affairs. Preference will be given to a female student.

#### **THE J. BEVERLY KRUGEL BURSARIES IN GERMAN STUDIES**

Established in 2010 by Mrs. J. Beverly Krugel, B.A. (Class of '53).

**Requirements:** To be granted to students in the Faculty of Humanities who demonstrate financial need. Preference to be given to students who are enrolled in one or more German courses within the Department of Linguistics and Languages.

#### **THE HAROLD J.L. KRUGEL BURSARY**

Established in 2000 by Mrs. J. Beverly Krugel (Class of '53) in honour of her husband, Harold J.L. Krugel.

**Requirements:** To be granted to a student enrolled in the Faculty of Humanities who demonstrates financial need. Preference will be given to a student in the Department of Linguistics and Languages.

#### **THE LAHREN LAMB MEMORIAL BURSARY**

Established in 2007 by family and friends in loving memory of Lahren Lamb, B.A. (Class of '06), a gifted young artist and graduate of the Honours Art and Multimedia program who did not live to fulfill her potential. She was a truly loved and admired young woman.

**Requirements:** To be granted to a Level 3 student enrolled in the School of the Arts who demonstrates financial need.

#### **THE JAMES R. A. LANGS BURSARIES IN THE ARTS**

Established by family in memory of James R. A. Langs (Class of '37), a Hamilton business leader and great supporter of the Hamilton Community.

**Requirements:** A variable number of bursaries to be granted to students enrolled in a program in Art, Theatre & Film Studies or Music who demonstrate financial need.

#### **THE DR. ALBERT MARTIN BURSARIES**

Established in 1996 by Joyce Beverly Krugel, a former student of Dr. Albert Martin who was a Professor of German in the Faculty of Arts and Science from 1939 to 1961.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Faculty of Humanities who demonstrate financial need. Preference will be given to students enrolled in the Department of Linguistics and Languages.

#### **THE J. B. MCARTHUR BURSARY**

Established in 2005 by Joseph B. McArthur, son of J. B. McArthur, a 1905 graduate of McMaster University, who conscientiously served his alma mater for forty two years as President of the McMaster Alumni Association (1911), member of McMaster's Senate (1911-1931) and member of McMaster's Board of Governors (1931-1953).

**Requirements:** To be granted to students enrolled in the Faculty of Humanities who demonstrate financial need.

#### **THE MCMASTER HISPANIC SOCIETY BURSARY**

Established in 1999 by the McMaster Hispanic Society under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in Spanish courses (formerly Hispanic Studies) or a Linguistics and Languages program who demonstrates financial need. Preference will be given to students who demonstrate a lively interest in the University and community through their involvement in extracurricular activities.

#### **THE THERESE E. MOORE BURSARY**

Established in 2003 by David M. Moore (Class of '00) in honour of his mother, Therese E. Moore.

**Requirements:** To be granted to a student enrolled in a program in History who demonstrates financial need.

#### **THE PATTERSON-WILSON BURSARIES**

Established in 2003 by the bequest of Laurence Cholwill Patterson under the McMaster Student Opportunity Fund II initiative.

**Requirements:** To be granted to students in the Faculty of Humanities who demonstrate financial need.

#### **THE DR. HOLLAND AND MRS. ELVIRA PETERSON BURSARY**

Established in 1997 by Dr. Holland and Mrs. Elvira Peterson under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to students demonstrating financial need who are enrolled in Level 2 or higher in the Faculty of Humanities. Preference to those enrolled in a program in the Department of Linguistics and Languages.

#### **THE ELVIRA AND HOLLAND PETERSON BURSARY**

Established in 2000 by Mrs. Elvira Peterson (Class of '69) and Dr. Holland Peterson.

**Requirements:** To be granted to a Level 3 student enrolled in the Honours Art History or Combined Honours Art History Program who demonstrates financial need.

#### **THE LILLIAN PLUMB BURSARY**

Established in 1998 by David Plumb in honour of his mother, Lillian Plumb.

**Requirements:** To be granted to a student enrolled in a program in the Department of English and Cultural Studies and who demonstrates financial need.

#### **THE MARY ROMEO BURSARY IN ART HISTORY**

Established in 1997 by Mary Romeo, a lifelong patron of the arts.

**Requirements:** To be granted to undergraduate and graduate students who have demonstrated financial need and are enrolled in a program in Art History.

#### **THE SAMMON MUNROE BURSARY**

Established in 2003 by Robert Munroe (Class of '72) and Sheila Sammon under the McMaster Student Opportunity Fund II initiative.

**Requirements:** To be granted to a student in the Faculty of Humanities who demonstrates financial need. Preference will be given to a student enrolled in a program in History.

#### **THE PHILIP SCHEIDING BURSARY**

Established in 2008 by Philip Scheiding (Class of '71).

**Requirements:** To be granted to students in the Faculty of Humanities enrolled in a program in History who demonstrate financial need. Preference will be given to a student from the Hamilton area.

#### **THE SMYRNIW BURSARY**

Established in 1996 by Dr. and Mrs. W. Smyrniw.

**Requirements:** To be granted to students who are Canadian citizens or permanent residents who demonstrate financial need and are in good academic standing in any undergraduate program of the Faculty of Humanities above Level 1.

#### **THE SPALLACCI GROUP BURSARY**

Established in 2009 by The Spallacci Group.

**Requirements:** To be awarded to a student enrolled in the Department of Linguistics and Languages who demonstrates financial need. Preference will be granted to a student specializing in Italian studies.

**THE SALVATORE SPITALE MEMORIAL BURSARY**

Established in 1984 and augmented in 1997 by the Spitale family in conjunction with the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student in the Department of Linguistics and Languages, Level 2 or above, who demonstrates financial need and has completed a minimum of nine units of Italian courses. Preference to be given to a student who has demonstrated active involvement in community life.

**THE LILLIAN AND HERMAN STEEVES BURSARY IN HUMANITIES**

Established in 2007 by Glen Steeves, B.A. (Class of '80) and Lorne Steeves in honour of their mother and father.

**Requirements:** To be granted to students in the Faculty of Humanities who demonstrate financial need. Preference will be given to students who have demonstrated leadership in their school and community.

**THE DONALD W. THOMAS BURSARIES**

Established in 1996 by Donald W. Thomas of Dundas, Ontario.

**Requirements:** A variable number of bursaries to be granted to students in the Faculty of Humanities who demonstrate financial need.

**THE DONALD WILLIAM THOMAS MEMORIAL BURSARY**

Established in 2005 by Jack Craig in memory of Donald William Thomas, B.A. (Class of '70).

**Requirements:** To be granted to students enrolled in the Faculty of Humanities who demonstrate financial need. Preference will be given to students enrolled in a program in the School of the Arts.

**THE ROBERTA GRAY TROXEL BURSARY**

Established in 1997 by Roberta Gray Troxel under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in the Faculty of Humanities who demonstrates financial need. Preference to be given to a female undergraduate student enrolled in a History program.

**THE TRESSILA TRUBY MEMORIAL BURSARY**

Established in 1992 from the bequest of Tressila Truby (M.C.S.P.) and Past-President of the Zonta Club of Hamilton II.

**Requirements:** To be granted to a female student who has completed Level 2 of a program in Music.

**THE JOHN AND JOAN VAN DUZER BURSARY**

Established in 2003 by John (Class of '50) and Joan Van Duzer under the McMaster Student Opportunity Fund II initiative.

**Requirements:** To be granted to a student in the Faculty of Humanities who demonstrates financial need.

**THE CATHERINE VASAS-BROWN BURSARIES**

Established in 1996 by J. Allan Brown in honour of Catherine Vasas-Brown.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Faculty of Humanities who demonstrate financial need.

**THE CLIFFORD JOHNSTON WEBSTER MEMORIAL BURSARIES**

Established in 1993 by Viola Webster in memory of her brother Clifford Johnston Webster (Class of '41).

**Requirements:** To assist students who demonstrate financial need enrolled in the Honours English program who are Canadian citizens or permanent residents and who have graduated from a public secondary school in Ontario. Applicants should have a record of academic performance that has normally been at the upper second-class level or higher. If sufficient applicants are not eligible in the Honours English program, the bursaries are available, under similar conditions, to students in the Honours French program.

**THE MARY DRYDEN WILLIS BURSARY**

Established in 1997, in memory of Mary Willis (Class of '26), by her daughter, Mary Lou Dingle and son-in-law Allan (both Class of '58), under the McMaster Student Opportunity Trust Fund initiative.

**Requirements:** To be granted to students enrolled in Level 2 or higher in the Faculty of Humanities who have attained a minimum GPA of 7.0 and who demonstrate financial need.

**THE KATHRYN A. WILSON BURSARIES**

Established in 2000 by bequest of Kathryn A. Wilson.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Faculty of Humanities who demonstrate financial need.

**THE SHEILA ZACK MEMORIAL BURSARY**

The Sheila Zack Memorial bursary established by the 45th Annual Bnai Brith Sports Celebrity Dinner.

**Requirements:** To be awarded to a student with financial need enrolled in a program in Theatre & Film Studies at McMaster University.

**Open to the Faculty of Science****THE G. RODGER ALLAN BURSARY**

Established in 2007 by M. Elizabeth Orr, B.A. (Class of '46) and her husband Robert Orr in memory of her brother G. Rodger Allan, B.A. (Class of '46).

**Requirements:** To be granted to a student enrolled in the Faculty of Science who demonstrates financial need.

**THE HELEN AND MORRIS BAUGHMAN BURSARY**

Established in 2005 by Marvin Ryder in honour of Helen and Morris Baughman.

**Requirements:** To be granted to students enrolled in the Faculty of Science who demonstrate financial need. Preference to be given to students in Level 3 or 4 of a Biology program.

**THE BEVERLY COLEMAN MEMORIAL BURSARY**

Established in 2009 by Dr. Douglas Coleman in loving memory of Mrs. Beverly Jean Coleman.

**Requirements:** To be granted to students enrolled in the Department of Biochemistry and Biomedical Sciences in the Faculty of Science who demonstrate financial need.

**THE DOUGLAS AND BEVERLY COLEMAN BURSARY**

Established in 2005 by Douglas and Beverly Coleman, both of Class of '54.

**Requirements:** To be granted to students enrolled in the Department of Biochemistry and Biomedical Sciences in the Faculty of Science who demonstrate financial need.

**THE STEWART ANDERSON DINNING BURSARY**

Established in 2008 by the Stewart Anderson Dinning Estate.

**Requirements:** To be granted to students enrolled in an Honours Chemistry program who demonstrate financial need.

**THE FACULTY OF SCIENCE BURSARIES**

Established in 2019 by McMaster University.

**Requirements:** To be granted to students enrolled in the Faculty of Science who demonstrate financial need.

**THE DAVID FUNG SCIENCE BURSARY**

Established in 2007 by David Fung, B.Sc. (Class of '75), M.B.A. (Class of '77) in support of his belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to a student enrolled in the Faculty of Science who demonstrates financial need.

**THE JAMES EDWARD GRADER MEMORIAL BURSARY**

Established in 1964 by his sister.

**Requirements:** To be granted to a student enrolled in the Faculty of Science specializing in Earth Sciences who demonstrates financial need.

**THE ASMAHAN HAFEZ MEMORIAL BURSARY**

Established in 1997 by her family in memory of Asmahan Hafez.

**Requirements:** To be granted to a student enrolled in Level 1 of the Faculty of Science who demonstrates financial need.

**THE JAMES WILSON HOUSTON & JACKLYN HOUSTON BURSARY**

Established in 2017, in honour of McMaster alumni James Wilson Houston & Jacklyn Houston.

**Requirements:** To be awarded to a student who demonstrates financial need and is registered in a Science Program.

**THE DONALD W. HURD BURSARY**

Established in 2006 by Alice Hurd in honour of her husband Donald W. Hurd, M.Sc. (Class of '50).

**Requirements:** To be granted to students enrolled in the Earth and Environmental Sciences program in the Faculty of Science who demonstrate financial need.

**THE IRMA BURSARY**

Established in 2019 by anonymous donors hoping to make a brighter world for student refugees forced to leave their country due to political or social upheaval or students with permanent resident status.

**Requirements:** To be granted to full-time undergraduate students enrolled in the Faculty of Science who have permanent resident status or a recognized claim of refugee protection from the Immigration Refugee Board of Canada and who demonstrate financial need. Preference will be given to refugee students. The bursary is tenable for up to four years, with special consideration for students undertaking a five-year undergraduate degree program. In order to remain eligible for funding, recipients must remain full-time, with the intention of completing their degree within the normal program duration, be allowed to continue at McMaster University, and continue to demonstrate financial need.

**THE JENSEN BURSARY**

Established in 1997 by Dr. Doris E.N. Jensen in conjunction with the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student in the Faculty of Science, Level 2 or higher, who demonstrates financial need. Preference to be given to a student enrolled in a co-op program in the Faculty of Science.

**THE NORMAN D. LANE BURSARIES**

Established in 1996 by family and friends in honour of Dr. Norman D. Lane, distinguished geometer and member of the Department of Mathematics and Statistics from 1952 to 1987 and now Professor Emeritus.

**Requirements:** A variable number of bursaries to be granted to students enrolled in a program in Mathematics who demonstrate financial need.

**THE W. BRUCE MACLEAN BURSARY**

Established in 2018 by the estate of W. Bruce MacLean, B.A. (Class of '33), M.A. (Class of '47) in honour of Professors Henry Franklin Dawes and Dr. A. Boyd McLay, B.A. (Class of '22).

**Requirements:** To be granted to students enrolled in a Physics program who demonstrate financial need.

**THE JOHN AND HELEN MAXWELL BURSARIES**

Established in 1996 by John and Helen Maxwell of Ottawa.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Faculty of Science who demonstrate financial need. Preference to be given to students enrolled in a program in Earth Sciences or Chemistry.

**THE DR. FREDA MAMKIROR OMASWA MEMORIAL BURSARY**

Established in 2016 by family, peers and friends in loving memory of Freda Mamkiror Omaswa (Class of 2004). Freda was a talented physician who loved international health, was confident and passionate about helping others, and built lasting friendships all over the world.

**Requirements:** To be awarded to a student who demonstrates financial need, and has completed at least Level 1 of the Life Sciences program.

**THE ROBERT MCNUTT MEMORIAL BURSARY**

Established in 2018 by family, friends and colleagues, in memory of Robert (Bob) McNutt, one of McMaster's most versatile and accomplished academic leaders and scientists.

**Requirements:** To be granted to students enrolled in Level 2 or above in the Faculty of Science who demonstrate financial need.

**THE MORT NELSON FAMILY BURSARY**

Established in 2018 by Mort Nelson (Classes of '62 & '72) and family in memory of Professor Evelyn Nelson to support students pursuing their academic and professional goals.

**Requirements:** To be granted to students enrolled in Level 2 or above of a Mathematics program who demonstrate financial need.

**THE BARBARA PARKE BURSARY**

Established in 2007 by Barbara Parke, B.Sc. (Class of '72).

**Requirements:** To be granted to a student who has completed Mathematics and Statistics I, demonstrates financial need and has attained a minimum Grade Point Average of 8.0.

**THE PHYSICAL EDUCATION CLASS OF '80 25TH ANNIVERSARY BURSARY**

Established by the Bachelor of Physical Education Class of '80 in honour of their 25th Anniversary.

**Requirements:** To be granted to students in Level 2 or above of a program in Kinesiology who demonstrate financial need.

**THE PITCHER-RATFORD BURSARIES**

Established in 2004 by Bruce Ratford (Class of '71) and Elda Ratford (Pitcher) (Class of '71) under the McMaster Student Opportunity Fund II initiative.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the School of Geography and Earth Sciences who demonstrate financial need. Preference will be given to students who have completed Level 3 of an Honours Geography program with a Grade Point Average of 8.0 at the most recent review.

**THE DR. JOHN POTTER BURSARY**

Established in 2019 by the family of Dr. John Potter, B.Sc. Honours (Class of '58) to honour his memory and life achievements.

**Requirements:** To be granted to students enrolled in a Physics or Mathematics program who demonstrate financial need.

**THE HARRY A. ROTHMANN BURSARY**

Established in 2005 by Harry A. Rothmann, B.Sc. (Class of '58).

**Requirements:** To be granted to students in the Faculty of Science enrolled in a program in Mathematics who demonstrate financial need.

**THE ERIC SCHLICHTING MEMORIAL BURSARY**

Established in 1966 by his family, classmates and friends.

**Requirements:** To assist a student in a program in the Faculty of Science who demonstrates financial need. Preference will be given to a student enrolled in Earth Sciences.

**THE SCIENCE ALUMNI BURSARY**

Established in 2004 by the Faculty of Science through the generosity of its alumni and friends under the McMaster Student Opportunity Fund II initiative.

**Requirements:** To be granted to a student in the Faculty of Science who demonstrates financial need. Preference to be given to a student who has attained a minimum Grade Point Average of 7.0 at the most recent review.

**THE DR. JOHN S. SCOTT (CLASS OF '53) MEMORIAL BURSARY**

Established in 2015 by Mrs. Barbara Scott (Class of '53) and family, in memory of Dr. John S. Scott (Class of '53) of Ottawa.

**Requirements:** To be awarded to students studying in the Faculty of Science, who demonstrate financial need.

**THE GEORGE SORGER BURSARY IN BIOLOGY**

Established by the friends of Dr. George Sorger.

**Requirements:** To be granted to a student in Level 4 of a Biology program who demonstrates financial need. Preference will be given to students who have attained a Grade Point Average of at least 9.0 at the most recent review and who are also involved in community service.

**THE BROOKE P. TOWNSEND BURSARY**

Established in 1996 by Brooke P. Townsend.

**Requirements:** To be granted to a student in any program who has demonstrated financial need. Preference to be given to a female student enrolled in the Faculty of Science.

**THE TURNER FAMILY BURSARY**

Established in 2005 by Mary Turner, B.Sc. (Class of '74) and Graham Turner, Ph.D. (Class of '76) in memory of Dr. Colin J.L. Lock, Professor of Chemistry and Pathology.

**Requirements:** To be granted to students enrolled in the Faculty of Science who demonstrate financial need.



**THE WALLER FAMILY BURSARY**

Established in 2014 by the Waller Family in memory of Thomas Edward and Norma Waller.

**Requirements:** To be awarded to students in a Biology program who demonstrate financial need.

**THE MARY AND HAROLD WATERMAN UNDERGRADUATE SCIENCE BURSARY**

Established in 2019 by Mary (Class of '48) and Dr. Harold Waterman (Class of '48 & '49).

**Requirements:** To be granted to undergraduate students enrolled in the Faculty of Science who demonstrate financial need.

**THE FRIDA AND JOACHIM WOLTER BURSARY**

Established in 1997 under the McMaster Student Opportunity Fund initiative by Claus Wolter (Class of '80) in honour of his parents, Frida and Joachim Wolter.

**Requirements:** To be granted to a student enrolled in the Kinesiology program who demonstrates financial need.

**THE JOHN YARWOOD MEMORIAL BURSARY**

Established in 1998 by family and friends in memory of Dr. A.J. Yarwood.

**Requirements:** To be granted to a Level 2 student enrolled in an Honours Chemistry program who demonstrates financial need.

**Open to the Faculty of Social Sciences****THE ADDISON FAMILY BURSARY**

Established in 2011 by Sharon Addison, B.A. (Class of '81) to encourage students in their pursuit of education.

**Requirements:** To be granted to students enrolled in the Faculty of Social Sciences who demonstrate financial need.

**THE ANTHROPOLOGY BURSARY**

Established in 1996 by faculty, alumni and other friends of the Department of Anthropology.

**Requirements:** To be granted to students who have completed Level 2 of a program in Anthropology and who demonstrate financial need. Preference will be given to students entering Level 3.

**THE FRED AND JEAN ARMER BURSARY**

Established in 2006 by Jean Armer in memory of her husband Frederick B. Armer, B.A. (Class of '75) and in support of her belief that all students should be able to pursue their educational goals.

**Requirements:** To be granted to a student enrolled in the Faculty of Social Sciences who demonstrates financial need. Preference will be given to students enrolled in Level 2 or Level 3 of a program in Anthropology.

**THE ATKINSON CHARITABLE FOUNDATION BURSARY**

Established in 1996 by The Atkinson Charitable Foundation.

**Requirements:** To be granted to students enrolled in the Faculty of Social Sciences who demonstrate financial need. Preference will be given to the recipient of The Atkinson Charitable Foundation Award.

**THE NORMA BERTI BURSARY**

Established in 1996 under the McMaster Student Opportunity Fund initiative by Norma Berti, active Stelco employee for 34 years and recognized by the Hamilton Council of Women as *Woman of the Year* for her charitable community contributions.

**Requirements:** To be granted to a student who demonstrates financial need and is enrolled in a program in Labour Studies.

**THE SIDNEY L. BLUM BURSARY**

Established in 1989 by friends and associates in memory of Sidney L. Blum.

**Requirements:** To be granted to one undergraduate and one graduate student enrolled in a program in Social Work who demonstrate financial need. Preference will be given to the undergraduate students enrolled in the Spring-Summer term in SOCWORK 3D06 A/B S.

**THE DR. RICHARD A. BRYMER MEMORIAL BURSARY**

Established in 1998, under the McMaster Student Opportunity Fund initiative, by Mrs. Isabelle Brymer in memory of her husband, Dr. Richard Brymer, who served as a faculty member in the Department of Sociology at McMaster University from 1969 to 1996.

**Requirements:** To be granted to a student enrolled in a program in Sociology or Anthropology who demonstrates financial need.

**THE JODIE ANNE BULL MEMORIAL BURSARIES**

Established in 1996 by her family in memory of Jodie Anne Bull.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Faculty of Social Sciences who demonstrate financial need. At least one bursary to be granted to a student enrolled in Labour Studies.

**THE ELEANOR TURNER CARMENT BURSARY**

Established in 1997 under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student who demonstrates financial need. Preference will be given to a student enrolled in a program in Women's Studies.

**THE CLASS OF '46 BURSARIES**

Established by the Year '46 in honour of their 40th class reunion.

**Requirements:** To be granted to a student in a program in Aging and Society.

**THE MRS. MARGARET CUDMORE BURSARY**

Established in 2005 under the Ontario Trust for Student Support initiative.

**Requirements:** To be granted to students enrolled in the Faculty of Social Sciences who demonstrate financial need. Preference will be given to students enrolled in an Economics or Political Science program.

**THE BEN F. DESROCHES BURSARIES**

Established in 1996 as a tribute to Ben F. DesRoches, Stelco employee from 1949 to 1966 and elected Municipal Councillor for Saltfleet and Stoney Creek from 1969 to 1978, in recognition of his outstanding contributions to labour and to men and women in the greater Hamilton area.

**Requirements:** A variable number of bursaries to be granted to students enrolled in a program in Labour Studies who demonstrate financial need.

**Value:** The value of this award shall be not less than \$300.

**PATRICIA ANNE DICICCIO MEMORIAL BURSARY**

Established in 1988.

**Requirements:** This bursary is to be granted to a student or students enrolled in a program which includes Aging and Society as a major, who is a Canadian citizen or permanent resident and who exhibits financial need.

**THE MARGARET E. DUNCAN BURSARY**

Established in 1998 by Mr. and Mrs. J. Bruce Duncan in honour of his late mother who was a long-term volunteer in McMaster's Gerontology Program as a Tutor and, subsequently, a Senior Class Assistant.

**Requirements:** A variable number of bursaries to be granted annually to students enrolled in a Gerontology course who demonstrate financial need.

**THE KITSY FRASER BURSARY**

Established in 2017 by Kitsy (Potter) Fraser (Class of '61) to support students independent of their academic achievements.

**Requirements:** To be granted to students enrolled in the Faculty of Social Sciences who demonstrate financial need.

**THE BILL FULLER BURSARY**

Established in 1996 in commemoration of the 50th anniversary of the historic 1946 Stelco strike by William E. (Bill) Fuller, recognized by the City of Hamilton for his volunteer work which included serving as Vice-President of Labour Community Services of the United Way for six years, member of The Hamilton Community Foundation Board from 1990-96, Chairman of the Finance Committee of the Holy Family Church and Hamilton's Citizen of the Year in 1991.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference to be given to students enrolled in a Labour Studies program.

**THE HAMILTON AND DISTRICT LABOUR COUNCIL BURSARY**

Established in 1997 by the Hamilton and District Labour Council under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student enrolled in the Labour Studies Program who demonstrates financial need.

**THE HAMILTON FOLLIES INC. (GERITOL FOLLIES) BURSARY**

Established in 1997 by the Hamilton Follies Inc. (Geritol Follies) under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student in any program who demonstrates financial need. Preference to be given to a student enrolled in Level 3 or above in the Aging and Society program.

**THE SUSAN AND BRIAN HASSALL BURSARY**

Established in 2017 by Susan (Class of '98) and Brian (Class of '79 and '83) Hassall.

**Requirements:** To be awarded to students enrolled in the Faculty of Social Sciences who demonstrate financial need. Preference given to students in a Labour Studies program.

**THE HUQUE FAMILY BURSARY**

Established in 2016 by Dr. Ahmed Shafiqul Huque, his wife Yasmin, and their family in the belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to students enrolled in a Political Science program who demonstrate financial need. Preference to be given to international students.

**THE JOHN B. ISBISTER BURSARY**

Established in 1996 under the McMaster Student Opportunity Fund initiative, by John B. Isbister of Stoney Creek, valued member of the United Steelworkers of America for 39 years and honoured war veteran by Canada and the navy on four occasions.

**Requirements:** To be granted to a student enrolled in a program in Labour Studies who demonstrates financial need.

**THE JAMES A. JOHNSON CLASS OF '97 BURSARIES**

Established by the Economics graduating Class of '97, and friends, under the McMaster Student Opportunity Fund initiative, in honour of Dr. James A. Johnson, to recognize his nine years as Dean of the Faculty of Social Sciences and his thirty-five years of dedicated service to the Department of Economics and McMaster University.

**Requirements:** A variable number of bursaries to be granted to students in a degree program in Economics who demonstrate financial need. Preference will be given to the recipient of The James A. Johnson Community Contribution Award.

**THE ANDREW JOHNSTONE MEMORIAL BURSARY**

Established in 2002 by colleagues, family and friends in memory of Andrew Johnstone.

**Requirements:** To be granted to a Level 3 student enrolled in the Faculty of Social Sciences who demonstrates financial need. Preference will be given to a student in an Economics program.

**THE GEORGE KOBLYK MEMORIAL BURSARY**

Established in 2016 by friends and family in memory of long time McMaster alumni volunteer George Koblyk (Class of '60 and '67).

**Requirements:** To be awarded to a student enrolled in the Faculty of Social Sciences who demonstrates financial need. Preference to be given to a student from Hamilton.

**THE TRUDY AND CECIL LAMOCA BURSARY**

Established in 2012 by Roland Lamoca, B.A.Hon. (Class of '86) in honour of his parents, Trudy and Cecil, for believing in the importance of supporting students in achieving their academic goals.

**Requirements:** To be granted to a student enrolled in the Faculty of Social Sciences who demonstrates financial need.

**THE KELLY DAWN LAPP MEMORIAL BURSARY**

Established in 1997 by family and friends under the McMaster Student Opportunity Fund initiative in memory of Kelly Dawn Lapp who received her B.A./B.S.W. degree from McMaster University in 1996.

**Requirements:** To be granted to a student enrolled in the Social Work program who demonstrates financial need. Preference will be given to a student who has volunteered or worked in programs related to violence against women and children, employment and affordable housing for women, advocacy and treatment of mental health patients, addiction treatment or prevention of cruelty to animals.

**THE LEDWITH FAMILY BURSARY**

Established in 2016 by Janette Ledwith (Class of '73).

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Faculty of Social Sciences, who demonstrate financial need. Preference will be given to students enrolled in a program in the Department of Health, Aging and Society.

**THE JOHN A. 'JACK' MACDONALD BURSARIES**

Established in 1996 as part of the Hamilton Sesquicentennial Celebrations in honour of John A. 'Jack' MacDonald for his 45 years of outstanding service and leadership to Hamilton and the region.

**Requirements:** A variable number of bursaries to be granted to students enrolled in a Political Science program who demonstrate financial need and interest in extracurricular or community activities.

**THE EWAN MACINTYRE BURSARIES**

Established in 1999 by the Social Work Alumni Branch, the Citizen Action Group, the Social Work Students Association, faculty (past and present), staff, friends, alumni, and various organizations associated with McMaster's School of Social Work as a tribute to Dr. Ewan Macintyre for his 29 years of service to the School, including 12 years of service as the School's Director.

**Requirements:** A variable number of bursaries to be granted to students who demonstrate financial need and are enrolled in a Bachelor of Social Work program.

**THE DIANNE MACISAAC MEMORIAL BURSARY**

Established in 1994 by friends and family of Dianne MacIsaac and augmented in 1996 in conjunction with the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student or students enrolled in a program in Sociology who demonstrate financial need. Preference will be given to students with disabilities.

**THE BOB MACKENZIE BURSARY**

Established in 1996 under the McMaster Student Opportunity Fund initiative, by Bob MacKenzie, political organizer for the United Steelworkers Union and valued MPP for Hamilton East for twenty years.

**Requirements:** To be granted to a student enrolled in a program in Labour Studies who demonstrates financial need.

**THE ENRICO HENRY MANCINELLI BURSARIES**

Established in 1996 by the Labourers' International Union of North America, Local 837 in honour of Enrico Henry Mancinelli, LIUNA Canadian Director and Vice President and Local 837 President.

**Requirements:** Two bursaries to be granted to students enrolled in a program in Labour Studies who demonstrate financial need. Preference to be given to students attaining a Fall-Winter Average of at least 7.0 at the most recent review.

**THE LAWRENCE MCBREARTY BURSARY**

Established in 1996 under the McMaster Student Opportunity Fund initiative by Lawrence McBrearty, current National Director of the United Steelworkers of America and President of the Steelworkers' Humanity Fund, the Union's third world aid and development arm.

**Requirements:** To be granted to a student enrolled in a program in Labour Studies who demonstrates financial need. The value of this award shall be no less than \$300.

**THE JOHN AND MARY MCCARTHY BURSARY**

Established in 2017 by John McCarthy, B.A. (Class of '75) and his wife, Mary McCarthy, B.A. (Class of '91) to honour their belief that education should be accessible to everyone.

**Requirements:** To be granted to students enrolled in the Faculty of Social Sciences, who demonstrate financial need.

**THE R. CRAIG MCIVOR BURSARIES**

Established in 1996 as a tribute to Professor R. Craig McIvor by his family, friends, colleagues and students.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Faculty of Social Sciences who demonstrate financial need. Preference will be given to students enrolled in an Honours program in Economics.

**THE HONOURABLE JOHN C. MUNRO BURSARIES**

Established in 1998 by family, friends and colleagues of the Honourable John C. Munro for his outstanding years of service and commitment to the political life of Canada and to the Regional Municipality of Hamilton-Wentworth.

**Requirements:** A variable number of bursaries to be granted to students enrolled in a program in Political Science who demonstrate financial need.

**THE CAROLE AND ALEXANDER NAKEFF BURSARIES**

Established in 2000 by Carole Anne Nakeff (Class of '69) and Dr. Alexander Nakeff.

**Requirements:** A variable number of bursaries to be granted to students enrolled in a Political Science or Environmental Studies program who demonstrate financial need.

**THE MCQUADE FAMILY BURSARY**

Established in 2010 by John McQuade (Class of '77).

**Requirements:** To be granted to a student enrolled in the Faculty of Social Sciences who demonstrates financial need.

**THE NORTHWATER CAPITAL MANAGEMENT BURSARY**

Established in 1997 by Northwater Capital Management in support of its belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** A variable number of bursaries will be granted annually to McMaster students enrolled in the Aging and Society program who demonstrate financial need. Preference to be given to students who have participated in a conference or workshop on Gerontology.

**THE MARION PEARCE BURSARIES**

Established in 1990 by Dr. Sally Palmer in memory of her aunt Marion Pearce (Class of '20). Miss Pearce worked with New Canadians at the Beverly Street Baptist Church in Toronto.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Social Work program who have demonstrated financial need.

**THE PEVENSING BURSARIES**

Established in 1996 by David Hannaford (Class of '64).

**Requirements:** A variable number of bursaries to be granted to students enrolled in the penultimate year of an Honours program in Economics who demonstrate financial need.

**THE BETH PHINNEY BURSARY**

Established in 2005 by Beth Phinney, B.A. (Class of '78), and Member of Parliament for Hamilton Mountain for 18 years.

**Requirements:** To be granted to a student enrolled in the Faculty of Social Sciences who demonstrates financial need.

**THE IRIS PICCINI BURSARY**

Established in 2019 by Estate of Iris Piccini, B.A. (Class of '92).

**Requirements:** To be granted to an undergraduate student enrolled in a Sociology program who demonstrates financial need.

**THE KATE PLAYLE BURSARY**

Established in 2012 by Christopher Playle, B.Sc. (Hon.) (Class of '75) and his mother K. Yvonne Playle, B.A. (1944 McGill), in memory of Ms. Kathleen Playle, B.A. (Class of '80), B.S.W. (Class of '83).

**Requirements:** To be granted to students enrolled in the School of Social Work

who demonstrate financial need. Preference will be given to students who demonstrate leadership and active involvement in the McMaster community.

**THE GEORGE PLUMB MEMORIAL BURSARY**

Established in 1996 by David Plumb in memory of his father George Plumb.

**Requirements:** To be granted to a student enrolled in a program in Aging and Society who demonstrates financial need. Preference to be given to a mature student.

**THE ROYAL CANADIAN LEGION BRANCH 163 BURSARY**

Established in 1997 by the Royal Canadian Legion Branch 163 in support of the McMaster Student Opportunity Fund initiative and in keeping with the Legion's intention to support community service, education and leadership programs in the country.

**Requirements:** To be granted to a student enrolled in an Aging and Society program who demonstrates financial need.

**THE WILLIAM F. SCANDLAN BURSARIES**

Established in the 50th anniversary year of the historical Stelco steel strike of 1946 by William F. Scandlan, valued member of the United Steelworkers of America for 44 years including terms as International Representative (1953) and Area Supervisor (1976 to 1986), Alderman to the City of Hamilton (1964-1976) and Regional Councillor (1973-1976).

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference to be given to students enrolled in a Labour studies program.

**THE SOCIAL SCIENCES BURSARY**

Established in 2004 by the Dean of the Faculty of Social Sciences through the generosity of its alumni and friends under the McMaster Student Opportunity Fund II initiative.

**Requirements:** To be granted to students enrolled in the Faculty of Social Sciences who demonstrate financial need.

**THE SOCIAL SCIENCES SOCIETY BURSARIES**

Established in 1990 by the Social Sciences Society Executive in recognition of the outstanding efforts of Dr. Peter George in establishing the Social Sciences Society.

**Requirements:** A variable number of bursaries to be granted to full-time students enrolled in a Social Sciences program involving Anthropology, Economics, Geography, Gerontology, Labour Studies, Political Science, Psychology, Religious Studies, Social Work or Sociology and who demonstrate financial need.

**THE EDWIN A. TAYLOR BURSARY**

Established in 2005 by Edwin A. Taylor, B.A. (Class of '54) and M.B.A. (Class of '63).

**Requirements:** To be granted to a student in the Faculty of Social Sciences who demonstrates financial need.

**THE HERMAN TEN CATE MEMORIAL BURSARY**

Established in 2002 in memory of Herman Ten Cate by his family, in support of his belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to a student enrolled in the Faculty of Social Sciences who demonstrates financial need.

**THE TRILLIUM NON PROFIT VENTURES FOR YOUTH BURSARY**

Established in 2004 by Trillium Non Profit Ventures for Youth.

**Requirements:** To be granted to students who demonstrate financial need. Preference will be given to students enrolled in the School of Social Work.

**THE THOMAS TRUMAN BURSARY**

Established in 1992 by friends and colleagues in memory of Professor Thomas Truman, a member of the Department of Political Science from 1966 to 1990.

**Requirements:** To be granted to students enrolled in an Honours program in Political Science who demonstrate financial need. Preference will be given to the recipient of The Thomas Truman Memorial Prize.

**THE UNITED STEELWORKERS OF AMERICA BURSARY**

Established in 1997 by the United Steelworkers of America.

**Requirements:** To be granted to students enrolled in any program who demonstrate financial need. Preference will be given to students enrolled in a program in Labour Studies.

#### **THE LYNN R. WILLIAMS BURSARY**

Established in 1997 as a tribute to Lynn R. Williams (Class of '44), International President of the United Steelworkers of America from 1983-1994, in recognition of his outstanding contributions to labour and labour studies.

**Requirements:** To be granted to a student who demonstrates financial need and is enrolled in a program in Labour Studies.

**Value:** The value of this bursary shall be no less than \$300.

#### **THE STUART AND PAULA WINN BURSARY**

Established in 2016 by the McMaster University Retirees Association (MURA) following a bequest from the estate of Stuart and Paula Winn. Stuart (Class of '72) was the principal founding member of MURA and its first honorary president.

**Requirements:** To be granted to a student in the Department of Health, Aging, and Society who demonstrates financial need. Preference will be given to students enrolled in an Aging and Society program.

**Value:** The value of this bursary shall be no less than \$1,600.

## Emergency Bursaries

### Emergency Bursary Regulations

1. An Emergency Bursary is a non-repayable grant sometimes available to enrolled students who find themselves in extreme circumstances or are experiencing unexpected financial hardship.
2. Students with emergency needs must meet with a representative in the Office of the Registrar, during drop-in counselling hours to discuss their financial circumstances. Indigenous students may choose to meet with representatives in Indigenous Student Services to discuss their financial circumstances.
3. Students are required to complete a bursary application.
4. Students may be required to submit supporting documentation to confirm financial need and/or extreme circumstances, as determined by the Office of the Registrar, Aid & Awards.
5. All Emergency Bursary payments are disbursed through the McMaster Student Account.
6. The University may remove specific Emergency Bursaries from the University Calendar, may revise the terms and stated value and/or suspend the granting of Emergency Bursaries (e.g. donor funds).
7. Emergency Bursaries supported by donor funds may have additional eligibility requirements.

## Emergency Bursaries

#### **THE INTERIM ROOM PROGRAM EMERGENCY FUND**

Established in 2019 by McMaster University.

**Requirements:** To be granted to students experiencing personal safety concerns related to their housing to help with the immediate costs of relocation so that they can continue to pursue their academic studies and reach their potential.

#### **THE MCMASTER EMERGENCY BURSARY FUND**

Funding provided by McMaster operating funding.

**Requirements:** To be granted to students who demonstrate urgent financial need due to exceptional circumstances as determined by the Office of the Registrar, Aid & Awards.

#### **THE MCMASTER STUDENTS UNION EMERGENCY BURSARY FUND**

Established in 2016 by the MSU Board of Directors and members of the McMaster Students Union.

**Requirements:** To be granted to full-time undergraduate students who are

members of the MSU and who demonstrate urgent financial need due to exceptional circumstances as determined by the Office of Aid & Awards.

## Exchange Bursaries

### Exchange Bursary Regulations

1. Exchange Bursaries are non-repayable grants intended to assist students who otherwise would not be able to participate in exchange opportunities due to financial hardship.
2. Exchange Bursaries are allocated on the basis of demonstrated financial need, which may also include a minimum expectation of academic achievement or other miscellaneous criteria for students approved for exchange.
3. Exchange Bursaries are available to full-time and part-time students enrolled in Level 2 or above of their first undergraduate degree program, at the time of bursary application and selection, who are returning to McMaster to continue their studies.
4. Exchange Bursaries requiring full-time status are available to students enrolled in a full-time OSAP eligible course load or equivalent at the time of bursary application and selection.
5. Exchange Bursaries are only available to students who are Canadian Citizens, Permanent Residents, Convention Refugees and Protected Persons of Canada.
6. Exchange Bursaries are allocated on the basis of financial need, as demonstrated through a completed Canadian federal and/or provincial government student aid application (e.g. full-time OSAP) or completed standard University need profiles and an Exchange Bursary Application for the academic year in which the student is being considered.
7. Exchange Bursaries are allocated according to financial need, with higher bursary amounts assigned to students demonstrating higher levels of financial need. Bursary amounts are set by the Office of the Registrar, Aid & Awards.
8. Exchange Bursary funds are limited.
9. Students are limited to one Exchange Bursary in their first undergraduate degree program.
10. The greater demonstrated financial need is used to break any tie.
11. Exchange Bursaries may consider one or more McMaster University calculated averages (e.g. Cumulative Grade Point Average).
12. Exchange Bursaries may specify a minimum average requirement.
13. Exchange Bursaries may also consider other forms of earned merit. In order to evaluate earned merit, students may need to complete one or more additional requirements including, but not limited to, submitting an application.
14. In order to be considered for an Exchange Bursary by application, students must submit a completed application by the specified deadline date.
15. Exchange Bursary applications which meet eligibility criteria are forwarded to a selection committee for review and ranking.
16. Students must be enrolled in at least the course load used to determine their eligibility for the Exchange Bursary to have the Exchange Bursary payment processed.
17. All Exchange Bursary payments are disbursed through the McMaster Student Account and are applied to outstanding charges. A few exceptions to this regulation may be approved by the Office of the Registrar, Aid & Awards.
18. Exchange Bursaries are typically disbursed no later than the end of April.
19. Exchange Bursaries are available to students participating in an approved formal exchange program during the academic year immediately following the application deadline.
20. It is the responsibility of Exchange Bursary recipients to make all exchange



arrangements. Recipients are required to assess travel risks, have a plan of action in place for emergencies, and ensure they have proper medical and other insurance in place prior to departure.

21. Exchange Bursaries will not be issued for travel to areas deemed as 'do not travel areas' per Global Affairs Canada.
22. Exchange Bursary recipients may be required to complete a risk assessment and/or safety component and/or waiver prior to departure as dictated by other University policies and must attend mandatory Exchange Pre-Departure Orientation sessions and complete Terms for Participation Forms, Liability Waivers, and Statement of Responsibilities Forms.
23. Students who do not participate in their formal exchange as identified on their application will forfeit their bursary.
24. Registration in, or transfer to, another program of study and/or a change in course load may result in forfeiture of an Exchange Bursary. Students are advised to consult with the Office of the Registrar prior to making any changes to their program of study or course load.
25. Students who forfeit their Exchange Bursary must return the full bursary amount to their McMaster Student Account.
26. The University may choose not to grant an Exchange Bursary in the absence of a suitable candidate; may choose to limit the number of recipients selected where funding is limited; may choose to limit the number of recipients selected where too few suitable candidates exist; and/or may choose to generate applicant pools for bursaries by application where complete applications have not been received.
27. The University may remove specific Exchange Bursaries from the University Calendar, may revise the terms and stated value and/or suspend the granting of Exchange Bursaries.
28. Exchange Bursaries supported by donor funds may have additional eligibility requirements.

## Exchange Bursaries

### THE BEALE-LINCOLN-HALL EXCHANGE PROGRAM BURSARIES

Established in 1996 by Arnold A. Beale in memory of his parents, F. Arnold Beale and Margaret S. Beale and, Mr. and Mrs. Walter Gould Lincoln and Commander Harley H. Hall., U.S.N.

**Requirements:** To be granted to a student who demonstrates financial need and is enrolled in a program in Commerce, Biochemistry, Biology, English, Chemistry, Earth Sciences, History, Materials Science, Mathematics, Physics, Engineering Physics or Religious Studies. Preference will be given to students who are participating in one of McMaster's formal exchange programs, and who have demonstrated a lively interest in the humanities and the human and social implications of scientific developments.

### THE CHAN YIN CHAK BURSARY

Established in 1997 by Tak Chan in honour of his great grandfather, Mr. Chan Yin Chak.

**Requirements:** This bursary will be used to help defray expenses of Level 3 Commerce students or M.B.A. students, who demonstrate financial need, and are participating in one of the international exchange programs at the DeGroote School of Business.

### THE JAMES R.A. LANGS STUDENT EXCHANGE PROGRAM BURSARIES

Established in 1996 by family in memory of James R.A. Langs (Class of '37), a Hamilton business leader and great supporter of the Hamilton Community.

**Requirements:** A variable number of bursaries to be granted to students enrolled in a program in Humanities who demonstrate financial need and who are participating in a formal McMaster Exchange Program.

### THE MCLAY BURSARY

Established in 1997 by David and Jean McLay under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be granted to a student in any program who demonstrates financial need and who is participating in one of McMaster's formal exchange

programs. Preference to be given to students who have been active in international clubs and associations.

### THE MCLEAN FAMILY EXCHANGE BURSARIES

Established in 1997 by the McLean Family under the McMaster Student Opportunity Fund initiative, in gratitude for the learning and relationship enrichment which they obtained first at McMaster University, and subsequently through international travel.

**Requirements:** To be granted to students who wish to participate in exchange programs, who demonstrate financial need and who are enrolled in Level 2 or 3 of a program. Preference to be given to international exchanges, for students from the Faculty of Engineering or the Faculty of Humanities with a GPA above 7.0 at the most recent review and who have shown leadership and involvement in university and/or community activities.

### THE MCMASTER GLOBAL EXPERIENCE EXCHANGE BURSARY

Established in 2018 by McMaster University to support global learning opportunities.

**Requirements:** To be granted to undergraduate students enrolled in any program who are participating in a formal McMaster Exchange and who demonstrate financial need.

### THE QUEEN ELIZABETH II INTERNATIONAL TRAVEL BURSARY

Established in 2015 by Arnold Beale, B.Sc. (Class of '68), B.A. (Class of '83) in honour of Her Majesty Queen Elizabeth II, who became the longest-reigning British monarch on September 9, 2015.

**Requirements:** To be granted to an undergraduate student participating in an international exchange program who demonstrates financial need. Preference will be given to a student travelling to a Commonwealth country.

### THE RANDOLPH E. ROSS MEMORIAL BURSARY

Established in 1998 by family and friends in memory of Dr. Randolph E. Ross, who was a dedicated and cherished faculty member for over 25 years at McMaster University.

**Requirements:** To be granted to a student enrolled in the School of Business or the Engineering and Management Program. Preference will be given to a McMaster student participating in an international exchange program.

### THE JAMES MASON YOUNG BURSARY

Established in 1996 by James Mason Young in honour of his family's long-standing association with McMaster University.

**Requirements:** A variable number of bursaries to be granted to students enrolled in the Faculty of Business who demonstrate financial need. Preference to be given to students participating in a formal McMaster Exchange Program.

## Bursaries for the Michael G. DeGroote School of Medicine

### Michael G. DeGroote School of Medicine Aid Regulations

#### Emergency Bursary Regulations for School Of Medicine (M.D) Students

1. An Emergency Bursary is a non-repayable grant sometimes available to students enrolled in the M.D. Program who find themselves in extreme circumstances or are experiencing unexpected financial hardship.
2. Students with emergency needs must meet with the designated representative from their M.D. Program Office to discuss their financial circumstances.
3. Students are required to complete a bursary application.
4. Students may be required to submit supporting documentation to confirm financial need and/or extreme circumstances, as determined by their M.D. Program Office.

5. The M.D. Program Office determines eligibility for emergency support.
6. All Emergency Bursary payments are disbursed through the McMaster Student Account.

## Medicine (M.D) Bursary Regulations

1. M.D. Bursaries are non-repayable grants, allocated on the basis of demonstrated financial need, which may also include a minimum expectation of academic achievement or other miscellaneous criteria.
2. M.D. Bursaries are available to students in good standing enrolled in the M.D. Program.
3. M.D. Bursaries are available to students who are Canadian Citizens, Permanent Residents, Convention Refugees or Protected Persons of Canada.
4. Students who are not Canadian Citizens, Permanent Residents, Convention Refugees or Protected Persons of Canada are not eligible for M.D. Bursaries.
5. M.D. Bursaries are allocated on the basis of highest financial need, as demonstrated through a completed Canadian federal and/or provincial government student aid application (e.g. full-time OSAP), completed standard University need profiles and/or discussions with designated staff on campus (e.g. the M.D. Program Office) who confirm the need for bursary assistance through submission of additional supporting documentation, for the academic year in which the student is being considered.
6. M.D. Bursaries are allocated in adherence with the Ministry of Colleges and Universities (MCU) policies, procedures and guidelines in place for the given academic year. The MCU Student Access Guarantee (SAG) currently specifies bursary amounts and payment deadlines for M.D. Program students. M.D. Program students who are eligible for SAG will receive bursary support without need of an application.
7. M.D. Program students may receive more than one M.D. Bursary up to the amount for which they are eligible.
8. The greater demonstrated financial need is used to break any tie.
9. M.D. Bursaries may also consider other forms of earned merit. In order to evaluate earned merit, students may need to complete one or more additional requirements.
10. In order to be considered for an M.D. Bursary that is a named donor bursary, students must submit a completed application by the specified deadline date.
11. All M.D. Bursary applications are evaluated for eligibility, reviewed and ranked according to level of financial need. A selection committee may be struck depending on the bursary and donor requirements.
12. Students must be enrolled in the M.D. Program to have the M.D. Bursary payment processed.
13. If an M.D. Bursary is renewable, students must meet the renewal requirements specified in the bursary terms to receive a renewal payment.
14. All M.D. Bursary payments are disbursed through the McMaster Student Account and are applied to outstanding charges. A few exceptions to this regulation may be approved by the M.D. Program Office.
15. All M.D. Bursaries are typically disbursed no later than the end of November.
16. Forfeiture of a renewable M.D. Bursary also cancels all future instalments of the bursary.
17. Change in course load may result in forfeiture or adjustment in the value of the M.D. Bursary. Students are advised to consult with their M.D. Program Office prior to making any changes to their course load.
18. Students who withdraw or take a leave of absence from the program may see an adjustment in the value of their M.D. Bursary or see the full amount returned to the University.
19. Any adjustment made to a student's account, in order to return all or a portion of an M.D. Bursary to the University, consider the balance available at the time of the adjustment and may put a student's account into deficit.
20. The University may choose not to grant an M.D. Bursary in the absence of

a suitable candidate; may choose to limit the number of recipients selected where funding is limited; may choose to limit the number of recipients selected where too few suitable candidates exist; and/or may choose to generate applicant pools for bursaries by application, where complete applications have not been received.

21. The University may remove specific M.D. Bursaries from the University Calendar, may revise the terms and stated value and/or suspend the granting of M.D. Bursaries (e.g. donor funds).
22. M.D. Bursaries supported by donor funds may have additional eligibility requirements.

## Bursaries for the Michael G. DeGroot School of Medicine

### THE AVERBUCH FAMILY MD BURSARY FOR NEW CANADIANS

Established in 2016 by Max and Wendy Averbuch.

**Requirements:** To be granted to a student enrolled in the Michael G. DeGroot School of Medicine, who is a permanent resident of Canada and demonstrates financial need. Preference will be given to students who are new to Canada. Applicants must declare their immigrant status.

### THE IVANA BALDELLI BURSARY

Established in 2015 by Ivana Baldelli, B.A. (Class of '70).

**Requirements:** To be awarded to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need. Preference will be given to a student participating in medical research, attending the Niagara Regional Campus. Students must submit a separate letter outlining their research.

### THE DR. BARBER MUELLER BURSARY

Established in 2019 by Dr. Mark J. Magenheimer, MD (Class of 74), to celebrate the 50th Anniversary of McMaster's medical school and in memory of Dr. C. Barber Mueller, an esteemed faculty member, who joined McMaster in 1967 as the medical school was being established and contributed to the development of a new problem-based teaching model that revolutionized medical education around the world.

**Requirements:** To be granted to students in the Michael G. Degroote School of Medicine who demonstrate financial need and an interest in a career in surgery.

### THE JOANNE BOMBEN BURSARY

Established in 2008 by Frank Bomben and his children Kayley and Jeffrey, in recognition and memory of a loving wife and mother, Joanne (nee Butters).

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine in good academic standing who demonstrate financial need. Preference will be given to students with an interest in pediatrics. Applicants must submit a separate letter indicating the details of their interest in pediatrics; for example, by taking an approved elective or an educational or research project in the field of pediatrics.

### THE DR. KEYNA BRACKEN BURSARY

Established in 2015 by Dr. Keyna Bracken to provide financial assistance to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need.

**Requirements:** Preference will be given to a student with an interest in primary care in women's and children's health.

### THE WALTER BRANDSTAETER MEMORIAL BURSARY

Established in 2018 by the estate of Waltraud E. Jeremic in memory of his late brother Walter Brandstaeter.

**Requirements:** To be granted to students enrolled in the Michael G. Degroote School of Medicine who demonstrate financial need.

### THE MOLSON C. CAIN MEDICAL BURSARY

Established in 2017 by the estate of Molson C. Cain.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine at McMaster University who demonstrate financial need.

**THE CAMPBELL FAMILY BURSARY**

Established in 2019 by Dr. Fiona Campbell M.D. (Class of '84) and Mrs. Diana Campbell in memory of Dr. Moran Campbell, the founding Chair of the Department of Medicine, to commemorate the 50th Anniversary of the McMaster Medical School.

**Requirements:** To be granted to students enrolled in the Michael G. Degroote School of Medicine who demonstrate financial need.

**THE CANADIAN MEDICAL ASSOCIATION 150TH ANNIVERSARY BURSARY**

Established in 2017 by the Canadian Medical Association Foundation in honour of the CMA's 150th anniversary.

**Requirements:** To be awarded to a student enrolled in the Michael G. DeGroote School of Medicine, who demonstrates significant financial need, and is Canadian citizen, permanent resident, or person with protected/refugee status. Preference may be given to members of the Canadian Medical Association.

**THE CANADIAN MEDICAL FOUNDATION (CMF) BURSARY**

Established in 2015 by the Canadian Medical Foundation.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroote School of Medicine who demonstrate financial need. Preference will be given to Indigenous students.

**THE DR. LEO CELLINI CLASS OF '84 BURSARY**

Established in 2004 in honour of the memory of Dr. Leo Cellini by his classmates, M.D. Class of 1984, at their Class Reunion.

**Requirements:** To be granted to a third year student in the Michael G. DeGroote School of Medicine who aspires to work with less fortunate patients in the inner-city. Awarded to a medical student in financial need. Must be a resident of Ontario for at least one year.

**THE MARY LILLIAN CHAPMAN MEMORIAL FUND**

Established in 2018 by the estate of Nancy Mary Chapman.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroote School of Medicine at McMaster University who demonstrate financial need.

**THE PATRICK SHING LUNG CHEUNG AND IVY HEONG NGAN CHAN AWARD**

Established in 2011 by Dr. Francesca Ting Yan Cheung, M.D. (Class of '06) CCFP, to honour her parents, Mr. Patrick Shing Lung Cheung and Mrs. Ivy Heong Ngan Chan.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroote School of Medicine with an interest in Family Medicine who are in good academic standing and demonstrate financial need. Preference will be given to students who are newcomers to Canada. Applicants must submit a separate letter indicating the details of their interest in Family Medicine and their immigrant status.

**THE CHOLOWSKY FAMILY MULTIPLE SCLEROSIS BURSARY**

Established in 2002 by Mrs. Tania Cholowsky.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroote School of Medicine who are in good academic standing and are completing an approved elective, educational or research project in the field of Multiple Sclerosis or the broader area of Neurology.

**THE CIBC MEDICAL BURSARIES IN BREAST CANCER**

Established in 2004 by CIBC in support of CIBC's belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted first to students enrolled in the Michael G. DeGroote School of Medicine who demonstrate financial need and are completing an approved elective, educational or research project in the field of breast cancer and, alternatively, to students who are completing an approved elective, educational or research project in the field of women's health, obstetrics, gynecology or medical oncology.

**THE CLINICAL EDUCATION LEADERS BURSARY FUND**

Established in 2017 by clinical educators in the Niagara region.

**Requirements:** To be awarded to a student from the Niagara Regional Campus

of the Michael G. DeGroote School of Medicine who demonstrates financial need.

**THE DR. MARK COHEN PRIZE IN OPHTHALMOLOGY**

Established in 2010 by Dr. Mark Cohen.

**Requirements:** To be awarded to an undergraduate medical student in the Michael G. DeGroote School of Medicine who has been accepted into an ophthalmology residency program in Canada and demonstrates academic excellence.

**THE COMMUNITY LEADERS FOUNDATION BURSARY**

Established in 2013 by the Community Leaders Foundation.

**Requirements:** To be awarded to students enrolled at the Niagara Regional Campus of the Michael G. DeGroote School of Medicine who demonstrate financial need.

**THE DR. IAN SCOTT CORNELL BURSARY**

Established in 2019 by Dr. Ian Scott Cornell M.D (Class of '77) to commemorate the 50th Anniversary of the McMaster Medical School.

**Requirements:** To be granted to students enrolled in the Michael G. Degroote School of Medicine who demonstrate financial need.

**THE RICHARD DAY BURSARY**

Established in 2018 by Dr. Richard Day, MD (Class of '79) in recognition of the goodwill that was shown to him during his days at McMaster.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroote School of Medicine, in the Faculty of Health Sciences, who demonstrate financial need.

**THE MICHAEL G. DEGROOTE SCHOOL OF MEDICINE BURSARY**

Established in 2005.

**Requirements:** To be granted to an undergraduate student in the Michael G. DeGroote School of Medicine who demonstrates financial need.

**THE DEPARTMENT OF BIOCHEMISTRY & BIOMEDICAL SCIENCES BURSARY**

Established in 2004.

**Requirements:** This bursary is available to Medical students with financial need who have resided in Ontario for one year prior to receiving the bursary. The award will recognize the student's capacity to contribute to the study of cancer through their learning.

**THE DEPARTMENT OF MEDICINE BURSARY**

Established in 2004.

**Requirements:** The bursary is available to Medical students with financial need who have resided in Ontario for one year prior to receiving the bursary. The award will recognize the student's excellence in academic endeavour and capacity to contribute to the field of medicine through their learning.

**THE SAVITRI DEVI BURSARY**

Established in 2013 by Dr. Indra Rastogi in honour of her mother Savitri Devi.

**Requirements:** To be granted to female students in the Michael G. DeGroote School of Medicine who demonstrate financial need and maintain a good academic standing.

**THE DODGE-BELLOWS CARDIO-RESPIRATORY AWARD**

Established in 1995 by Betty Lou and Norman Bellows to provide financial assistance to a variable number of undergraduate medical students to further their education and training in the area of cardio-respiratory or internal medicine.

**THE SEETA ETWAROO MEMORIAL BURSARY**

Established in 2017 by Brendan Singh and Chad Singh to honour their aunt, Seeta Etwaroo, and her courageous fight against cancer.

**Requirements:** To be granted to a student enrolled in the Michael G. DeGroote School of Medicine who demonstrates financial need.

**Value:** \$1,000

**THE RON AND GINA FRASER HEALTH SCIENCES BURSARY**

Established in 2005 by The Ronald K. Fraser Foundation and Gina E. Fraser with a mandate to provide university tuition funding for students in the highest financial need who enter full-time study in the Bachelor of Health Sciences

Program in the Faculty of Health Sciences at McMaster University.

**Requirements:** The amount of the bursary is equivalent to one year of tuition and would be available for each of the four years in the Bachelor of Health Sciences Program on the condition of both continued good academic standing and financial need. If the bursary recipient decides to pursue a career in medicine and is accepted into the Michael G. DeGroot School of Medicine, the tuition bursary would be available for each of the three years in medical school or if the bursary recipient decides to pursue a career in biomedical engineering and is accepted into the Graduate Program in Biomedical Engineering, the tuition bursary would be available for each of the five years in biomedical engineering at McMaster University.

#### **THE GENERAL MEDICAL BURSARY**

Established in 1970 by the School of Medicine and its associated faculty members and physicians.

**Requirements:** To be awarded to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need.

#### **THE FRIEDMAN-GROSSMAN BURSARY**

Established in 2012 by Dr. Yael Friedman and Paul Grossman, in honour of Musia Friedman and in loving memory of Jasza Friedman, Pola and Zysia Zylber, Ann and Harold Linton, and Irvine and Hannah Grossman.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need.

#### **THE DANIEL GIANNINI BURSARY**

Established in 1998 by Mr. Daniel Giannini.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine to provide financial assistance with tuition fees in order to further education in the medical field. A student who receives the award in the first year would be eligible to continue to receive the award for their second and third years of study, providing they maintain a good academic standing. Student must be a graduate from a publicly-funded secondary school in the Hamilton or Burlington area and participate in community activities in the Hamilton or Burlington area.

#### **THE DR. JOHN GRANTON MEDICAL BURSARY**

Established in 2009 by Dr. John Granton, M.D. (Class of '87) to provide financial support for medical students who wish to pursue their educational goals.

**Requirements:** To be granted to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

#### **THE SAYRA AND ABDUL HAI BURSARY FOR INSPIRING CHANGE**

Established in 2013 by Sayma Hai to honour her parents who instilled in her the importance of education and giving back to one's community.

**Requirements:** To be awarded to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need and maintains good academic standing. To be granted to students who have demonstrated an interest in pursuing a career in Cardiology or Internal Medicine. Applicants must submit a separate letter indicating the details of their interest in Cardiology or Internal Medicine.

#### **THE ALFRED THEODORE HAINES AND FORSTER HAINES BURSARY**

Established in 2014 through the bequest of Alfreda Haines (Class of '35).

**Requirements:** To be granted to students in the Michael G. DeGroot School of Medicine at McMaster University who demonstrate financial need. Preference will be given to a student who demonstrates interest in homeopathic medicine.

#### **THE DR. GAIL HENNING MEMORIAL BURSARY**

Established in 2000 by William J. Henning in loving memory of his daughter, Dr. Gail Patricia Henning, who worked on the staff of McMaster Medical Centre and in private practice as a psychiatrist from 1978 until her death in 1990.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine in financial need who choose to complete electives in Psychiatry with the intention to pursue a career in psychoanalysis.

#### **THE FERRARA KENNEDY BURSARY**

Established in 2007 by Mario Ferrara, B.Com. (Class of '70), M.B.A. (Class of '74) and Annabel Kennedy.

**Requirements:** To be granted to an undergraduate student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need. Preference will be given to a student attending the Niagara campus.

#### **THE KILPATRICK SCHOLARSHIP IN MEDICINE**

Established in 2018 from the estate of Eleanor Jean McLeish.

**Requirements:** To be awarded to students enrolled in the Michael G. DeGroot School of Medicine who best exhibit academic excellence and demonstrate financial need.

#### **THE DR. CHARLES KNAPP BURSARY**

Established in 2019 by Dr. Charles Knapp (MD '87) to commemorate the 50th Anniversary of the McMaster Medical School.

**Requirements:** To be granted to students in the Michael G. DeGroot School of Medicine who demonstrate financial need. Preference will be given to students with an interest in Anesthesiology.

#### **THE JOSEPH & JOANNE LEE BURSARY**

Established by Joseph (Class of '72) and Joanne Lee.

**Requirements:** To provide financial assistance for Undergraduate Medical students in the Michael G. DeGroot School of Medicine who demonstrate financial need and would like to further their education and training in the area of Inflammatory Bowel Disease or Crohn's Disease by way of an elective or research.

#### **THE SAU-MI LEE MEMORIAL BURSARY**

Established in 2005 by Dr. Carl Lee (M.D. Class of '99) in memory of his mother Sau-Mi Lee.

**Requirements:** To be granted to a medical student in good standing who is enrolled in the second or third year of the Michael G. DeGroot School of Medicine, is planning to continue training in Family Medicine, and has demonstrated participation in extracurricular activities.

#### **THE DR. VICTORIA LEE BURSARY**

Established in 2005 by Victoria Lee (M.D. Class of 1982), FRCPC.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need and are completing an approved elective, educational or research project in the field of psychiatry or geriatric medicine. Preference will be given to students completing an approved elective, educational or research project in geriatric psychiatry.

#### **THE DR. VICTORIA LEE BURSARY FOR INDIGENOUS MD STUDENTS**

Established in 2016 by Victoria Lee (Class of '82) in support of her belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to indigenous students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need. Note: Students may be asked to provide proof of indigenous ancestry.

#### **THE DR. LEONARD E. LEVINE BURSARY**

Established in 2006 by the Estate of Dr. Leonard E. Levine, retired McMaster University Professor.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need. Preference will be given to students showing interest in Lymphoma or Leukemia research or participating in a related elective.

#### **THE LEW-KING LI AND YUN-FANG LI AWARD**

Established in 2012 by Dr. Shao-Jin Gene Li to honour his parents, Lew-King Li, and Yun-Fang Li.

**Requirements:** To be granted to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need and maintains good academic standing. Preference will be given to students who are new to Canada within the last five years. Applicants must declare their immigrant status.

#### **THE MAGENHEIM FAMILY MEDICAL EDUCATION TRAVEL BURSARY**

Established in 2006 by Dr. Mark J. Magenheimer, M.D. (Class of 1974), in honour of his parents Milton David and Dolores Ella Magenheimer.

**Requirements:** To be granted to an undergraduate medical student taking an international elective in Public Health and/or Preventative Medicine outside



Canada who demonstrates financial need. Electives in the US are acceptable provided they focus primarily on addressing needs in an underserved rural urban area with documented disproportionately high public health problems and low resources. Students must submit an application, separate cover letter outlining how the elective meets these criteria and a letter of acceptance from the proposed supervisor. Upon completion of the elective, the successful candidate will work with the Program Administrator of the Undergraduate Medical Program to identify an appropriate venue to share his/her experience in a public forum with others. Recipients of the bursary are required to prepare a report of their elective experience which the Administrator of the Undergraduate Medical Program will forward to the founder of the award. The report can be brief (2-5 pages) and should indicate where the elective time was spent, with whom, knowledge acquired from the experience, overview of activities conducted, assessment of health issues observed and/or addressed, evaluative analysis and overview of goals attained or not, and recommendations plus lessons learned to assist other McMaster M.D. Students. Must be a resident of Ontario for at least one year.

#### **THE DR. CHERYL AND KYLE MARSHALL BURSARY**

Established in 2010 by Dr. C.P. Marshall, MBBS (UWI), FRCP (C).

**Requirements:** To be granted to a student enrolled in the Michael G. DeGroot School of Medicine at McMaster University who demonstrates financial need. Preference will be given to a sole support parent.

#### **THE PETER MAURER NORTHERN HEALTH BURSARY**

Established in 1991 in memory of Peter Maurer, Administrative Officer for the Faculty of Health Sciences at McMaster and later, Administrator of the Lakehead/McMaster Link Project in Thunder Bay.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need and are pursuing electives in northern Ontario via the Northern Ontario School of Medicine (NOSM).

#### **THE DR. BARBARA MCAULEY MEMORIAL BURSARY**

Established in 2012 by the family, friends and colleagues of Dr. Barbara McAuley, a respected physician from the Niagara region.

**Requirements:** To be granted to a student enrolled at the Niagara Regional Campus of the Michael G. DeGroot School of Medicine who demonstrates financial need. Preference will be given to students who are mothers and/or students with a nursing background.

#### **THE DRs. ANDREW AND ANNETTE MCCALLUM MEDICAL BURSARY**

Established in 2016 by Dr. Andrew McCallum (Class of '80, MD), and Dr. Annette McCallum (Class of '91, MD) to provide financial support for medical students who wish to pursue their educational goals.

**Requirements:** To be granted to a student enrolled in the Michael G. DeGroot School of Medicine at McMaster University who demonstrates financial need.

#### **THE EVELYN MCGLOIN SCHOLARSHIP**

Established in 2014 by the Heart and Stroke Foundation of Canada. To be awarded to students enrolled in the Michael G. DeGroot School of Medicine who have completed at least their first year of medical school.

**Requirements:** The award will provide valuable research training and experience over the summer (June through August) under the supervision and tutelage of established scientific investigators.

#### **THE MCMASTER UNIVERSITY M.D. PROGRAM BURSARY**

Established in 2007.

**Requirements:** To be granted to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

#### **THE MCMASTER M.D. CLASS OF 1972 BURSARY**

Established in 2012 by the M.D. Class of 1972 to commemorate their 40th anniversary.

**Requirements:** To be granted to an undergraduate student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

#### **THE MCMASTER M.D. CLASS OF 1973 BURSARY**

Established in 2013 by the McMaster University M.D. Class of 1973.

**Requirements:** To be awarded to a student enrolled in the Michael G.

DeGroot School of Medicine who demonstrates financial need.

#### **THE MCMASTER M.D. CLASS OF 1974 BURSARY**

Established in 2013 by the McMaster University M.D. Class of 1974.

**Requirements:** To be awarded to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

#### **THE M.D. CLASS OF 1975 BURSARY**

Established in 2005 by the M.D. Class of 1975 in honour of their 30th reunion.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need. Student must be a resident of Ontario for at least one year.

#### **THE M.D. CLASS OF 1976 BURSARY**

Established in 2006 by the M.D. Class of 1976 in honour of their 30th reunion.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need. Student must be a resident of Ontario for at least one year.

#### **THE M.D. CLASS OF 1977 BURSARY**

Established in 2007 by the M.D. Class of 1977 in honour of their 30th reunion.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need. Student must be a resident of Ontario for at least one year.

#### **THE MCMASTER M.D. CLASS OF 1978 BURSARY**

Established in 2013 by the McMaster University M.D. Class of 1978.

**Requirements:** To be awarded to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

#### **THE MCMASTER M.D. CLASS OF 1979 BURSARY**

Established in 2013 by the McMaster University M.D. Class of 1979.

**Requirements:** To be awarded to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

#### **THE M.D. CLASS OF 1980 GYAN AHUJA BURSARY**

Established in 2005 by the M.D. Class of 1980 in honour of their 25th reunion and in memory of their classmate Gyan Ahuja.

**Requirements:** To be granted to students enrolled in the M.D. Undergraduate Program who demonstrate financial need and who, in the judgment of the Michael G. DeGroot School of Medicine, demonstrate a lively interest in humanitarian contributions to society and issues affecting third world developing countries.

#### **THE M.D. CLASS OF 1981 BURSARY**

Established in 2006 by the M.D. Class of 1981 in honour of their 25th reunion.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need. Student must be a resident of Ontario for at least one year.

#### **THE M.D. CLASS OF 1982 BURSARY**

Established in 2007 by the M.D. Class of 1982 in honour of their 25th reunion.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need. Must be a resident of Ontario for at least one year.

#### **THE MCMASTER M.D. CLASS OF 1983 BURSARY**

Established in 2013 by the McMaster University M.D. Class of 1983.

**Requirements:** To be awarded to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

#### **THE MCMASTER M.D. CLASS OF 1986 BURSARY**

Established by the M.D. Class of 1986 to commemorate their 25th anniversary.

**Requirements:** To be granted to an undergraduate student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

#### **THE MCMASTER M.D. CLASS OF 1987 BURSARY**

Established in 2012 by the M.D. Class of 1987 to commemorate their 25th anniversary.

**Requirements:** To be granted to an undergraduate student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

#### **THE MCMASTER M.D. CLASS OF 1988 BURSARY**

Established in 2013 by the McMaster University M.D. Class of 1988.

**Requirements:** To be awarded to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

**THE MCMASTER M.D. CLASS OF 1989 BURSARY**

Established in 2013 by the McMaster University M.D. Class of 1989.

**Requirements:** To be awarded to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

**THE MCMASTER M.D. CLASS OF 1990 BURSARY**

Established in 2013 by the McMaster University M.D. Class of 1990.

**Requirements:** To be awarded to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

**THE MCMASTER UNIVERSITY M.D. CLASS OF 1991 BURSARY**

Established by the M.D. Class of 1991 to commemorate their 20th anniversary.

**Requirements:** To be granted to an undergraduate student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

**THE MCMASTER M.D. CLASS OF 1992 BURSARY**

Established in 2012 by the M.D. Class of 1992 to commemorate their 20th anniversary.

**Requirements:** To be granted to an undergraduate student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

**THE M.D. CLASS OF 1995 BURSARY**

Established in 2007 by the M.D. Class of 1995 in honour of their 10th reunion.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need. Preference will be given to a mature student.

**THE M.D. CLASS OF 1996 BURSARY**

Established in 2006 by the M.D. Class of 1996 in honour of their 10th reunion.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need.

**THE MCMASTER M.D. CLASS OF 2002 BURSARY**

Established in 2012 by the M.D. Class of 2002 to commemorate their 10th anniversary.

**Requirements:** To be granted to an undergraduate student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

**THE MCMASTER UNIVERSITY M.D. CLASS OF 2011 BURSARY**

Established by the M.D. Class of 2011 as a class gift to the M.D. Program.

**Requirements:** To be granted to an undergraduate student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

**THE MCMASTER M.D. CLASS OF 2012 BURSARY**

Established in 2012 by the McMaster University M.D. Class of 2012.

**Requirements:** To be granted to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

**THE MCMASTER UNIVERSITY M.D. CLASS OF 2013 SHANE DANIELL AND ISKREN KANTCHEV MEMORIAL BURSARY**

Established in 2011 by the M.D. Class of 2013 to honour the memory of their classmates, Shane Daniell and Iskren Kantchev.

**Requirements:** To be granted to students enrolled in the M.D. undergraduate program who demonstrate financial need. Preference will be given to students who have demonstrated an interest in Global Health.

**THE MCMASTER MD CLASS OF 2014 BURSARY**

Established in 2014 by the McMaster University MD Class of 2014.

**Requirements:** To be awarded to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

**THE MCMASTER MD CLASS OF 2015 BURSARY**

Established in 2015 by the McMaster University MD Class of 2015.

**Requirements:** To be awarded to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

**THE MCMASTER MD CLASS OF 2016 BURSARY**

Established in 2016 by the McMaster University MD Class of 2016.

**Requirements:** To be awarded to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

**THE MCMASTER OMA BURSARIES**

The Medical Alumni from the province of Ontario have established this bursary in recognition of their support to medical students at McMaster University.

**Requirements:** These annual bursaries are intended to provide financial assistance for undergraduate medical students.

**THE DR. JOHN THOMAS WILLIAM MCWHINNIE BURSARY**

Established in 2014 by the estate of Betty Milne McWhinnie.

**Requirements:** To be awarded to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need and show an interest in human sexuality through study and/or research.

**THE MEDICAL STUDENT OPPORTUNITY TRUST BURSARY**

Established in 2001 from a variety of financial contributions which were donated to help medical students.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine in financial need.

**THE FRANK C. MILLER JR. BURSARY**

Established in 2011 by the Hamilton Community Foundation.

**Requirements:** To be granted annually to provide financial assistance to cover up to fifty percent of tuition and up to fifty percent of compulsory fees to up to four undergraduate medical students in the Michael G. DeGroot School of Medicine who demonstrate financial need, a desire to learn, and a willingness to participate in the Hamilton community. Preference will be given to entry level students.

**THE ORVILLE J. MIREHOUSE MEMORIAL BURSARY**

Established in 2007 by family and friends in memory of Dr. Orville J.

Mirehouse, M.D., a pioneering plastic surgeon and mentor.

**Requirements:** To be granted to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

**THE ADRACHES (ARCHIE) YIAN MOUGHALIAN MEMORIAL BURSARY**

Established in 1998 from the estate of Mr. Adraches (Archie) Yian Moughalian.

**Requirements:** To be granted to a student enrolled in the Michael G. DeGroot School of Medicine to provide financial assistance to further their education in the medical field.

**THE DRS. RICHARD AND TAMAR PACKER M.D. BURSARY**

Established by Dr. Tamar Packer and Dr. Richard Packer to commemorate their 25th anniversaries as graduates of the McMaster M.D. Program in 2011/2012.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need. Preference will be given to a student who is a Hamilton resident.

**THE DR. ADRIAN PARK MEDICAL BURSARY**

Established in 2018 by Dr. Adrian Park, MD (Class of '87).

**Requirements:** To be granted to students in the Michael G. DeGroot School of Medicine who demonstrate financial need and an interest in a career in surgery. Preference will be given to students with an interest in mission-based surgery.

**THE JANET PATERSON MUIR BURSARY**

Established in 2009 by the bequest of Janet Paterson Muir.

**Requirements:** One or more bursaries to be granted to full-time students in the undergraduate medical program of the Michael G. DeGroot School of Medicine who demonstrate financial need.

**THE JOSEPH AND EDITH NAGY BURSARY**

Established in 2018 by Jo-Anne Ferns in memory of her parents who always held medical doctors in high regard and were grateful for their cardiology and oncology care.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need. Preference will be given to students who demonstrate professionalism and compassion.

**THE DR. BRYAN PEARSE FAMILY BURSARY**

Established in 2013 by Dr. Bryan Pearse, M.D. (Class of '75) in memory of his sister Nancy Katherine.

**Requirements:** To be granted to an undergraduate medical student enrolled in

the Michael G. DeGroot School of Medicine who demonstrates financial need.

#### **THE DR. SUSAN BEVERLEY PLANK MEMORIAL BURSARY**

Established in 1997 by Mr. William J. Plank, family and friends, in memory of Dr. Susan Beverley Plank (Class of '90).

**Requirements:** To be granted to a student who demonstrates financial need and is enrolled in the Faculty of Health Sciences, School of Medicine.

#### **THE RONALD PYE BURSARY**

Established in 2000 by Dr. Ronald Pye (Class of 1979).

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine based on good academic standing and financial need.

#### **THE BENJAMIN, SAMANTHA, THOMAS AND KATE RAGONETTI MEDICAL BURSARY**

Established in 1999 by Dr. Chris Ragonetti and family.

**Requirements:** To be granted to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need and maintains good academic standing.

#### **THE DR. ROBIN RICHARDS BURSARY**

Established in 2019 by Dr. Robin Richards (MD '76) to commemorate the 50th Anniversary of the McMaster Medical School.

**Requirements:** To be granted to students enrolled in the Michael DeGroot School of Medicine who demonstrate financial need. Preference will be given to students from Guelph or Wellington County.

#### **THE PAUL RIDDLES LAW BURSARY**

Established in 2019 by Paul Riddles, B.A. (Class of '86) to support students to pursue their academic and professional goals.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need.

#### **THE RIPLEY BURSARIES**

Established in 1998.

**Requirements:** To be granted to an undergraduate student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

#### **THE SALENA FAMILY BURSARY**

Established in 1997 under the McMaster Student Opportunity Fund initiative by Dr. Bruno Salena (Class of '81), full-time faculty member in the Faculty of Health Sciences, and his family.

**Requirements:** To be granted to a student who demonstrates financial need and is enrolled in the Faculty of Health Sciences, School of Medicine.

#### **THE SCHENKEL MEDICAL ASSISTANCE BURSARY**

Established in 1982.

**Requirements:** To provide books, equipment and bursaries for female students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need.

#### **THE SHOALTS FAMILY BURSARY**

Established in 2016 by Todd and Kerry Shoalts.

**Requirements:** To be granted to a student enrolled in the Niagara Regional Campus (NRC) of the Michael G. DeGroot School of Medicine who demonstrates financial need. Preference will be given to individuals (a) from the Niagara region (or another small community, i.e. population < 100,000), and (b) with a demonstrated interest in elder care or family medicine.

#### **THE SCOTIABANK BREAST CANCER SCHOLARSHIP**

Established in 1999 by the Bank of Nova Scotia.

**Requirements:** Two scholarships to be awarded annually to provide financial assistance to medical students who are in good academic standing and are completing an approved elective, educational or research project in the field of breast cancer at the Hamilton Regional Cancer Centre.

#### **THE SCOTIABANK MEDICAL SCHOLARSHIPS/BURSARIES**

Established in 1999 by the Bank of Nova Scotia.

**Requirements:** Ten scholarships to be awarded to undergraduate medical students based on good academic standing and financial need.

#### **THE SCOTIABANK MEDICAL SCHOLARSHIPS**

Established in 2004 by Scotiabank under the McMaster Student Opportunity Fund II initiative.

**Requirements:** Four scholarships to be awarded annually to undergraduate medical students who are in good academic standing and demonstrate financial need.

#### **THE SCOTIABANK PEDIATRIC MEDICAL BURSARY**

Established in 2004 by Scotiabank.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who are residents of Ontario, in good academic standing, demonstrate financial need and who are completing an approved elective, educational or research project in the field of Pediatrics.

#### **THE ALBERT JOHN SMITH MEDICAL BURSARY**

Established in 2015 by the bequest of Albert John Smith.

**Requirements:** To be awarded to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need.

#### **THE STOBBE GLOBAL HEALTH BURSARY FUND**

Established in 2017 by faculty, students, staff and friends of Dr. Karl Stobbe, the inaugural Regional Assistant Dean of the Niagara Regional Campus (NRC) of the Michael G. DeGroot School of Medicine.

**Requirements:** To be granted to students enrolled at the NRC who demonstrate financial need and will be pursuing further education in the area of global health.

#### **THE GERRY AND SYLVIA SMITH BURSARY**

Established in 2007 by Gerry Smith, B.Com. (Class of '71), M.B.A. (Class of '75) and Sylvia Smith because of their belief in the value of education.

**Requirements:** To be granted to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need. Preference will be given to students from Simcoe County.

#### **THE DR. GARY STEIN BURSARY IN MEDICINE**

Established in 2011 by Gary Stein, M.D. (Class of '77).

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need.

#### **THE STOBBE BURSARY**

Established in 2016 by Karl and Julie Stobbe.

**Requirements:** To be granted to a student enrolled in the Niagara Regional Campus (NRC) of the Michael G. DeGroot School of Medicine who demonstrates financial need. If there are no eligible students from the NRC in a given year, no bursary will be granted and funds will be carried forward to support NRC students in future years.

#### **THE DANIEL AND NATALIE STRUB BURSARY**

Established in 1999 by the nieces and nephews of Daniel and Natalie Strub in their honour.

**Requirements:** To be granted to an undergraduate student enrolled in the Michael G. DeGroot School of Medicine to provide financial assistance to further their education in the medical field. Awarded to medical students in financial need who have completed an academic elective, or have special interest, in stroke recovery, leukemia or blood disorders.

#### **THE ANDREW TALALLA MEMORIAL BURSARY FUND**

Established in 2000 in the memory of Dr. Andrew Talalla, a Neurosurgeon at McMaster University.

**Requirements:** To be granted to a student enrolled in the Michael G. DeGroot School of Medicine to provide financial assistance in the payment of their tuition fees in order to further education in the medical field. Preference will be given to students who are interested in a career in Neurosurgery.

#### **THE MARY THOMAS BURSARY**

Established in 2015 by bequest of Lilian Mary Eleanor Thomas.

**Requirements:** To be awarded to a female student in the Michael G. DeGroot School of Medicine who is a resident of Ontario, and who demonstrates financial need.



### THE RUTH TOMLINSON MEMORIAL BURSARIES

Established in 1995 through a bequest of the late Ruth Nourse Tomlinson Wilson. Ruth Tomlinson was a professional artist born in Chicago, USA in 1908. She resided in Canada from 1917 to 1957 and moved to Chelsea, England until her death in 1994. Ruth Tomlinson was proud of her Canadian citizenship and, after attending the opening ceremony of the Medical School at McMaster University, she decided to bequeath a portion of her estate to create bursaries for medical students.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who are in good academic standing and who show evidence that they require financial support to complete their medical education training program.

### THE UCHIDA FUND FOR MD ELECTIVES

Established in 2014 from the estate of Dr. Irene A. Uchida, Professor Emeritus at McMaster, in recognition of her years of service in the Faculty of Health Sciences, and as a contribution to the promotion of good health care by graduates of McMaster University.

**Requirements:** To be awarded to students enrolled in the Michael G. DeGroot School of Medicine who are pursuing electives in underserved areas of Canada or in developing countries.

### THE WILLIAM A. VANDERBURGH ESTATE BURSARY

Established in 1968 via the estate of Mr. William Andrew Vanderburgh Jr. in honour of his father.

**Requirements:** To be awarded to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need.

### THE EDWARD VOGELMAN MD BURSARY

Established in 2019 from the Estate of Shirley Foran in memory of her father Edward Vogelman.

**Requirements:** To be awarded to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need.

### THE WANG MD BURSARY FOR NEWCOMERS

Established in 2015 by the Wang family. To be granted to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

**Requirements:** Preference will be given to students who are new to Canada within the last 5 years. Applicants must declare their immigrant status.

### THE WENDY WANG BURSARY IN MEDICINE

Established in 2007 by Stanley Yip, B.Sc. (Class of '86) in honour of his wife, Wendy Wang.

**Requirements:** To be granted to a student enrolled in the Michael G. DeGroot School of Medicine who demonstrates financial need.

### THE DR. IAN WILSON BURSARY

Established in 2019 by Dr. Ian Wilson (MD '83) to commemorate the 50th Anniversary of the McMaster Medical School.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need. Preference will be given to a student at the Waterloo Campus.

### THE HENRY AND SYLVIA WONG BURSARY IN MEDICINE

Established in 2004 by Dr. Henry Wong and Mrs. Sylvia Wong.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need.

### THE DR. HENRY AND SYLVIA WONG FAMILY BURSARY

Established in 2017 by Dr. Henry Wong and Mrs. Sylvia Wong.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who demonstrate financial need.

### THE WALLY ZIMMERMAN CML HEALTHCARE BURSARY

Established in 2009 in honour of Wally Zimmerman by CML Healthcare Inc.

**Requirements:** To be granted to students enrolled in the Michael G. DeGroot School of Medicine who best exhibit a combination of academic excellence and community service. Applicants must submit a separate letter indicating the details of their community service and financial need.

## Work Programs

### McMaster Work Program Regulations

1. Work Programs provide meaningful employment opportunities, with approved University employers, to students who demonstrate financial need.
2. Students with completed full-time Canadian federal and/or provincial government student aid applications (e.g. full-time OSAP) with a calculated entitlement of at least \$1 demonstrate financial need for the purpose of Work Program participation.
3. Students without government aid applications, including Indigenous students, International students, students with government aid restrictions, students with permanent disabilities studying at a lesser course load, Nursing students at the Mohawk site, and students on Social Assistance who complete a standard University need profile and show at least \$1 in need demonstrate financial need for the purpose of Work Program participation.
4. Students who meet with designated staff on campus (e.g. a Student Loans Officer) who confirm the need for Work Program assistance through submission of additional supporting documentation demonstrate financial need for the purpose of Work Program participation.
5. International Students with a valid study permit are able to participate in Work Programs.
6. Students wishing to participate in the fall and/or winter terms must be enrolled in the terms in which they wish to participate and must submit a complete Fall/Winter Work Program application through Mosaic by the specified deadline date.
7. Students wishing to participate in the summer term must have been in a full-time OSAP eligible course load in the preceding fall or winter term and must submit a complete Summer Work Program application through Mosaic by the specified deadline date.
8. Students are encouraged to apply for Work Program Approval as soon as the Work Program applications open, as there are more students interested in participating in Work Programs than jobs available.
9. Students approved for Work Program participation are provided a Work Program Approval notification.
10. Students approved for Work Program participation apply for approved positions posted under Career Opportunities in Mosaic. Job posting dates are advertised on the Office of the Registrar website <https://registrar.mcmaster.ca/aid-awards/>.
11. Students review approved positions and apply for those for which they feel they are qualified.
12. Students must provide a copy of their Work Program Approval when they apply to a position with a prospective employer.
13. Prospective employers review job applications and invite students to participate in their employee selection and hiring process. University employers use their own criteria for selecting eligible Work Program students for interview and/or hire.
14. Approval for Work Program participation does not guarantee the student will be hired for an approved Work Program position.
15. Approved Work Program students are restricted to accepting one Fall/Winter position and one Summer Work position in a given academic year.
16. Once hired, students may work no earlier than the published start date of the Work Program and no later than the published end date of the Work Program.
17. Employers and students must adhere to all applicable employment legislation and McMaster Human Resources' policies.
18. Students must maintain satisfactory work performance and attendance.
19. University employers have the right to terminate student employment



where work performance and/or attendance is unsatisfactory.

20. Students are advised that employers may or may not recognize University mid-term recesses as a scheduled break from work and may or may not be able to accommodate requests for time off. Students should discuss work requirements with their employers.
21. Students must report enrolment status and work program earnings, as required, by their government aid program.
22. Students earn at least minimum wage and are paid by the hiring employer through Payroll.
23. The Office of the Registrar, Aid & Awards, provides partial reimbursement of an approved Work Program student's salary to the employer from operating monies and donor trust funds.
24. The University may choose to no longer offer Work Programs and may choose to limit the number of approved participants due to funding limitations.
25. The University may remove specific Work Program funds from the University Calendar, may revise the terms and stated value and/or suspend the allocation of Work Program funds (e.g. donor funds).
26. Work Program participation supported by donor funds may have additional eligibility requirements.

## McMaster Work Programs

### Fall/Winter Specific Regulations

1. The Fall/Winter Work Program is available to students who are Canadian Citizens, Permanent Residents, Conventional Refugees and Protected Persons of Canada enrolled in OSAP eligible Graduate and Medicine degree programs.
2. The Fall/Winter Work Program is available to students who are Canadian Citizens, Permanent Residents, Conventional Refugees and Protected Persons of Canada in OSAP eligible Undergraduate degree programs (including Nursing students at the Mohawk Site). Students who are not Canadian Citizens, Permanent Residents, Conventional Refugees or Protected Persons of Canada, in OSAP eligible Undergraduate degree programs (excluding Nursing students at the Mohawk Site), may participate in Level 2 or above.
3. Students may work no more than 10 hours per week on average, during the fall and/or winter terms, through an approved Work Program.
4. To maintain Fall/Winter Work Program eligibility, students must be enrolled in a full-time OSAP eligible course load or equivalent in the term(s) in which they would like to participate in the Work Program, from the time of application through approval, hiring and start of employment.
5. Students must remain enrolled in the term(s) in which they participate in the Work Program, from start of employment to end of employment. Should a student drop all classes in a term or withdraw from the institution, their Fall/Winter Work Program participation ends on the date of withdrawal.

### Fall/Winter Work Programs

Application details are available in Mosaic. Further information about our Work Programs is available at <https://registrar.mcmaster.ca/aid-awards/>.

#### THE MCMASTER FALL/WINTER WORK PROGRAM

Established in 1996 by the University with the goal of creating meaningful employment opportunities for current students who demonstrate financial need.

**Requirements:** Students must be approved for the Fall/Winter Work Program through the Office of the Registrar, Aid & Awards.

## Summer Specific Regulations

1. The Summer Work Program is open to students who are Canadian Citizens, Permanent Residents, Conventional Refugees and Protected Persons of Canada enrolled in OSAP eligible Medicine programs.
2. The Summer Work Program is available to students who are Canadian Citizens, Permanent Residents, Conventional Refugees and Protected Persons of Canada in OSAP eligible Undergraduate degree programs (including Nursing students at the Mohawk Site) beginning in Level 1.
3. In order to be eligible to participate in the Summer Work Program, students must be returning to continue their studies the following academic year (i.e. their degree will not be conferred in the June of the Summer Work Program term nor in the November immediately following the Summer Work Program).
4. Summer work positions may be part-time or full-time. Students may work no more than 40 hours per week during the summer term.

### Summer Work Programs

Application details are available in Mosaic. Further information about our Work Programs is available at <https://registrar.mcmaster.ca/aid-awards/>.

#### THE R. ROSS CRAIG MEMORIAL FUND WORK PROGRAM

Established in 1997 in memory of R. Ross Craig. A variable number of employment opportunities made available to students in any program who demonstrate financial need.

**Requirements:** Students must be approved for the Summer Work Program through the Office of the Registrar, Aid & Awards.

#### THE HAMLIN FAMILY FOUNDATION WORK PROGRAM

Established in 1996 by the Hamlin Family Foundation. A variable number of employment opportunities made to students in any program who demonstrate financial need.

**Requirements:** Preference will be given to students in disciplines related to the fields of Health Sciences and Engineering. To be eligible for consideration, students must be approved for the Summer Work Program through the Office of the Registrar, Aid & Awards.

#### THE SALLY HORSFALL WORK PROGRAM

Established in 1996, the Offord Centre for Child Studies, McMaster University has a variable number of employment opportunities made available to students demonstrating financial need. These jobs will provide an opportunity for students to pursue research and/or assist with activities sponsored by the Centre.

**Requirements:** Students must be approved for the Summer Work Program through the Office of the Registrar, Aid & Awards.

#### THE HUMANITIES COMMUNICATIONS CENTRE WORK ENDOWMENT

Established in 1997 by Edward and Margaret Lyons, McMaster alumni of the Class of '49 and later augmented by friends of The Edward and Margaret Lyons Humanities Communications Centre.

**Requirements:** A variable number of employment opportunities will be made available to students in any program who demonstrate financial need. Preference will be given to students in Humanities and Social Sciences. Students must be approved for the Summer Work Program through the Office of the Registrar, Aid & Awards.

#### THE MCMASTER SUMMER WORK PROGRAM

Established in 1996 by the University with the goal of creating meaningful employment opportunities for current students who demonstrate financial need.

**Requirements:** Students must be approved for the Summer Work Program through the Office of the Registrar, Aid & Awards.

# Awards for Undergraduate Students

## Academic Grants

### Entrance Academic Grants

#### Entrance Academic Grant Regulations

1. Entrance Academic Grants are monetary awards allocated on the basis of academic merit, and in some cases other forms of earned merit, and demonstrated financial need.
2. Entrance Academic Grants are available to students admitted full-time on the basis of high school admission requirements.
3. Entrance Academic Grants are available to full-time and part-time students entering Level 1 of their first baccalaureate degree program.
4. Students who have enrolled at any post-secondary institution after graduation from high school are not eligible for Entrance Academic Grant, unless:
  - i. They are completing a certificate or diploma at McMaster University as a requirement of admission (e.g. the McMaster English Language Diploma), and/or
  - ii. They have withdrawn from post-secondary studies before attending or before the deadline to drop and add courses in their first term of study.
5. Entrance Academic Grants are available to students who are Canadian Citizens or Permanent Residents of Canada regardless of where they completed their high school education.
6. Students who are not Canadian Citizens or Permanent Residents of Canada are not eligible for Entrance Academic Grants regardless of where they completed their high school education.
7. Entrance Academic Grants first consider one or more McMaster University calculated admission and scholarship averages (e.g. final admission average).
8. Students must achieve a minimum 80% in the average(s) used to determine Entrance Academic Grant eligibility. An admission audition, portfolio score, or equivalent may be included in the calculation of an average.
9. Averages for Entrance Academic Grants are calculated using the course grades that form the basis for admission to the Level I program. Final grades for courses completed after June 30th in the year of admission application will not be considered in assessing eligibility for Entrance Academic Grants.
10. Entrance Academic Grants requiring full-time status are available to students enrolled full-time or equivalent in both the fall and winter.
11. Entrance Academic Grants may also consider other forms of earned merit. In order to evaluate earned merit, students may need to complete one or more additional requirements including, but not limited to, submitting an application, participating in an interview, performing an audition, or developing a portfolio.
12. In order to be considered for an Entrance Academic Grant by application, students must submit a complete application by the specified deadline date.
13. Entrance Academic Grant applications which meet eligibility criteria are forwarded to a selection committee for review and ranking.
14. Entrance Academic Grants are allocated on the basis of an eligible course load and financial need as determined by a completed full-time OSAP application for the academic year in which the student is entering Level 1 of their program.
15. The greater calculated financial need is used to break any tie.
16. Students may receive a maximum of one Entrance Academic Grant.
17. Students must be enrolled in at least the full-time OSAP eligible course load used to determine their eligibility to have an Entrance Academic Grant payment processed.
18. All Entrance Academic Grant payments are disbursed through the McMaster Student Account and are applied to outstanding charges. A few exceptions to this regulation may be approved by the Office of the Registrar, Aid & Awards.
19. Entrance Academic Grants are disbursed September through the end of December.
20. Entrance Academic Grant recipients will have their awards noted on their University transcript.
21. Registration in, or transfer to, another program of study and/or a change in course load may result in forfeiture or adjustment in the value of the Entrance Academic Grant. Students are advised to consult with the Office of the Registrar prior to making any changes to their program of study or course load.
22. Students withdrawing from courses without failure by default in the Winter term will forfeit their Entrance Academic Grant.
23. Students who forfeit their Entrance Academic Grant will have their grant cancelled and their transcript notation removed. Students must return the Entrance Academic Grant funding to their McMaster Student Account.
24. Some Entrance Academic Grants are renewable (see In-Course and Renewal Academic Grant Regulations).
25. The University may choose not to grant an Entrance Academic Grant in the absence of a suitable candidate; may choose to limit the number of recipients selected where funding is limited; may choose to limit the number of recipients selected where too few suitable candidates exist; and/or may choose to generate applicant pools for awards by application, where complete applications have not been received.
26. The University may remove specific Entrance Academic Grants from the University Calendar, may revise the terms and stated value and/or suspend the granting of Entrance Academic Grants (e.g. donor funds).
27. Entrance Academic Grants supported by donor funds may have additional eligibility requirements.

## Academic Grants for Entering Students

### Open to the DeGroote School of Business

#### THE COSTCO WHOLESALE CANADA LTD. ACADEMIC GRANT

Established in 2012 by Costco Wholesale Canada Ltd.

**Requirements:** To be awarded to a student entering the Commerce program in the DeGroote School of Business with a high final admission average who demonstrates financial need. The grant is tenable for up to four years provided the recipient is enrolled full-time in the DeGroote School of Business and maintains a minimum Fall-Winter Average of 9.5. To be awarded every four years.

**Typically Available:** 1 x \$8,000 (\$2,000/year)

#### THE BURDEE GIBSON ACADEMIC GRANT

Established in 2007 by Scott Kinnear, B.Eng. (Class of '88) and Betty Ann Kinnear in memory of her mother, Burdee Gibson.

**Requirements:** To be awarded to a student entering Business I in the DeGroote School of Business who has a high final admission average and demonstrates financial need. Award is tenable for up to four years provided the recipient remains in the DeGroote School of Business and maintains a minimum Fall-Winter Average of 9.5. (To be awarded every four years.)

**Typically Available:** 1 x \$4,000 (\$1,000 /year)

#### THE CARL HALLER-ASSOCIATED MEDICAL SERVICES, INC. ACADEMIC GRANT

Established in 2006 by Associated Medical Services, Inc. in honour of Carl Haller, B.A., Economics and Business (Class of '55) for his dedication and years of service on its Board of Directors.

**Requirements:** To be awarded to a student entering Business I in the DeGroot School of Business who has a high final admission average and demonstrates financial need.

**Typically Available:** 2 x \$2,000

#### **THE THELMA LAZAROWICH ACADEMIC GRANT**

Established in 2005 by Michael Lypka, B. Com. (Class of '80) in memory of his grandmother.

**Requirements:** To be awarded to a student enrolled in 24 units or more in Business I in the DeGroot School of Business who has a high final admission average and demonstrates financial need. Award is tenable for up to four years provided the recipient remains in the DeGroot School of Business and maintains a minimum Fall-Winter Average of 9.5.

**Typically Available:** 1 x \$20,000 (\$5,000 per year)

#### **THE LINO LUISON & JOANNE LICURSI FAMILY ACADEMIC GRANT**

Established in 2017 by Lino Luison B.A.Hon. (Class of '79) and Joanne Licursi B.A.Hon. (Class of '79) in support of their belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be granted to an entering student in the Honours Bachelor of Integrated Business and Humanities program who has achieved a high final admission average and demonstrates financial need.

**Typically Available:** 1 x \$3000

### **Open to the Faculty of Health Sciences**

#### **THE FRITH ACADEMIC GRANT FOR NURSING EXCELLENCE**

Established in 2009 by the Styles Family Foundation in recognition of the Hamilton General Hospital School of Nursing and, in particular, the graduating Class of 1954B of which Jacqueline Frith Styles was a member.

**Requirements:** To be awarded to the student entering B.Sc.N. program in the School of Nursing who has a high final admission average and demonstrates financial need. The award is tenable for up to four years provided the recipient remains enrolled in the School of Nursing and maintains a minimum Fall-Winter Average of 9.5.

**Typically Available:** 1 x \$22,000 (\$5,500 per year)

#### **THE DOMINIC ROSART ACADEMIC GRANT**

Established in 2002 by Mrs. Patsy Rosart in loving memory of her husband Dominic Rosart.

**Requirements:** To be awarded to the student enrolled in Level 1 of program of study in the Faculty of Health Sciences who has the highest final admission average and is eligible for OSAP or an equivalent provincial student assistance program. Award is tenable for up to four years provided the recipient maintains a Fall-Winter Average of 9.5.

**Typically Available:** 1 x \$20,000 (\$5,000 per year)

### **Open to the Faculty of Science**

#### **THE DUBECK ACADEMIC GRANT**

Established in 2006 by Dr. Michael Dubeck, B.Sc. (Class of '51) and M.Sc. (Class of '52).

**Requirements:** To be awarded to a student enrolling in a program of study in the Faculty of Science who has a high final admission average and demonstrates financial need. The grant is tenable for up to four years provided the recipient remains in the Faculty of Science and maintains a minimum Fall-Winter Average of 9.5. (To be awarded every four years.)

**Typically Available:** 1 x \$8,000 (\$2,000 per year)

#### **THE DUBECK MEMORIAL ACADEMIC GRANT**

Established in 2012 by Dr. Michael Dubeck B.Sc. (Class of '51), M.Sc. (Class of '52) in memory of his parents, Samuel and Elsie Dudyk who, through dedication and sacrifice, enabled their two sons to attend McMaster.

**Requirements:** To be awarded to students enrolled in Level 1 Environmental & Earth Sciences Gateway, Honours Integrated Sciences, Life Sciences Gateway, or Chemical and Physical Sciences Gateway in the Faculty of Science with a high admission average and who demonstrate financial need. The grant is

tenable for up to four years provided the recipient remains enrolled full-time in the Faculty of Science and maintains a minimum Fall-Winter Average of 9.5.

**Typically Available:** 1 x \$20,000 (\$5,000 per year)

### **Open to the Faculty of Social Sciences**

#### **THE WALTER AND ADELINE BOYCHUK ACADEMIC GRANT**

Established in 2011 by Lynda Boychuk in honour of her parents, Walter and Adeline Boychuk.

**Requirements:** To be awarded to a Level 1 student in the Faculty of Social Sciences who has a high final admission average and demonstrates financial need.

**Typically Available:** 1 x \$2,000

### **Academic Grants by Application**

### **Open to the Faculty of Engineering**

#### **THE WALKER WOOD FOUNDATION ACADEMIC GRANT**

Established in 2016 by the Walker Wood Foundation.

**Requirements:** To be awarded annually to a student enrolled in Level 1 of a program of study in the Faculty of Engineering who achieves a minimum admission average of 90%, and who demonstrates financial need and community leadership. The recipient must be a Canadian citizen. Preference will be given to a student from a rural location. The grant is tenable for up to three years provided the recipient remains enrolled in at least 24 units and maintains a minimum Fall-Winter Average of 9.5.

**Typically Available:** 1 x \$5,000 per year

## **Community Contribution Awards**

### **Community Contribution Awards Regulations**

1. Community Contribution Awards are non-monetary, non-academic awards allocated on the basis of demonstrated qualities of leadership or innovative skills, service to the University or community at large, or outstanding athletic or artistic participation.
2. Community Contribution Awards are available to full-time and part-time students enrolled in Level 2 or above of their first undergraduate degree program at the time of award application and selection.
3. Community Contribution Awards requiring full-time status are available to students enrolled full-time or equivalent in both fall and winter terms.
4. Community Contribution Awards intended for true part-time students are available to students who have completed at least 50% of all units attempted in their undergraduate degree program at McMaster on a part-time basis.
5. Community Contribution Awards are available to all domestic and international students.
6. Community Contribution Awards are not available to second degree students.
7. Students are limited to one Community Contribution Award per academic year.
8. Community Contribution Awards are available to students with a minimum Cumulative Grade Point Average of 4.0 on a minimum of 18 graded units.
9. Community Contribution Awards seek to recognize current contributions of 75 hours or more during the year leading up to the application deadline.
10. In order to be considered for a Community Contribution Award, students must submit a complete application by the specified deadline date to a MAXIMUM of three Awards. If a student submits more than three completed applications, the Office of the Registrar, Aid & Awards will

determine which applications, if any, are forwarded for review.

11. Community Contribution Award applications which meet award eligibility criteria are forwarded to a selection committee for review and ranking.
12. Community Contribution Award recipients receive a letter of recognition.
13. Letters of recognition are typically available no later than the end of September.
14. Community Contribution Award recipients will have their awards noted on their University transcripts.
15. A Community Contribution Award recipient may be eligible to receive a corresponding donor bursary of the same name if the student is able to demonstrate financial need (see In-Course Bursary Regulations).
16. Registration in, or transfer to, another program of study and/or a change in course load may result in forfeiture of a Community Contribution Award. Students are advised to consult with the Office of the Registrar prior to making any changes to their program of study or course load.
17. Students who forfeit their award will have their award cancelled and their transcript notation removed. Students must return their letter of recognition to the Office of the Registrar.
18. The University may choose not to grant a Community Contribution Award in the absence of a suitable candidate; may choose to limit the number of recipients selected where too few suitable candidates exist; and/or may choose to generate applicant pools where complete applications have not been received.
19. The University may remove specific Community Contribution Awards from the University Calendar, may revise the terms and stated number available for allocation and/or suspend the granting of Community Contribution Awards.
20. The terms of individual Community Contribution Awards may specify additional eligibility requirements.

## Community Contribution Awards by Application

Application details are available in Mosaic.

### Open to Two or More Faculties

#### **THE AUBURN INDUSTRIAL SERVICES LTD. COMMUNITY CONTRIBUTION AWARDS**

Established in 1997 by Auburn Industrial Services Ltd.

**Requirements:** To be awarded to students enrolled in any program who display superior leadership or innovative skills.

Typically Available: 2

#### **THE BRANTFORD ALUMNI BRANCH COMMUNITY CONTRIBUTION AWARDS**

Established in 2000 by the Brantford Alumni Branch of the McMaster Alumni Association.

**Requirements:** A variable number of awards to be granted to students enrolled in any program who demonstrate leadership and innovative skills through participation in either university or community activities. Preference will be given to students from the Brant County area high schools.

Typically Available: 1

#### **THE ELVA CARROL COMMUNITY CONTRIBUTION AWARD**

Established in 1996 by Elva Carrol. To be awarded to a student enrolled in any program who demonstrates outstanding athletic participation.

**Requirements:** Preference to be given to an athlete who participates on an inter-university women's team and has demonstrated leadership and fair play.

Typically Available: 1

#### **THE EDWARD FRANK DAVIS MEMORIAL COMMUNITY CONTRIBUTION AWARD**

Established in 1996 by bequest in memory of Edward Frank Davis.

**Requirements:** A variable number of awards to be granted to students in Level

2 or above in any program who have shown commitment and contribution to their community through volunteer work.

Typically Available: 1

#### **THE DAMIAN MIGUEL HEADLEY COMMUNITY CONTRIBUTION AWARDS**

Established in 1997 by family and friends in memory of Damian Miguel Headley (Class of '89).

**Requirements:** To be awarded to students enrolled in any program who demonstrate one or more of the following: service to McMaster University or the community-at-large, outstanding athletic or artistic participation or display superior leadership or innovative skills.

Typically Available: 3

#### **THE RUDY HEINZL COMMUNITY CONTRIBUTION AWARD**

Established in 1996 by family, friends and colleagues upon the retirement of Rudy Heinzl as Dean of Student Affairs, in recognition of 32 years of dedicated service to students and to the McMaster University community.

**Requirements:** To be awarded to a student enrolled in any program who, in the judgment of a selection committee, has made a significant contribution to the university life of his/her fellow students.

Typically Available: 3

#### **THE JUNIOR LEAGUE OF HAMILTON-BURLINGTON, INC. COMMUNITY CONTRIBUTION AWARD**

Established in 1997 by the Junior League of Hamilton-Burlington, Inc. under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be awarded to a student in any program who has demonstrated service to the community-at-large.

Typically Available: 4

#### **THE ALEC JOHN ROYSTON MACMILLAN MEMORIAL COMMUNITY CONTRIBUTION AWARDS**

Established in 1996 by his family in memory of Alec John Royston MacMillan.

**Requirements:** Three awards to be granted upon completion of Level 1: a) one to a student in any program; b) one to a student enrolled in the Faculty of Business, Humanities or Social Sciences; and, c) one to a student enrolled in the Faculty of Engineering, Health Sciences or Science who, in the judgment of a selection committee, demonstrate qualities of innovation, leadership and service to the community through participation in campus and community programs including athletics.

Typically Available: 3

#### **THE MCMASTER ATHLETIC COUNCIL COMMUNITY CONTRIBUTION AWARD**

Established in 1997 by the Men's Athletic Council and the Women's Intercollegiate Athletics Council under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be awarded to a student enrolled in any program who demonstrates outstanding athletic participation. Preference will be given to students in Level 2 or higher who exhibit leadership and dedication to sport and prove to be an overall asset to their team(s).

Typically Available: 1

#### **THE PIONEER ENERGY LP LEADERSHIP COMMUNITY CONTRIBUTION AWARDS**

Established in 1997 by the Pioneer Group of Companies Inc. in recognition of the community contributions of McMaster students.

**Requirements:** A variable number of awards to be granted to students enrolled in any program who, in the judgment of a selection committee, have demonstrated leadership and community service.

Typically Available: 10

#### **THE GORDON AND JANE PRICE COMMUNITY CONTRIBUTION AWARDS**

Established in 1997 by their sons in honour of Gordon and Jane Price.

**Requirements:** To be awarded to students in the Arts and Science Program or in the Faculty of Health Sciences who demonstrate service to the community-at-large, outstanding athletic participation or who display superior leadership and innovative skills.



Typically Available: 4

#### **THE GORDON RAYMOND COMMUNITY CONTRIBUTION AWARD**

Established in 1996 by the McMaster Association of Part-time Students and other friends and colleagues in honour of Gord Raymond in recognition of his 27 years of service to McMaster University including 15 years as Coordinator of Part-time Degree Studies.

**Requirements:** To be awarded to the part-time student who, in the judgment of a selection committee, demonstrates enthusiasm for life-long learning and/or had an influence on the lives of part-time students.

Typically Available: 1

#### **THE ROTARY CLUB OF BURLINGTON CENTRAL COMMUNITY CONTRIBUTION AWARD**

Established in 1997 by the Rotary Club of Burlington Central in keeping with Rotary's mission to foster the ideal of service within the community.

**Requirements:** To be granted to a student enrolled in any program who demonstrates involvement in extra-curricular or community activities. Preference will be given to a student from the Burlington area.

Typically Available: 3

#### **THE ROTARY CLUB OF HAMILTON A.M. COMMUNITY CONTRIBUTION AWARD**

Established in 1997 by the Rotary Club of Hamilton A.M. in keeping with Rotary's mission to foster the ideal of service within the community.

**Requirements:** To be awarded to a student enrolled in any program who demonstrates outstanding service to the community-at-large.

Typically Available: 3

#### **THE ROTARY CLUB OF HAMILTON COMMUNITY CONTRIBUTION AWARD**

Established in 1997 by the Rotary Club of Hamilton in keeping with Rotary's mission to foster the ideal of service within the community.

**Requirements:** To be awarded to a student enrolled in any program who demonstrates outstanding service to the community-at-large.

Typically Available: 4

#### **THE SATURN OF HAMILTON EAST COMMUNITY CONTRIBUTION AWARDS**

Established in 1996 by SATURN of Hamilton East.

**Requirements:** To be awarded to McMaster students who promote the ideals of leadership and community service. One award to be granted in each Faculty.

Typically Available: 1 per Faculty

#### **THE STEPHEN F. H. THRELKELD COMMUNITY CONTRIBUTION AWARD**

Established in 1997 by friends and colleagues of Stephen F. H. Threlkeld.

**Requirements:** To be awarded to a student entering Level 4 of an Honours program in Biology who has demonstrated leadership or innovative skills through participation in either university and/or community activities.

Preference will be given to students who have taken at least nine units of Genetics courses.

Typically Available: 1

#### **THE ROGER TRULL COMMUNITY CONTRIBUTION AWARD**

Established in 1997 by friends and colleagues in recognition of Roger Trull's ten years of outstanding service and commitment to the Advancement area and the McMaster University community in general.

**Requirements:** The award will be granted annually to a student who demonstrates solid academic standing and superior leadership in extra-curricular activities in the McMaster community.

Typically Available: 4

#### **THE UBS GLOBAL ASSETS MANAGEMENT (CANADA) COMPANY COMMUNITY CONTRIBUTION AWARDS**

Established in 1997 by Brinson Partners Inc. under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be awarded to a student enrolled in any program who demonstrates one or all of the following: service to McMaster University or the community-at-large; superior leadership or innovative skills; outstanding athletic or artistic participation.

Typically Available: 5

#### **THE ZOOM MEDIA COMMUNITY CONTRIBUTION AWARDS**

Established in 1997 by Zoom Media Inc. in support of McMaster students.

**Requirements:** A variable number of awards to be granted to students enrolled in any program who, in the judgment of a selection committee, have demonstrated superior leadership and innovative skills through participation in either university and/or community activities.

Typically Available: 6

### **Open to the Arts and Science Program**

#### **THE SAM WATSON MEMORIAL COMMUNITY CONTRIBUTION AWARD**

Established in 1996 by his wife Irene M. Watson and friends of Samuel Watson.

**Requirements:** One or two awards to be granted to students enrolled in a program in Arts and Science who, in the judgment of the selection committee, have made a notable contribution in the community-at-large through participation in extra-curricular activities.

Typically Available: 1

### **Open to the Faculty of Engineering**

#### **THE ROBERT JOHN MORRIS COMMUNITY CONTRIBUTION AWARDS**

Established in 1996 by family, friends and colleagues of Robert John Morris.

**Requirements:** Six awards: three to be granted to students upon completion of Level 1 or higher of a program in Engineering, and three to be granted to students upon completion of Level II or higher of a program in Engineering Physics who, in the judgment of the appropriate selection committee in the Faculty of Engineering, have demonstrated leadership or innovative skills in the field of Engineering or, through their participation in campus and community activities, have had a significant influence on the lives of Engineering students at McMaster University.

Typically Available: 6

#### **THE MEENA AND NARESH SINHA COMMUNITY CONTRIBUTION AWARD**

Established in 1996 by Meena and Naresh Sinha.

**Requirements:** To be awarded to a student enrolled in the Faculty of Engineering who, in the judgment of selection committee, has demonstrated superior leadership or innovative skills through participation in either University and/or community activities.

Typically Available: 1

#### **THE TKK INC. COMMUNITY CONTRIBUTION AWARDS**

Established in 1997 by TTK Inc. in recognition of the contributions of McMaster students.

**Requirements:** To be awarded to students enrolled in the Faculty of Engineering who demonstrate outstanding athletic participation and display superior leadership or innovative skills.

Typically Available: 2

#### **THE WESCOST INDUSTRIES CONTINUOUS LEARNING COMMUNITY CONTRIBUTION AWARD**

Established in 1997 by Wescost Industries Inc. in recognition of the contributions of McMaster students.

**Requirements:** To be awarded to a student enrolled in the Faculty of Engineering who is involved in activities displaying superior leadership or innovative skills. Preference will be given to a student enrolled in Materials Engineering.

Typically Available: 1

#### **THE ZENON ENVIRONMENTAL COMMUNITY CONTRIBUTION AWARDS**

Established in 1997 by Zenon Environmental Inc. in recognition of the contributions of McMaster students.

**Requirements:** To be awarded to students enrolled in the Faculty of Engineering who display superior leadership or innovative skills.

Typically Available: 2

## Open to the Faculty of Health Sciences

### THE HELEN K. MUSSALLEM COMMUNITY CONTRIBUTION AWARD

Established in 1996 by Dr. Helen K. Mussallem (C.C., B.N., Ed.D., LL.D (Queen's), D.Sc., D.St.J., F.R.C.N., M.R.S.H.) to stimulate interest in professional nursing affairs through participation in meetings, conferences, professional associations and societies related to the field of nursing.

**Requirements:** A variable number of awards granted to students who have completed Nursing I and who, in the judgment of the School of Nursing, have demonstrated notable involvement in extracurricular activities.

Typically Available: 1

### THE NURSING PROGRAM COMMUNITY CONTRIBUTION AWARDS

Established in 1997 in recognition of the contribution of McMaster students.

**Requirements:** To be awarded to students enrolled in the Nursing program who display superior leadership or innovative skills. Preference to be given to students who are working in under-resourced communities and who must travel long distances to participate in the program.

Typically Available: 1

## Open to the Faculty of Humanities

### THE STUART AND MARJORIE IVISON COMMUNITY CONTRIBUTION AWARDS

Established in 1997 by Donald Ivison (Class of '53) and Betty Ivison (Class of '52) in honour of his parents Stuart and Marjorie Ivison (Class of '28 (Arts)).

**Requirements:** A variable number of awards to be granted to students enrolled in a program in the Department of English and Cultural Studies who demonstrate a lively interest in English/Cultural Studies, involvement in extra-curricular activities and service to the University or community-at-large.

Typically Available: 1

### THE LORNA AND DAVID SOMERS COMMUNITY CONTRIBUTION AWARD

Established in 1997 by Lorna Somers (Class of '81) and David Somers (Class of '88) under the McMaster Student Opportunity Fund initiative.

**Requirements:** To be awarded to a student enrolled in the Faculty of Humanities who, in the judgment of a selection committee, has demonstrated one or more of the following: service to McMaster or the community-at-large; superior leadership or innovative skills; outstanding athletic or artistic participation. Preference will be given to a student enrolled in Art and Art History.

Typically Available: 1

### THE ADAM SUDAR PRINTMAKING COMMUNITY CONTRIBUTION AWARD

Established in 1997 in memory of Adam Sudar by his friends.

**Requirements:** To be awarded to students entering Level 3 or 4 of the Honours Art Program at McMaster who, in the judgment of the selection committee, have demonstrated outstanding achievement or promise in the area of printmaking, and who have contributed significantly to the School's cultural presentations within the community.

Typically Available: 1

### THE ALLAN AND JOY WILLIAMS COMMUNITY CONTRIBUTION AWARD

Established in 1996 by Mary Williams (Class of '87), Anne Williams (Class of '89) and Ellen and Dan Walker in honour of their parents.

**Requirements:** To be awarded to a student enrolled in a program in the Department of English and Cultural Studies who, in the judgment of the selection committee, has made a notable contribution to campus and community life and demonstrates a lively interest in English studies.

Typically Available: 1

## Open to the Faculty of Science

### THE ROTARY CLUB OF ANCASTER COMMUNITY CONTRIBUTION AWARD

Established in 1997 by the Rotary Club of Ancaster in keeping with Rotary's mission to foster the ideal of service within the community.

**Requirements:** To be awarded to a student enrolled in any program who demonstrates commendable service to the community-at-large. Preference to be given to a student enrolled in an Environmental Science Program.

Typically Available: 1

## Open to the Faculty of Social Sciences

### THE ATKINSON CHARITABLE FOUNDATION COMMUNITY CONTRIBUTION AWARD

Established in 1996 by The Atkinson Charitable Foundation.

**Requirements:** To be awarded to a student enrolled in any program who participates in activities displaying superior leadership or innovative skills and demonstrates service to the community-at-large. Preference to be given to a student enrolled in the Faculty of Social Sciences.

Typically Available: 2

### THE JAMES A. JOHNSON COMMUNITY CONTRIBUTION AWARD

Established in 1997 by the McMaster Social Sciences Society Executive Committee to recognize Dr. James A. Johnson, Dean of Social Sciences (1989-97), for his outstanding service to the Faculty of Social Sciences and the broader campus community.

**Requirements:** One award to be granted annually to a Social Sciences student enrolled in a program involving Anthropology, Economics, Geography, Gerontology, Labour Studies, Political Science, Psychology, Religious Studies, Social Work or Sociology who, in the judgment of the selection committee, has provided outstanding service to McMaster University or the community-at-large. Preference will be given to students whose service has been undertaken within the Faculty of Social Sciences at McMaster University.

Typically Available: 1

## Entrance Awards

### Entrance Awards Regulations

Entrance Awards are monetary awards allocated on the basis of academic merit and, in some cases, other forms of earned merit.

1. Entrance Awards are available to students admitted full-time on the basis of high school admission requirements.
2. Entrance Awards are available to students entering Level 1 of their first baccalaureate degree program.
3. Students who have enrolled at any post-secondary institution after graduation from high school are not eligible for Entrance Awards unless:
  - i. They are completing a certificate or diploma at McMaster University as a requirement of admission (e.g. the McMaster English Language Diploma), and/or
  - ii. They have withdrawn from post-secondary studies before attending or before the deadline to drop and add courses in their first term of study.
4. Entrance Awards are available to students (including WUSC sponsored students) who are Canadian Citizens or Permanent Residents of Canada regardless of where they completed their high school education.
5. Canadian Citizens and Permanent Residents of Canada may receive a maximum of one Entrance Award granted solely on the basis of academic merit (e.g. a McMaster Honour Award) and one Entrance Award granted on the basis of an application or other earned merit.
6. Students who are not Canadian Citizens or Permanent Residents of Canada who complete their final year and graduate from a high school in Canada are eligible for Entrance Awards open to Canadian Citizens and Permanent Residents.
7. Students who are not Canadian Citizens or Permanent Residents of Canada who complete their final year and/or graduate from a high school outside of Canada are limited to one award from a limited number of International Student Entrance Awards. See *International Student Entrance Awards*

section.

8. Entrance Awards first consider one or more McMaster University calculated admission and scholarship averages (e.g. final admission average).
9. Students must achieve a minimum 80% in the average(s) used to determine Entrance Award eligibility. An admission audition or portfolio score, or equivalent, may be included in the calculation of an average.
10. Averages for Entrance Awards are calculated using the course grades that form the basis for admission to the Level 1 program. Final grades for courses completed after June 30th in the year of admission application will not be considered in assessing eligibility for Entrance Awards.
11. Entrance Awards may also consider other forms of earned merit. In order to evaluate earned merit, students may need to complete one or more additional requirements, including, but not limited to, submitting an application, participating in an interview, performing an audition or developing a portfolio.
12. In order to be considered for an Entrance Award by application, students must submit a complete application by the specified deadline date.
13. Entrance Award applications which meet eligibility criteria are forwarded to a selection committee for review and ranking.
14. Students must enrol in the fall term to have an Entrance Award payment processed.
15. All Entrance Award payments are disbursed through the McMaster Student Account and are applied to outstanding charges. A few exceptions to this regulation may be approved by the Office of the Registrar, Aid & Awards.
16. Entrance Awards are typically disbursed no later than the end of September.
17. Entrance Award recipients will have their awards noted on their University transcript.
18. Registration in, or transfer to, another program of study and/or a change in course load may result in forfeiture or adjustment in the value of the award. Students are advised to consult with the Office of the Registrar prior to making any changes to their program of study or course load.
19. Students withdrawing from courses without failure by default in the Fall term will forfeit their Entrance Award.
20. Students who forfeit their Entrance Award will have their award cancelled and their transcript notation removed. Students must return the Entrance Award funding to their McMaster Student Account.
21. Some Entrance Awards are renewable (see In-Course Award and Renewals Regulations).
22. Students wishing to defer the benefits of an Entrance Award to the following academic year should apply to the Office of the Registrar, Admissions, for deferral of both admission and stated scholarship value. Approval of applications for deferral is not automatic, and deferrals are not normally granted for more than one academic year.
23. The University may choose not to grant an Entrance Award in the absence of a suitable candidate; may choose to limit the number of recipients selected where funding is limited; may choose to limit the number of recipients selected where too few suitable candidates exist; and/or may choose to generate applicant pools for awards by application, where complete applications have not been received.
24. The University may remove specific Entrance Awards from the University Calendar, may revise the terms and stated value, and/or suspend the granting of Entrance Awards (e.g. donor funds).
25. Entrance Awards supported by donor funds may have additional eligibility requirements.

## President's Awards and Honour Awards Program

An unlimited number of President's Awards and Honour Awards are automatically assessed on the basis of final admission averages. No application is required. The value awarded corresponds to the final admission

average range in which the Level 1 entering student's average falls:

President's Award	95.0 - 100.00%	\$2500
Honour Award	90.0 - 94.99%	\$1000
Honour Award	88.0 - 89.99%	\$ 750

The President's Awards and the Honour Awards program are generously supported by the following funds:

## Entrance Awards

### Automatically Assessed

#### OPEN TO TWO OR MORE FACULTIES

#### THE CLASS OF 1956 50TH ANNIVERSARY ENTRANCE SCHOLARSHIPS

Established in 2006 by the Class of 1956 in honour of its 50th anniversary.

**Requirements:** Two scholarships to be awarded to students entering any Level 1 program.

**Typically Available:** 2 x \$1,000

#### THE HELEN M. CURREY SCHOLARSHIP

Established in 1941 by bequest of Helen Maud Currey of Drumbo, Ontario.

**Requirements:** A variable number of scholarships to be awarded to students entering any program of study. To be awarded every four years.

**Typically Available:** 1 x \$750

#### THE DE VILLIERS - MAHAFFY MERIT AWARDS

Established in 1991 in memory of Nina De Villiers and Leslie Mahaffy of Burlington, by contributions from the local community and the employees of several area companies including Searle Canada, Boehringer Ingelheim, Smithkline Beecham, Monsanto and the Royal Bank.

**Requirements:** Two scholarships to be awarded to outstanding students graduating from a secondary school in the Halton Region; (a) one to a student entering any program of study; and (b) one to a student entering Science I or Music I. Preference will be given to female students.

**Typically Available:** 2 x \$1,000

#### THE H.P. FRID SCHOLARSHIP

Established in 1982 by the family of H.P. Frid in her memory.

**Requirements:** To be awarded to a promising student entering any program of study.

**Typically Available:** 1 x \$1,000

#### THE CATHRYN E. KAAKE MERIT AWARD

Established in 1988 in memory of Cathryn E. Kaake (Class of '78) by family and friends.

**Requirements:** A variable number of scholarships to be awarded to students entering any program of study.

**Typically Available:** 2 x \$750

#### THE RAYMOND C. LABARGE MERIT AWARDS

Established in 1990 in memory of Raymond C. Labarge (Class of '36) of Ottawa.

**Requirements:** A variable number of scholarships to be awarded to students entering any program of study.

**Typically Available:** 4 x \$1,000

#### THE LLOYD MEMORIAL SCHOLARSHIP

Established in 1956 in memory of Henry Hoyes and Lizzie Lloyd by their children.

**Requirements:** Grade 12 U or M subjects to be included are: Physics, Chemistry, two credits of Mathematics, and either Biology or a third credit of Mathematics.

**Typically Available:** 1 x \$500

#### THE JOSEPHINE MAGEE SCHOLARSHIP

Established in 1959 by bequest of Josephine Magee of Hamilton.

**Requirements:** To be awarded on the basis of general proficiency in the

subjects required for admission to students from any province or territory of Canada.

Typically Available: 4 x \$750

#### **THE ALBERT MATTHEWS SCHOLARSHIP**

Established in 1920.

**Requirements:** Grade 12 U or M subjects to be included are Latin and a language other than English.

Typically Available: 1 x \$750

#### **THE HAROLD MATTHEWS MEMORIAL SCHOLARSHIP**

Established in 1917.

**Requirements:** Grade 12 U or M subjects to be included are French and either German or Spanish.

Typically Available: 1 x \$750

#### **THE MCMASTER HONOUR AWARDS**

Established by McMaster University to reward students who have completed their final year of high school with high academic standing.

**Requirements:** A variable number of scholarships to be awarded to students entering Level 1 of an undergraduate degree program. Students must achieve a final admission average to their program of study between 80.0% and 89.99%.

Typically Available: Unlimited x Variable Amounts

#### **THE MCMASTER PRESIDENT'S AWARDS**

Established by McMaster University to reward students who have completed their final year of high school with the highest academic standing.

**Requirements:** A variable number of scholarships to be awarded to students entering Level 1 of an undergraduate degree program. Students must achieve a final admission average of 95% or higher to their program of study.

Typically Available: Unlimited x \$2,500

#### **THE ISABELLA CAMPBELL MCNEE SCHOLARSHIP**

Established in 1915 and augmented in 1926.

**Requirements:** Grade 12 U or M subjects to be included are three credits of Mathematics and Physics.

Typically Available: 1 x \$750

#### **THE ALVIN I. OGILVIE SCHOLARSHIPS**

Established in 1984 by bequest of Alvin I. Ogilvie of Hamilton.

**Requirements:** Five scholarships to be awarded to students entering any program of study.

Typically Available: 5 x \$1,000

#### **THE LESLIE A. PRINCE MERIT AWARDS**

Established in 1979 in honour of Leslie A. Prince, Dean of Students, by his friends and colleagues upon the occasion of his retirement and in recognition of his outstanding contribution to the University community.

**Requirements:** Two to be awarded to students entering any program of study.

Typically Available: 2 x \$750

#### **THE D.E. THOMSON SCHOLARSHIP**

Established in 1909 and augmented in 1915.

**Requirements:** Grade 12 U or M subjects to be included are English and either Latin or French.

Typically Available: 1 x \$750

#### **THE TYNOWSKI SCHOLARSHIP**

Established in 1989 by the University, friends and colleagues of Olga Tynowski, for her outstanding contributions to McMaster University during 46 years of service.

**Requirements:** To be awarded to an outstanding student entering any program of study.

Typically Available: 1 x \$1,000

#### **THE WALLINGFORD HALL ENTRANCE SCHOLARSHIP**

Established in 1993.

**Requirements:** To be awarded to a student entering any program of study.

Typically Available: 3 x \$750

#### **THE WHEELER SCHOLARSHIP**

Established in 1915.

**Requirements:** Grade 12 U or M subjects to be included are: History, English and a language other than English.

Typically Available: 1 x \$500

#### **OPEN TO THE FACULTY OF BUSINESS**

##### **THE FORTINOS SCHOLARSHIP**

Established in 1990 by John Fortino.

**Requirements:** To be awarded to an outstanding student entering the School of Business.

Typically Available: 1 x \$1,400

#### **OPEN TO THE FACULTY OF ENGINEERING**

##### **THE A.H. ATKINSON EDUCATION FUND SCHOLARSHIP**

Established in 2001 by the A.H. Atkinson Education Fund.

**Requirements:** To be awarded to a student entering the Faculty of Engineering.

Typically Available: 5 x \$750

##### **THE GENERAL MOTORS ENTRANCE SCHOLARSHIPS**

Established in 1999 by General Motors of Canada Limited.

**Requirements:** A variable number to be awarded to female students entering the Faculty of Engineering.

Typically Available: 11 x \$750

##### **THE JOHN HODGINS MEMORIAL SCHOLARSHIP**

Established in 1985 by his wife, Jean, in memory of Dr. John W. Hodgins in recognition of his extraordinary contributions in founding the Faculty of Engineering which he served with distinction as the first Dean.

**Requirements:** To be awarded to an outstanding student entering the Faculty of Engineering.

Typically Available: 1 x \$1,000

#### **THE ONTARIO PROFESSIONAL ENGINEERS FOUNDATION FOR EDUCATION ENTRANCE SCHOLARSHIP**

Established in 1961 by the Ontario Professional Engineers Foundation for Education.

**Requirements:** Two scholarships to be awarded, one to a female student and one to a male student, enrolled in a CEAB (Canadian Engineering Accreditation Board) accredited program in the Faculty of Engineering who have demonstrated a combination of high academic achievement and exhibit characteristics of leadership. Recipients must have an Ontario Secondary School Diploma with overall final admission average of at least 90 percent.

Typically Available: 2 x \$1,500 each

#### **OPEN TO THE FACULTY OF HEALTH SCIENCES**

##### **THE REESE FALLON MEMORIAL SCHOLARSHIP**

Established in 2018 in honour of Reese Fallon.

**Requirements:** To be awarded to students entering Level 1 in the School of Nursing who graduated from a Toronto District High School.

Typically Available: Variable

#### **OPEN TO THE FACULTY OF HUMANITIES**

##### **THE MARION LAING-KNOX ENTRANCE SCHOLARSHIP**

Established in 2000 by bequest of Marion Laing-Knox.

**Requirements:** To be awarded to a student entering the Faculty of Humanities in a program of study who presents an outstanding final admission average.

Typically Available: 2 x \$1,000

#### **OPEN TO THE FACULTY OF SCIENCE**

##### **THE LILLIAN AND LEROY PAGE SCHOLARSHIP**

Established in 1982 by donation of the Lillian and Leroy Page Foundation.

**Requirements:** For a student from the Hamilton area entering the Faculty of Science.

Typically Available: 5 x \$1,000



## Entrance Awards by Application

### OPEN TO TWO OR MORE FACULTIES

#### THE ASHBAUGH SCHOLARSHIPS

Established in 1989 by bequest of Frederick K. Ashbaugh of St. Petersburg, Florida, in memory of Mary Eliza Kingston.

**Requirements:** A variable number of scholarships to be awarded to students entering any program of study.

**Typically Available:** 5 x \$5,000 by award application through Faculty

#### THE CLASS OF 1952 MEL HAWKRIGG HONOUR AWARDS

Established in 2001 by the Class of 1952 in honour of its 50th reunion.

**Requirements:** A maximum number of four entrance scholarships to be awarded each year to students entering any Level 1 program.

**Typically Available:** 1 x \$4,500 by award application through Faculty

#### THE COCA-COLA SCHOLARSHIPS

Established in 1998 by Coca-Cola Bottling Ltd.

**Requirements:** A variable number of scholarships to be awarded to students entering any program of study.

**Typically Available:** 1 x \$4,500 by award application through Faculty

#### THE DUNDAS SCHOLARSHIPS

Established in 1984 from funds donated by The H.G Bertram Foundation.

**Requirements:** A variable number of scholarships to be awarded to students from Dundas and surrounding area entering any program of study. The recipient of this award is eligible to receive the corresponding donor bursary if financial need is demonstrated.

**Typically Available:** 4 x \$5,000 by award application through Faculty

#### THE GEORGE AND NORA ELWIN SCHOLARSHIPS

Established in 1979 by bequest of George and Nora Elwin of Hamilton.

**Requirements:** A variable number of scholarships to be awarded to students entering any program of study.

**Typically Available:** 10 x \$5,000 by award application through Faculty

#### THE NELLIE P. HOGG SCHOLARSHIP

Established in 1965 by bequest of Nellie P. Hogg of Hamilton.

**Requirements:** One scholarship to be awarded to a female student entering any program of study.

**Typically Available:** 1 x \$8,000 by award application through Faculty

#### THE MOULTON COLLEGE ENTRANCE SCHOLARSHIP

Established in 1980 from funds originally subscribed by the Alumnae of Moulton College during the years 1946 to 1949.

**Requirements:** To be awarded to a female student entering any program of study.

**Typically Available:** 1 x \$5,000 by award application through Faculty

#### THE A.G. REILLY SCHOLARSHIPS

Established in 1991 by bequest of Lois E. Reilly of Toronto.

**Requirements:** A variable number of scholarships to be awarded to students entering any program of study.

**Typically Available:** 9 x \$5,000 by award application through Faculty

#### THE SCHULICH LEADER SCHOLARSHIPS

Established in 2012 by The United Jewish Welfare Fund of Toronto through funding from Seymour Schulich.

**Requirements:** To be awarded to students entering the Faculty of Engineering or the Faculty of Science in the areas of science, technology, engineering or mathematics (STEM) who, in the judgment of the Faculties, have demonstrated academic excellence and/or leadership in school life or community life, or have provided evidence of entrepreneurial talent. The scholarship is renewable for three years at the same value provided the recipient remains enrolled full-time and demonstrates notable academic achievement.

**Typically Available:**

- 1 x \$100,000 (\$25,000 per year) Faculty of Engineering
- 1 x \$ 80,000 (\$20,000 per year) Faculty of Science

**Note:** See [www.schulichleaders.com](http://www.schulichleaders.com) for application information.

### OPEN TO THE DEGROOTE SCHOOL OF BUSINESS

#### THE DAVID FEATHER FAMILY SCHOLARSHIP

Established in 2016 by David Feather, B.A. (Class of '85) and MBA (Class of '89).

**Requirements:** To be awarded to a student entering the Honours Bachelor of Commerce in Integrated Business and Humanities program and, who in the judgment of the DeGroote School of Business, has demonstrated community engagement and high academic achievement.

**Typically Available:** 2 x \$5,000 by admission application

#### THE KEVIN A. LOCKHART FAMILY SCHOLARSHIP

Established in 2017 by Kevin A. Lockhart, BA '87 and Past Vice-President of the McMaster Students Union.

**Requirements:** To be awarded to a student entering the Honours Bachelor of Commerce in Integrated Business and Humanities program and, who in the judgment of the DeGroote School of Business, has demonstrated community engagement and high academic achievement.

**Typically Available:** 2 x \$5,000 by admission application

### OPEN TO THE FACULTY OF ENGINEERING

#### THE ARCELORMITTAL DOFASCO FIRST ROBOTICS ENGINEERING ENTRANCE SCHOLARSHIP

Established in 2018 by ArcelorMittal Dofasco.

**Requirements:** To be awarded to students who permanently reside or attended high school in the Greater Toronto and Hamilton Area, City of Brantford or Region of Niagara, who enroll in a first year program in the Faculty of Engineering, achieve a minimum final admission average of 90% and demonstrate leadership experience and involvement in extracurricular activities through FIRST Robotics.

**Typically Available:** 2 x \$15,000

#### THE YVES & CYNTHIA BLEDE FUTURE ACHIEVERS AWARD FOR WOMEN IN ENGINEERING

Established in 2019 by Yves and Cynthia Bled.

**Requirements:** To be awarded to female students entering Level 1 in the Faculty of Engineering who demonstrate high academic achievement and leadership potential.

**Typically Available:** 2 x \$2,500

#### THE HATCH SCHOLARSHIPS

Established in 2008 by HATCH Ltd.

**Requirements:** Four scholarships to be awarded annually to students entering the Faculty of Engineering. These awards are renewable for three years at the same value provided the students remain in 24 units or more, and achieve a Fall-Winter Average of 9.5 with no failures.

**Value:** 4 x \$32,000 each (\$8,000 per year) by award application through the Faculty of Engineering

#### THE JOSEPH IP ENTRANCE SCHOLARSHIP

Established in 2014 by Joe Ip, B.Eng. (Class of '79), M.Eng (Class of '81).

**Requirements:** To be awarded to students entering the Faculty of Engineering who achieve a minimum final admission average of 95%, and who demonstrate leadership experience and involvement in extracurricular activities.

**Typically Available:** 2 x \$10,000 by award application through the Faculty of Engineering

#### THE LIBURDI ENGINEERING ENTRANCE SCHOLARSHIP

Established in 2019 by Joseph Liburdi.

**Requirements:** To be awarded to students entering the Faculty of Engineering who demonstrate outstanding academic achievement and community engagement.

**Typically Available:** 1 x \$10,000 by award application through the Faculty of Engineering

**OPEN TO THE FACULTY OF HUMANITIES****THE JOAN FRANCES BOWLING ENTRANCE SCHOLARSHIPS**

Established in 1997 from the estate of Marie Bowling in memory of her daughter, Joan Frances Bowling.

**Requirements:** Two scholarships to be awarded to students entering Music I, who in the judgment of the School of the Arts, have demonstrated excellence in classical music.

**Typically Available:** 2 x \$2,000 by admission audition

**THE EILEEN GRAY FARLEY SCHOLARSHIP**

Established in 1998 by Eileen Gray Farley (Class of '43 and winner of the D.E. Thomson Scholarship) in memory of Mr. D. E. Thomson who exemplified a generous spirit of giving throughout his life and established the D.E. Thomson Scholarship in 1909.

**Requirements:** A variable number of scholarships to be awarded to students entering the Faculty of Humanities.

**Typically Available:** 2 x \$3,000 and 1 x \$6,000

**THE MERRILL FRANCIS GAGE ENTRANCE SCHOLARSHIP**

Established in 1982 from the estate of Merrill Francis Gage of Hamilton.

**Requirements:** To be awarded to a keyboard student entering Music I who, in the judgment of the School of the Arts, has attained outstanding musical proficiency.

**Typically Available:** 2 x \$1,000 by admission audition

**THE HUMANITIES ENTRANCE AWARD**

Established in 2019 by the Faculty of Humanities.

**Requirements:** To be awarded to students entering the Faculty of Humanities who, in the judgment of the Faculty, attained high averages and demonstrate a strong desire to study in the Humanities.

**Typically Available:** 6 x \$2,500

**THE FRANK THOROLFSON MEMORIAL SCHOLARSHIPS**

Established in 1978 in memory of Professor Frank Thorolfson, first Chair of the Department of Music.

**Requirements:** Two scholarships to be awarded to students entering Music I who, in the judgment of the School of the Arts, have attained high scholastic achievement and musical proficiency.

**Typically Available:** 2 x \$2,000 by admission audition

**THE GRAHAM TODD MEMORIAL ENTRANCE SCHOLARSHIP**

Established in 2015 to honour the legacy of Professor Graham Todd of the School of the Arts.

**Requirements:** To be awarded to students entering Studio Art I who, in the judgment of the School of the Arts, have demonstrated artistic excellence and high academic achievement.

**Typically Available:** 1 x \$1,000 by admission portfolio

**THE VICTOR WILSON SCHOLARSHIP**

Established in 2009 in memory of his father, Victor Wilson, by Steve Wilson (Class of '85) and his wife Tina (Class of '86) and their family.

**Requirements:** Two scholarships to be awarded to students entering Music I who, in the judgment of the School of the Arts, demonstrates excellence in Music and strength of character; one to a piano student and one to an orchestral student.

**Typically Available:** 2 x \$2,000 by admission audition

**International Student Entrance Awards****Automatically Assessed****OPEN TO TWO OR MORE FACULTIES****THE CARIBBEAN ALUMNI ENTRANCE SCHOLARSHIP**

Established in 2012 through the generous support of the McMaster University's Caribbean alumni.

**Requirements:** To be awarded to a visa student from a Caribbean nation belonging to the CARICOM Community entering Level 1 of any program with

the highest admission average.

**Typically Available:** 2 x \$1,800

**THE MCMASTER CHINESE ALUMNI - PETER GEORGE INTERNATIONAL ENTRANCE SCHOLARSHIPS**

Established in 1999 by Chinese Alumni (Toronto Chapter) of McMaster University.

**Requirements:** A variable number to be awarded to visa students entering Level 1 of any program.

**Typically Available:** 1 x \$3,000

**THE TAYLOR'S EDUCATION GROUP ENTRANCE SCHOLARSHIP**

Established in 2010 by Dato' Loy Teik Ngan (Class of '84).

**Requirements:** To be awarded to a graduate or transfer student from Taylor's Education Group in Malaysia who has been accepted as a visa student to any undergraduate program of study on the recommendation of the College.

**Typically Available:** 1 x \$20,000 (\$5,000 per year)

**THE WOO FAMILY INTERNATIONAL ENTRANCE SCHOLARSHIPS**

Established in 1999 by Mr. Chung How Woo in honour of his late wife, Mrs. Ching Yung Chiu-Woo, mother and mother-in-law of four McMaster graduates.

**Requirements:** A variable number to be awarded to visa students entering Level 1 of any program.

**Typically Available:** 1 x \$3,000

**By Application****OPEN TO TWO OR MORE FACULTIES****THE COLUMBIA INTERNATIONAL COLLEGE COMMUNITY LEADER AWARD**

Established in 2018 by McMaster University to recognize students who demonstrate leadership qualities and a commitment to community involvement.

**Requirements:** A variable number to be awarded to students entering Level 1 from Columbia International College.

**Typically Available:** 4 x \$5,000

**THE COLUMBIA INTERNATIONAL SCHOLARSHIP ENDOWMENT FUND (CISEF)****COMMUNITY LEADER SCHOLARSHIP**

Established in 2018 by the Columbia International Scholarship Endowment Fund to recognize students who demonstrate leadership qualities and a commitment to community involvement.

**Requirements:** A variable number to be awarded to students entering Level 1 from Columbia International College.

**Typically Available:** 4 x \$5,000

**THE PROVOST ENTRANCE SCHOLARSHIP FOR INTERNATIONAL STUDENTS**

Established in 2018 by McMaster University to recognize the academic achievements of international students.

**Requirements:** A variable number to be awarded to visa students entering Level 1.

**Typically Available:** 10 x \$7,500

**In-Course Awards****Graduating Student Awards****Graduating Student Awards Regulations**

1. Graduating Student Awards are monetary and non-monetary awards allocated on the basis of academic merit and, in some cases, other forms of earned merit.
2. Graduating Student Awards are normally available to all full-time and part-time students graduating from their first undergraduate degree program. Graduating Student Awards are not available to second degree students unless the terms of a particular donor award specify eligibility and the

- student has not received the award previously.
3. Graduating Student Awards requiring full-time status are available to students enrolled full-time or equivalent in both the fall and winter terms.
  4. Graduating Student Awards intended for true part-time students are available to students who have completed at least 50% of all units attempted in their undergraduate degree program at McMaster on a part-time basis.
  5. Graduating Student Awards are available to all domestic and international students.
  6. Students are considered for all available Graduating Student Awards in the spring following their graduating term.
  7. While students typically apply for Graduating Student Awards in Mosaic, students with degrees conferred at Fall Convocation are only able to apply for Graduating Student Awards by application the following spring using paper application forms available through the Office of the Registrar at <https://registrar.mcmaster.ca/aid-awards/>.
  8. Graduating Student Awards are available to students with a minimum Cumulative Grade Point Average of 8.0 calculated on at least 60 graded units.
  9. Available averages, units upon which averages are calculated, program level, and enrolled units may be used to break any ties in an award competition.
  10. Graduating Student Awards may also consider other forms of earned merit. In order to evaluate earned merit, students may need to complete one or more additional requirements including, but not limited to, submitting an application.
  11. In order to be considered for a Graduating Student Award by application, students must submit a complete application by the specified deadline date.
  12. Graduating Student Award applications which meet award eligibility criteria are forwarded to a selection committee for review and ranking.
  13. All Graduating Student Award payments are disbursed through the McMaster Student Account and are applied to outstanding charges. A few exceptions to this regulation may be approved by the Office of the Registrar, Aid & Awards.
  14. Graduating Student Awards are typically disbursed no later than the end of May.
  15. Graduating Student Award recipients will have their awards noted on their University transcripts.
  16. Registration in, or transfer to, another program of study and/or a change in course load may result in forfeiture of a Graduating Student Award. Students are advised to consult with the Office of the Registrar prior to making any changes to their program of study.
  17. Graduating Student Award recipients who do not have their degree conferred as expected will forfeit their award.
  18. Students who forfeit their awards will have their award cancelled and their transcript notation removed. Students must return any non-monetary award to the Office of the Registrar and any award funding to their McMaster Student Account.
  19. The University may choose not to grant a Graduating Student Award in the absence of a suitable candidate; may choose to limit the number of recipients where funding is limited; may choose to limit the number of recipients selected where too few suitable candidates exist; and/or may choose to generate applicant pools where complete applications have not been received.
  20. The University may remove specific Graduating Student Awards from the University Calendar, may revise the terms and stated value and/or suspend the granting of Graduating Student Awards (e.g. donor funds).
  21. Graduating Student Awards supported by donor funds may have additional eligibility requirements.

## Graduating Student Awards

### Automatically Assessed

#### OPEN TO TWO OR MORE FACULTIES

##### THE LEONE BETTY BLACKWELL MEMORIAL BOOK PRIZE

Established in 1999 by Dr. Bonnie Blackwell in memory of her mother, Leone Betty Blackwell.

**Requirements:** To be awarded to a graduating student with the highest grade in EARTHSC 4P03.

**Typically Available:** 1 x \$85 for books

##### THE GOVERNOR GENERAL'S ACADEMIC MEDAL

Given by His Excellency the Governor General of Canada.

**Requirements:** To be awarded to the student graduating from a first baccalaureate degree program who has attained the highest standing throughout the program.

**Typically Available:** 1 x Medal

##### THE MAPS GOLD MEDAL

Established in 1996 by the McMaster Association of Part-time Students.

**Requirements:** To be awarded to the graduating student completing studies primarily on a part-time basis and who attains the highest Grade Point Average.

**Typically Available:** 1 x Medal

##### THE WILLIAM J. MCCALLION SCHOLARSHIPS

Established in 1984 in honour of Professor McCallion, B.A. (Class of '43), M.A. (Class of '46), first Dean of the School of Adult Education from 1970 to 1978, in recognition of his outstanding contribution to adult education and to the Department of Mathematical Sciences during 41 years of service.

**Requirements:** To be awarded to graduating students who have completed a program primarily on a part-time basis with high averages.

**Typically Available:** 2 x \$800

##### THE P.L. NEWBIGGING PRIZE

Established in 1982 in recognition of Dr. Lynn Newbigging for his outstanding contributions to the Department of Psychology, Neuroscience & Behaviour (Faculty of Science).

**Requirements:** Four prizes to be awarded to students graduating from a program in the Department of Psychology, Neuroscience & Behaviour with high averages.

**Typically Available:** 4 x \$100 each

##### THE LLOYD REEDS PRIZES

Established in 1983 in recognition of Dr. Lloyd G. Reeds for his outstanding contributions to the Department of Geography during 35 years of service.

**Requirements:** To be awarded to graduating students who, in the judgment of the School of Geography and Earth Sciences, have demonstrated outstanding achievement in GEOG 4MT6 A/B or EARTHSC 4MT6 A/B.

**Typically Available:** 4 x \$100 each

##### THE SOCIETY OF CHEMICAL INDUSTRY MERIT AWARDS

Established in 1961.

**Requirements:** Three certificates to be awarded: (a) one to a Chemical Engineering graduand, (b) one to an Honours Biochemistry graduand, and (c) one to an Honours Chemistry or Chemical Biology graduand, who have attained the highest Grade Point Average (at least 9.5) and have completed the program in the normal number of years.

**Typically Available:** 3 x Certificates

##### THE UNIVERSITY SCHOLARSHIPS

Established in 1978.

**Requirements:** To be awarded to graduating students who have completed a program primarily on a part-time basis with high averages.

**Typically Available:** 6 x \$800

**OPEN TO THE ARTS AND SCIENCE PROGRAM****THE LAURA DODSON PRIZE**

Established in 1985 by Laura Dodson (Class of '56).

**Requirements:** To be awarded to the student graduating from the Honours Arts and Science Program who has displayed outstanding achievement in both arts and science.

Typically Available: 1 x \$200

**OPEN TO THE DEGROOTE SCHOOL OF BUSINESS****THE BASU MEDAL**

Established in 1984 in memory of Professor Sanjoy Basu by friends, colleagues and accounting organizations.

**Requirements:** To be awarded to the graduating student who, in the judgment of the School of Business, has displayed outstanding achievement in accounting and has attained an average of at least 10.0 in any four of COMMERCE 4AA3, 4AC3, 4AD3, 4AE3, 4AF3.

Typically Available: 1 x \$1,250 and Medal

**THE JOHN DEERE LIMITED SCHOLARSHIP**

Established in 1992 by John Deere Limited.

**Requirements:** To be awarded to a graduating student who, in the judgment of the DeGroote School of Business, has demonstrated outstanding academic achievement in courses offered by the Human Resource/Labour Relations Area.

Typically Available: 1 x \$2,000

**THE BURTON R. JAMES MEMORIAL PRIZE**

Established in 1974 by his friends and colleagues in honour of Burton R. James (Class of '39), Controller, 1963-71, Assistant Vice-President - Administration, 1971-73, McMaster University.

**Requirements:** To be awarded to the student who, has attained the highest Grade Point Average in a program in Commerce.

Typically Available: 1 x \$250

**OPEN TO THE FACULTY OF ENGINEERING****THE BINKLEY MEDAL**

Established in 2000 by the University, friends and colleagues of Margaret Belec (nee Binkley) on the occasion of her retirement and for her outstanding contributions to McMaster University during her 43 years of service.

**Requirements:** To be awarded to a student graduating from an Honours program in Computer Science who attains the highest Grade Point Average.

Typically Available: 1 x \$350 and a Medal

**THE GERALD L. KEECH MEDAL**

Established in 1994 by his friends and colleagues as a tribute to Gerald L. Keech in recognition of his outstanding contributions to McMaster University during his 33 years of service in Computer Science and computer services.

**Requirements:** To be awarded to the graduating student from a program in Computer Science who attains the highest Grade Point Average.

Typically Available: 1 x Medal

**THE ONTARIO PROFESSIONAL ENGINEERS FOUNDATION FOR EDUCATION GOLD MEDAL**

Established in 1961 by the Ontario Professional Engineers Foundation for Education.

**Requirements:** To be awarded to the graduate of a CEAB (Canadian Engineering Accreditation Board) accredited program in the Faculty of Engineering who attains the highest Cumulative Grade Point Average.

Typically Available: 1 x Medal

**THE SHELL CANADA PRIZES IN ENGINEERING AND MANAGEMENT**

Established in 1983.

**Requirements:** Three prizes to be awarded to students graduating from an Engineering and Management program. Awards will be based on scholarship and on the quality of and creativity shown in written communication.

Typically Available: 3 x \$300

**OPEN TO THE FACULTY OF HEALTH SCIENCES****OPEN TO THE FACULTY OF HUMANITIES****THE WILLIAM AND LIDA BARNES MEMORIAL PRIZE IN HISTORY**

Established in 1969 by their son, William D. Barnes, of Morgantown, West Virginia.

**Requirements:** To be awarded to the graduand who, in the judgment of the Department of History, has attained notable standing in an Honours History program.

Typically Available: 1 x \$150

**THE MARION BATES BOOK PRIZE**

Established in 1967, Centennial Year, by the Alumnae members of the McMaster Alumni Association in honour of Marion Bates, Dean of Women from 1947 to 1965.

**Requirements:** To be awarded to a student graduating from an Honours program in History who, in the judgment of the Department of History, has displayed outstanding achievement in Canadian history courses consistently throughout the degree program.

Typically Available: 1 x \$85 for books

**THE DEAN'S MEDAL FOR EXCELLENCE IN THE HUMANITIES**

Established in 2000 by Donald T. Betzner (Class of '52).

**Requirements:** Three prizes to be awarded to the graduating students who, in the judgment of the Faculty of Humanities, have demonstrated outstanding academic achievement.

Typically Available: 3 x \$10,500

**THE W. NORMAN JEEVES SCHOLARSHIP**

Established in 1987 by the French Section, Department of Romance Languages, in honour of W. Norman Jeeves, Professor of French from 1965 to 1987.

**Requirements:** To be awarded to a graduand of an Honours program in French who, in the judgment of the Department of French, has demonstrated outstanding academic achievement in the French component of the program.

Typically Available: 1 x \$475

**THE AGNES AND JOHN MACNEILL MEMORIAL PRIZE**

Established in 1946 by bequest of Annie May MacNeill (Class of '03).

**Requirements:** To be awarded to the student graduating from an Honours program in English who has attained the highest Grade Point Average in English throughout the degree program.

Typically Available: 1 x \$200

**THE WALTER SCOTT MCLAY PRIZE**

Established in 1938 in honour of Dean McLay, by his daughter, Mrs. R.R. McLaughlin (Marjorie McLay Class of '25) and further enlarged in 1950 by A.H. Wilson of Woodstock.

**Requirements:** To be awarded to the student who attains the highest Grade Point Average in an Honours program in English.

Typically Available: 1 x \$250

**THE ABRAHAM ISAAC ROSENBERG MEMORIAL PRIZE**

Established in 1986 by bequest of Abraham Isaac Rosenberg (Class of '34) of Hamilton and Kitchener.

**Requirements:** To be awarded to the graduating student who attains the highest Grade Point Average in the Honours Philosophy program.

Typically Available: 1 x \$225

**THE JOHN H. TRUEMAN PRIZE**

Established in 1989 as a tribute to Professor John H. Trueman by his many friends, colleagues and students on the occasion of his retirement from McMaster University.

**Requirements:** To be awarded to the graduating student who demonstrates the most outstanding ability in a History program.

Typically Available: 1 x \$450

**OPEN TO THE FACULTY OF SCIENCE****THE CSEP/SCPE UNDERGRADUATE STUDENT AWARD**

Established in 1993 by the Canadian Society for Exercise Physiology.

**Requirements:** To be awarded to the student from the Kinesiology program



who, in the judgment of the Department of Kinesiology, shows high standing in KINESIOL 2C03 and KINESIOL 2CC3 (Exercise Physiology) and either KINESIOL 4C03 or KINESIOL 4CC3.

**Typically Available:** 1 x Medal and Certificate

#### **THE DAWSON PRIZE IN CHEMISTRY**

Established in 2010 by Dr. Wilfred Chung (Class of '75) and the Philomathia Foundation in honour of Dr. Peter T. Dawson, Professor Emeritus of Chemistry.

**Requirements:** To be awarded to a graduating student who, in the judgment of the Department of Chemistry and Chemical Biology, has attained outstanding academic achievement in a Chemistry program. Preference will be given to the student who exhibits a special aptitude and promise in the field of physical chemistry and/or has attained the highest standing in Chemistry.

**Typically Available:** 1 x \$800

#### **THE JENSEN MEDAL**

Established in 1995 by friends and colleagues as a tribute to Dr. Doris E.N. Jensen in recognition of her contribution in developing Cooperative Education Programs in the Faculty of Science and her 31 years of service in the wider university community.

**Requirements:** To be awarded to a student graduating from the Honours Biology and Pharmacology (Co-op) Program who, in the judgment of the Committee of Instruction, demonstrates outstanding academic achievement and excellence in co-op placements.

**Typically Available:** 1 x Medal

#### **THE KINESIOLOGY PRIZES**

Established in 1982.

**Requirements:** Two prizes to be awarded to graduating students who, in the judgment of the Department of Kinesiology, have submitted an outstanding paper or project.

**Typically Available:** 2 x \$100

#### **THE ESTHER MCCANDLESS MEMORIAL PRIZE**

Established in 1984 by friends and colleagues in memory of Professor E.L. McCandless, a humanitarian and distinguished member of the Department of Biology from 1964 to 1983.

**Requirements:** To be awarded to a student who achieves an outstanding Grade Point Average in an Honours program in Biology.

**Typically Available:** 1 x \$300

#### **THE MIDDLETON / WALKER PRIZE IN SEDIMENTARY GEOLOGY**

Established in 2010 in honour of Gerard Middleton and Roger Walker by a generation of grateful students who studied under them from the mid-1960s until 2000.

**Requirements:** To be awarded to the student graduating from an Honours B.Sc. program in the School of Geography & Earth Sciences who, in the judgment of the School, has achieved the highest standing in the field of sedimentary geology.

**Typically Available:** 1 x \$1,250

#### **THE E.S. MOORE PRIZE**

Established in 1956 by Elwood S. Moore, LL.D. (Class of '55).

**Requirements:** To be awarded to the student graduating in an Honours program in Geography who, in the judgment of the School of Geography and Earth Sciences, has attained the most notable standing in Geology (or Earth Science, Environmental Science or Geography).

**Typically Available:** 1 x \$225

#### **OPEN TO THE FACULTY OF SOCIAL SCIENCES**

##### **THE CFUW - HAMILTON MEMORIAL PRIZE IN POLITICAL SCIENCE**

Established in 1992 by CFUW-Hamilton to honour the memory of past members. Renewed in 2015 on the occasion of the Club's 90th anniversary.

**Requirements:** To be awarded to a female student graduating from a Political Science program who has demonstrated outstanding academic achievement.

**Typically Available:** 1 x \$1,000

#### **THE DENTON PRIZE IN ECONOMICS**

Established in 2009 by J. Stephen Yeo (Class of 1972) in honour of Dr. Frank T. Denton, Professor Emeritus in Economics.

**Requirements:** To be awarded to a student graduating from an Honours program in Economics who, in the judgment of the Department of Economics, has demonstrated outstanding achievement in Econometrics as well as overall academic merit.

**Typically Available:** 1 x \$1,000

#### **THE J.E.L. GRAHAM MEDAL**

Established by the Faculty of Social Sciences in 1982 in recognition of Professor J.E.L. Graham for his outstanding contributions to the Faculty and the University during 32 years of service.

**Requirements:** To be awarded on the recommendation of the Faculty of Social Sciences to a student in the graduating class who, on the basis of scholarship, is judged to be an outstanding member of the class of Social Sciences graduands, and who has completed the program primarily on a part-time basis.

**Typically Available:** 1 x Medal

#### **THE HURD MEDAL**

Established in 1955 by Donald W. Hurd (Class of '49) in memory of his father, Dean William Burton Hurd and augmented in 2003 in his memory by his wife Alice Hurd.

**Requirements:** To be awarded to a student at graduation for distinguished achievement in an Honours program in which economics is a major field of study.

**Typically Available:** 1 x Medal

#### **THE FRANK E. JONES PRIZE**

Established in 1982 in honour of Professor F.E. Jones for his outstanding contributions to the Department of Sociology.

**Requirements:** To be awarded to full-time graduating students who have completed a program in Sociology with high averages.

**Typically Available:** 1 x \$100

#### **THE DR. JEAN JONES MEMORIAL SCHOLARSHIP**

Established in 2005 by family and friends in memory of Dr. Jean Jones.

**Requirements:** To be awarded to a graduating student who attains the highest Grade Point Average in either the Bachelor of Arts/Bachelor of Social Work or Bachelor of Social Work post-degree program.

**Typically Available:** 1 x \$800

#### **THE RUTH LANDES PRIZE**

Established in 1982 in honour of Professor Ruth Landes for her outstanding contributions to the Department of Anthropology.

**Requirements:** To be awarded to graduating students who have completed a program in Anthropology primarily on a part-time basis with high averages.

**Typically Available:** 1 x \$100

#### **THE FELIKS LITKOWSKI MEMORIAL PRIZE IN POLITICAL SCIENCE**

Established in 1987 by Albert Litkowski (Class of '78) and Richard Litkowski (Class of '86) in honour of their father.

**Requirements:** To be awarded to a student graduating from an Honours program in Political Science who, in the judgment of the Department of Political Science, has demonstrated outstanding academic achievement.

**Typically Available:** 1 x \$950

#### **THE R.C. MCIVOR MEDAL**

Established by the Faculty of Social Sciences in 1982 in recognition of Professor R.C. McIvor, former Dean of the Faculty, for his outstanding contributions to the Faculty and the University during 35 years of service.

**Requirements:** To be awarded on the recommendation of the Faculty of Social Sciences to the student in the graduating class who, on the basis of scholarship, is judged to be the outstanding member of the class of Social Sciences graduands.

**Typically Available:** 1 x Medal

#### **THE MCMASTER UNIVERSITY RETIREES ASSOCIATION PRIZE**

Established in 1992 by the McMaster University Retirees Association.

**Requirements:** To be awarded to students graduating from a program in Aging and Society who attain high averages.

**Typically Available:** 1 x \$750

#### **THE ONTARIO ASSOCIATION OF SOCIAL WORKERS PRIZES**

Established in 1986 and augmented in 1992 by the Hamilton Branch.

**Requirements:** Two prizes to be awarded to the graduating students, one first degree and one second degree, who successfully complete SOCWORK 4DD6 A/B S and attain the highest grade in SOCWORK 4D06 A/B S in the same Fall/Winter term.

Courses must be taken during the Fall/Winter terms.

**Typically Available:** 2 x \$500

#### **THE HARRY L. PENNY PRIZE**

Established in 1984 in recognition of Professor Harry L. Penny, founding Director of the School of Social Work, for his outstanding contribution to the School.

**Requirements:** To be awarded to the student with the highest Cumulative Average in a Social Work program.

**Typically Available:** 1 x \$100

#### **THE POLITICAL SCIENCE HONOURS ESSAY PRIZE**

Established in 1982.

**Requirements:** To be awarded to the student who in the judgment of the Department of Political Science, has demonstrated outstanding academic achievement in POLSCI 4Z06 A/B.

**Typically Available:** 1 x \$100

#### **THE POLITICAL SCIENCE PRIZE**

Established in 1982.

**Requirements:** To be awarded to graduating students who have completed a program in Political Science primarily on a part-time basis with high averages.

**Typically Available:** 2 x \$100

#### **THE RELIGIOUS STUDIES PRIZES**

Established in 1982.

**Requirements:** To be awarded to graduating students who have completed a program in Religious Studies primarily on a part-time basis with high averages.

**Typically Available:** 2 x \$100 each

#### **THE RICHARD SLOBODIN PRIZE**

Established in 1982 in honour of Professor Richard Slobodin for his outstanding contributions to the Department of Anthropology.

**Requirements:** To be awarded to full-time graduating students who have completed an Anthropology program with high averages.

**Typically Available:** 1 x \$100

#### **THE SOCIOLOGY PRIZES**

Established in 1982.

**Requirements:** To be awarded to graduating students who have completed a program in Sociology primarily on a part-time basis with high averages.

**Typically Available:** 2 x \$100 each

#### **THE HARRY WAISGLASS BOOK PRIZE**

Established in 1988 in honour of Harry Waisglass, the first Director of the Labour Studies Education Program at McMaster.

**Requirements:** To be awarded to a student graduating from a program in Labour Studies who, in the judgment of the Committee of Instruction for Labour Studies, has demonstrated outstanding achievement.

**Typically Available:** 1 x \$50 for books

#### **THE ALVINA MARIE WERNER SCHOLARSHIP**

Established in 2008 through a bequest by the late Alvina Marie Werner.

**Requirements:** To be awarded to a graduating student enrolled in a Aging and Society or Social Work program who, in the judgment of the Faculty of Social Sciences, demonstrates outstanding academic achievement and interest in pursuing a career in social services in the specific area of gerontology.

**Typically Available:** 1 x \$3,500

## **Awards by Application**

Application details are available on Mosaic.

### **OPEN TO TWO OR MORE FACULTIES**

#### **THE REV. ALLISON M. BARRETT SCHOLARSHIP**

Established in 2010 by her family and friends in honour of Rev. Allison M. Barrett to celebrate her outstanding leadership and devoted service as Minister of the First Unitarian Church of Hamilton, 1996-2008.

**Requirements:** To be awarded to a graduating student in Honours Religious Studies with demonstrated excellence in Western Religious Thought who, in the judgment of the Department of Religious Studies, has achieved notable academic standing and intends to pursue graduate studies.

**Typically Available:** 1 x \$1,000

#### **THE BERT MACKINNON MEMORIAL SCHOLARSHIP**

Established in 1996 in memory of Bert MacKinnon, B.A. (Class of '43), LL.D. (Class of '77), first Associate Chief Justice of Ontario (1978 to 1986).

**Requirements:** One scholarship to be awarded to a graduating student who enrolls in a Bachelor of Laws or Juris Doctor or equivalent degree program in the academic year immediately following graduation. The student selected will have demonstrated high academic achievement and leadership in extracurricular activities.

**Typically Available:** 1 x \$800

#### **THE CATHERINE MACNEILL PRIZE**

Established in 1946 by bequest of Annie May MacNeill (Class of '03).

**Requirements:** To be awarded to a woman student in her graduating year who has attained notable standing in scholarship and has shown qualities of leadership.

**Typically Available:** 1 x \$175

#### **THE JOHN R. MCCARTHY SCHOLARSHIP**

Established in 1987 by John R. McCarthy, LL.D. (Class of '65), former Deputy Minister of University Affairs and Deputy Minister of Education for the Province of Ontario.

**Requirements:** To be awarded to a student graduating from a program in Arts and Science, Humanities, Science, or Social Sciences who enrolls in the Faculty of Education of an Ontario university in the academic year immediately following graduation. The student selected will have made a contribution to the life of the University by displaying leadership in student government or student affairs and leadership and sportsmanship in athletic endeavours.

**Typically Available:** 5 x \$700

#### **THE MCMASTER UNIVERSITY FUTURES FUND GRADUAND AWARD**

Established in 2000.

**Requirements:** To be awarded to the child of a member of McMaster University's salaried pension plan who has demonstrated outstanding academic achievement. Recipient must obtain a Grade Point Average of 8.0 or greater.

**Typically Available:** 4 x \$1,000

### **OPEN TO THE DEGROOTE SCHOOL OF BUSINESS**

#### **THE E.H. AMBROSE GOLD MEDAL**

Established in 1971 by Clarkson Gordon in memory of their former Hamilton partner, E.H. Ambrose, member of the University's Board of Governors from 1957 to 1967 and its Chair, 1965 to 1967, and augmented by Mrs. E.H. Ambrose in 1987.

**Requirements:** To be awarded to the student in the graduating class of a program in Commerce who, on the basis of scholarship and leadership, is judged to be the outstanding member of the class.

**Value:** 1 x Medal

### **OPEN TO THE FACULTY OF ENGINEERING**

#### **THE DR. RUDOLF DE BUDA SCHOLARSHIP**

Established in 1989 in memory of Professor de Buda by family, friends and colleagues.

**Requirements:** To be awarded to students who have achieved high academic standing in an Electrical or Computer Engineering program and who complete a

thesis or project in their final year or intend to pursue graduate research in the field of Information Theory, Coding or Digital Communications.

Typically Available: 1 x \$1,900

#### OPEN TO THE FACULTY OF HEALTH SCIENCES

##### THE CHRISTINE DITTA MEMORIAL AWARD

Established in 2017 in memory of Christine Ditta.

**Requirements:** To be awarded to a student graduating from a Nursing program, who in the judgement of the School of Nursing, intends to pursue a career in ICU, or excels in this specialty area.

Typically Available: 1 x \$1,000

##### THE MCMASTER NURSING ALUMNI MEMORIAL PRIZE

Established in 1984 and augmented in 2001 by the McMaster Nursing Alumni Branch to recognize graduates from the McMaster University School of Nursing.

**Requirements:** To be awarded to a student who, in the judgment of the School of Nursing, has demonstrated leadership while participating in undergraduate activities.

Typically Available: 1 x \$300

##### THE PIONEER ENERGY LP PRIZES IN NURSING

Established in 1989 by the Pioneer Group Limited in conjunction with the R. Samuel McLaughlin Centre for Gerontological Health Research.

**Requirements:** Two prizes to be awarded to students graduating from the Nursing program who, in the judgment of the School of Nursing, have achieved notable standing and demonstrated practical aptitude for a career in the health care of the elderly.

Typically Available: 2 x \$450

##### THE GRACE SENRA-FONTES MEMORIAL PRIZE

Established in 1989 by the graduating class (Class of '88) in association with the McMaster University Nursing Society and the McMaster Nursing Alumni Executive in memory of Grace Senra-Fontes (Class of '88) of Toronto.

**Requirements:** To be awarded to a student in Level 3 or 4 of the Nursing program and who, in the judgment of the School of Nursing, best demonstrates excellence in scholarship and leadership, and has served as a valuable role model for those qualities deemed important to success in a nursing career. Preference will be given to students enrolled in Level 4 of the Nursing Program.

Typically Available: 1 x \$250

#### OPEN TO THE FACULTY OF HUMANITIES

##### THE AMELIA HALL GOLD MEDAL

Established in 1985 by members of the Class of '38 in recognition of Amelia Hall (Class of '38), D. Litt. (Class of '75), one of the great pioneers of Canadian theatre and a consummate actress, who performed on Canadian stage, screen, radio and television for 35 years.

**Requirements:** To be awarded to a graduating student who, in the judgment of the School of the Arts, has made a significant contribution to drama during the student's University career.

Typically Available: 1 x Medal

##### THE HUMANITIES MEDALS FOR SPECIAL ACHIEVEMENT

Established by the University in 1982.

**Requirements:** Up to five medals to be awarded to graduating students in the Faculty of Humanities in recognition of outstanding achievement in scholarship and contributions to the cultural and intellectual life of the University including such areas as the creative and performing arts and faculty government.

Typically Available: 5 x Medal

##### THE A.G. MCKAY PRIZE IN CLASSICAL STUDIES

Established in 1990 by Professor Emeritus A.G. McKay.

**Requirements:** To be awarded to a graduating student from an Honours program in Classics who, in the judgment of the Department of Classics, has demonstrated outstanding academic achievement and leadership.

Typically Available: 1 x \$200

#### OPEN TO THE FACULTY OF SCIENCE

##### THE BURKE MEMORIAL RING

Presented by science graduates of the University in memory of Dean C.E. Burke.

**Requirements:** To be awarded to a graduate of a B.Sc. program who is named to the Deans' Honour List and who has made the most outstanding contribution to undergraduate activities.

Typically Available: 1 x Ring

#### OPEN TO THE FACULTY OF SOCIAL SCIENCES

##### THE JENNIFER HEADLEY SCHOLARSHIP

Established in 2010 by Rochelle Coleman in memory of her friend and classmate Jennifer Headley who embodied and embraced the passion to enable policy creation to have a direct impact on improving lives around the world; her keen mind, lively spirit and commitment to all living things is honoured via this award.

**Requirements:** To be awarded to a graduating student in a program in Political Science who, in the judgment of the Department of Political Science, has demonstrated outstanding academic achievement and promise for a career in either public policy or international relations.

Typically Available: 1 x \$1,000

##### THE KARL KINANEN ALUMNI PRIZE IN GERONTOLOGY

Established in 1992 by the Gerontology Alumni of McMaster University in recognition of Karl Kinanen for his leadership in the development of Gerontological Studies at the University.

**Requirements:** To be awarded to a student graduating from a program in Aging and Society who, in the judgment of the Department of Health, Aging and Society, has demonstrated high academic achievement and leadership in community activities.

Typically Available: 2 x \$50

##### THE MCMASTER UNIVERSITY RETIREES ASSOCIATION PRIZE

Established in 1992 by the McMaster University Retirees Association.

**Requirements:** To be awarded to students graduating from a program in Aging and Society who attain high averages.

Typically Available: 1 x \$550

##### THE AUDREY EVELYN MEPHAM AWARD

Established in 2001 by Gordon W. Mephram in loving memory of his wife Audrey Evelyn Mephram.

**Requirements:** To be awarded to a student graduating from an Honours program in the Department of Health, Aging and Society who, in the judgment of the Department of Health, Aging and Society, has demonstrated notable academic achievement. Preference will be given to a student who has completed a thesis or course paper on issues relating to Alzheimer's disease.

Typically Available: 3 x \$5,000

##### THE PIONEER ENERGY LP GERONTOLOGY PRIZES

Established in 1988 by the Pioneer Group Limited.

**Requirements:** To be awarded to students graduating from a program in the Department of Health, Aging and Society, who in the judgment of the Department, demonstrate leadership in the field of Gerontology.

Typically Available: 1 x \$120 each

## In-Course Academic Grants

### In-Course and Renewal Academic Grant Regulations

1. In-Course Academic Grants are monetary awards allocated on the basis of academic merit, and in some cases other forms of earned merit, and demonstrated financial need.
2. In-Course Academic Grants are available to full-time and part-time students enrolled in their first baccalaureate degree program who are not in their

- graduating term.
3. In-Course Academic Grants requiring full-time status are available to students enrolled full-time or equivalent in both the fall and winter terms.
  4. In-Course Academic Grants will require either a minimum Cumulative Grade Point Average of 8.0 calculated on at least 18 graded units or a Fall-Winter Average of 9.5 calculated on the basis of graded units in at least a full-time OSAP eligible course load per term in the prior academic year.
  5. In-Course Academic Grants first consider available averages, units upon which averages are calculated, program level and enrolled units in the ranking of academic merit.
  6. In-Course Academic Grants may also consider other forms of earned merit. In order to evaluate earned merit, students may need to complete one or more additional requirements including, but not limited to, submitting an application, participating in an interview, performing an audition or developing a portfolio.
  7. In order to be considered for an In-Course Academic Grant by application, students must submit a complete application by the specified deadline date.
  8. In-Course Academic Grant applications which meet eligibility criteria are forwarded to a selection committee for review and ranking.
  9. In-Course Academic Grants are allocated on the basis of an eligible course load and financial need as determined by a completed full-time OSAP application for the current academic year.
  10. The greater calculated financial need is used to break any tie.
  11. Some In-Course Academic Grants are renewable.
  12. Entrance, Indigenous Student Entrance and In-Course Academic Grant renewals may be based on a minimum Cumulative Grade Point Average of 8.0, or a minimum Fall-Winter Average of 9.5 from the prior academic year based on their full-time OSAP eligible course load or equivalent. An OSAP application for the current year is not required to renew an Entrance or In-Course Academic Grant.
  13. Students may receive a maximum of one In-Course Academic Grant or renewal of a prior year Entrance, Indigenous Student Entrance or In-Course Academic Grant.
  14. Students must be enrolled in at least the full-time OSAP eligible course load or equivalent used to determine their eligibility to have an In-Course Academic Grant payment processed. Students must be enrolled in the fall term in a full-time OSAP eligible course load or equivalent to have the renewal of a prior year Entrance or In-Course Academic Grant payment processed.
  15. All In-Course Academic Grants and Academic Grant renewal payments are disbursed through the McMaster Student Account and are applied to outstanding charges. A few exceptions to this regulation may be approved by the Office of the Registrar, Aid & Awards.
  16. In-Course Academic Grants are typically disbursed no later than the end of December. Academic Grant renewal payments are typically disbursed no later than the end of September.
  17. In-Course Academic Grant recipients will have their awards noted on their University transcript. Academic Grant renewals are not noted on transcripts.
  18. Registration in, or transfer to, another program of study and/or a change in course load may result in forfeiture or adjustment in the value of the In-Course Academic Grant or Entrance or In-Course Academic Grant renewal. Students are advised to consult with the Office of the Registrar, prior to making any changes to their program of study or course load.
  19. Students withdrawing from courses without failure by default in the Winter term will forfeit their Academic Grant renewal.
  20. Students who forfeit their Academic Grant will have their grant cancelled and their transcript notation removed if forfeited in first year of payment only. Students must return the Academic Grant funding to their McMaster Student Account.
  21. Forfeiture of a renewable Academic Grant also cancels all future instalments of the Academic Grant.
  22. Students wishing to defer the benefits of an Academic Grant renewal to the next academic year should make the request in writing to the Office of the Registrar, Aid & Awards. Approval is not automatic and deferments are not normally granted for more than one academic year.
  23. Students holding renewable Academic Grants who choose to accelerate their program and to complete their degree earlier than normal by completing Spring/Summer courses and who wish to employ the benefits of their renewable Academic Grant to defray the tuition and compulsory fees for those courses should make the request in writing to the Office of the Registrar, Aid & Awards.
  24. The University may choose not to grant an In-Course Academic Grant in the absence of a suitable candidate; may choose to limit the number of recipients selected where funding is limited; may choose to limit the number of recipients selected where too few suitable candidates exist; and/or may choose to generate applicant pools for awards by application, where complete applications have not been received.
  25. The University may remove specific In-Course Academic Grants from the University Calendar, may revise the terms and stated value and/or suspend the granting of In-Course Academic Grants (e.g. donor funds).
  26. In-Course Academic Grants supported by donor funds may have additional eligibility and renewal requirements.

## Academic Grants for In-Course Students

### Open to Two or More Faculties

#### THE WILLIAM F. CAMPBELL ACADEMIC GRANT

Established in 2005 by Margaret Campbell, M.Sc. (Class of '72) and David F. Campbell in memory of their father William F. Campbell, B.A. (Class of '36) of Ottawa.

**Requirements:** To be awarded to students entering Level 2 in the Faculty of Engineering and the Faculty of Science who have completed Level 1 with high Fall-Winter Averages and demonstrate financial need. Tenable in Levels 3 and 4 provided that the recipients remain enrolled in their Faculty and maintain a minimum Fall-Winter Average of 9.5. These awards will be divided equally between the Faculty of Engineering and the Faculty of Science.

**Typically Available:** 1 x \$6,000 (\$2,000 each year)

#### THE HANS GROH ACADEMIC GRANT

Established in 2011 by Dr. Catherine Groh, B.Sc. (Class of '93) and M.D. (Class of '96), in honour of her father Hans Groh to encourage students in their pursuit of education.

**Requirements:** To be awarded to a student who has completed at least Level 1 with a high Fall-Winter Average, and who demonstrates financial need.

**Typically Available:** 1 x \$2,000

#### THE HENRY GLOBAL CONSULTING ACADEMIC GRANT

Established in 2011 by Henry Global Consulting at the request of Henry Zou, Ph.D. Engineering (Class of '91), in recognition of McMaster students who, through dedicated effort, excel in their education.

**Requirements:** To be awarded to a student who has completed at least Level 1 with a high Fall-Winter Average, and who demonstrates financial need.

**Typically Available:** 1 x \$1,500

#### THE ELIZABETH JENKINS ACADEMIC GRANT

Established in 2010 by Tom Jenkins, B.Eng.Mgt. (Class of '82) and Toby Jenkins in honour of Tom's mother, Elizabeth Jenkins.

**Requirements:** To be awarded to students who have completed any Level 1 program, attained high Fall-Winter Averages, and who demonstrate financial need.

**Typically Available:** 1 x \$5,000

#### THE JUDITH AND WARREN JOHNSON ACADEMIC GRANT

Established in 2017 by Judith Johnson (Class of '65) and Warren Johnson (Class of '62).



**Requirements:** To be awarded to a student in any Faculty who has attained a high average and demonstrates financial need.

**Typically Available:** 1 x \$1,000

#### **THE KNEALE BROTHERS '37 ACADEMIC GRANT**

Established in 2006 by brothers Verne and Graham Kneale (Class of '37) in honour of their family's belief in higher education.

**Requirements:** To be awarded to a student enrolled in the Faculty of Social Sciences or the Faculty of Humanities enrolled in Level 3, who attains a high Fall-Winter Average, and who demonstrates financial need.

**Typically Available:** 4 x \$2,000

#### **THE MCLEAN FAMILY ACADEMIC GRANTS**

Established in 2016 by Paul McLean, HBS (Class of '80) and MBA (Class of '81), his wife Carol, his daughter, Lauren McLean, HBA (Class of '17) in recognition of their three generation family connection to McMaster started by Paul's father, Mr. C. Gordon McLean, Alumnus (Class of '46).

**Requirements:** To be awarded to students enrolled in the (a) Faculty of Humanities (b) Faculty of Science, (c) Faculty of Social Sciences and (d) the DeGroote School of Business who have completed Level 1 with a high Fall-Winter Average and who demonstrate financial need.

**Typically Available:** 4 x \$2,500

#### **THE MICKELSEN-GOULD FAMILY ACADEMIC GRANT**

Established in 2016 by I. David Gould (Class of '62) and his wife Ruth Gould.

**Requirements:** To be awarded to a student enrolled in any program who attains a high average and demonstrates financial need.

**Typically Available:** 1 x \$1,000

#### **THE SZLEK MILLER ACADEMIC GRANT**

Established in 2008 by Dr. Stefania Szlek Miller (Class of '67), on the occasion of her retirement after 35 years of service as a faculty member in the Department of Political Science.

**Requirements:** To be awarded to a student enrolled in an Honours History or Honours Political Science program who attains a high Fall-Winter Average and demonstrates financial need.

**Typically Available:** 1 x \$1,500

#### **THE UTTER MORRIS 90TH ANNIVERSARY ACADEMIC GRANT**

Established in 2017 by Utter Morris Insurance Brokers of Burlington, Ontario, in celebration of 90 years of leadership and commitment to improving both itself and its community.

**Requirements:** To be awarded to a student enrolled in any program who attains a high average and demonstrates financial need.

**Typically Available:** 1 x \$1,000

#### **VAN DER SLUIS FAMILY ACADEMIC GRANT**

Established in 2019 by Henry van der Sluis, B.Eng. (Class of '73) and his wife Jane van der Sluis, in memory of Henry's brother, John Albert van der Sluis and Jane's son, Paul John Allison. Two beloved family members who would have embraced all that a university education offers.

**Requirements:** To be awarded to a students enrolled in either the Faculty of Engineering or the Faculty of Science who attain high averages and demonstrate financial need.

**Typically Available:** 1 x \$1,000

## **Open to the Arts and Science Program**

#### **THE JULIE PATEL FOUNDATION ACADEMIC GRANT**

Established in 2017 by the Julie Patel Foundation.

**Requirements:** To be awarded to a student in an Arts & Science program who has attained a high Fall-Winter average and demonstrates financial need.

**Typically Available:** 1 x \$1,000

## **Open to the DeGroote School of Business**

#### **THE CHARITY OF HOPE/MORRIS MERCANTI ACADEMIC GRANT**

Established in 2014 by The Charity of Hope, in memory of their family member, prominent entrepreneur and businessman Morris Mercanti, B.A., B.P.E. (Class of '76).

**Requirements:** To be awarded to a student in the Bachelor of Commerce program with a high Fall-Winter Average, and who demonstrates financial need.

**Typically Available:** 1 x \$1,000

#### **THE ALFRED HARRY CROWHURST ACADEMIC GRANT**

Established in 2012 by Lawrence Crowhurst, B. Com. (Class of '76) in memory of his father, Alfred Harry Crowhurst.

**Requirements:** To be awarded to a student enrolled in the Bachelor of Commerce program who has completed at least Level 1 with a high Fall-Winter Average, and who demonstrates financial need.

**Typically Available:** 1 x \$1,500

#### **THE IODE HAMILTON MARTHA SERRELS ACADEMIC GRANT**

Established in 2010 by IODE Hamilton in memory of Martha Serrels.

**Requirements:** A variable number to be awarded to students enrolled in a Commerce program in the DeGroote School of Business who attain a high Fall-Winter Average and demonstrate financial need.

**Typically Available:** 3 x \$1,000

#### **THE TAYLOR LEIBOW ACADEMIC GRANT**

Established in 2006 by Taylor Leibow LLP, a Hamilton-based firm established in 1947.

**Requirements:** To be awarded to a student who has completed Level 2 or 3 of the Bachelor of Commerce program, attains a high Fall-Winter Average and demonstrates financial need.

**Typically Available:** 1 x \$800

#### **THE REHANA AND KHALID MASUD ACADEMIC GRANT**

Established in 2011 by Omar Masud, B.Sc. (Class of '11) in honour of his parents Rehana and Khalid Masud, for their unparalleled dedication and commitment towards their children's education.

**Requirements:** To be awarded to a student in the DeGroote School of Business who has completed at least Level 1 with a high Fall-Winter Average and who demonstrates financial need.

**Typically Available:** 1 x \$1,000

#### **THE BARRIE REID ACADEMIC GRANT**

Established in 2006 by friends and family in memory of Barrie Reid, B.A. (Class of '75).

**Requirements:** To be awarded to a student in a Commerce program, who attains a high standing in either marketing course, COMMERCE 2MA3 or COMMERCE 3MC3, and who demonstrates financial need.

**Typically Available:** 2 x \$300

#### **THE TROY FAMILY ACADEMIC GRANT**

Established in 2004 by Kenneth, B.Com. (Class of '75) and Drenda Troy in honour of Anthony and Marie Troy in support of their belief that all students should have the opportunity to pursue their educational goals.

**Requirements:** To be awarded to a student who has completed Business I, is continuing in the Bachelor of Commerce program, attains a high Fall-Winter Average and demonstrates financial need.

**Typically Available:** 1 x \$2,500

#### **THE WONG FAMILY ACADEMIC GRANT**

Established in 2015 by Wilfred Wong, B.Com. (Class of '97) and his wife, Dorothy Tong, B.Com. (Hon.) (Class of '99), in memory of Wilfred's father, Yue Pak Wong, for his dedication and commitment towards his children's education.

**Requirements:** To be awarded to a student enrolled in the DeGroote School of Business who has completed at least Level 1 and is enrolled in a Bachelor of Commerce program, who attained a high Fall-Winter Average and demonstrates financial need.

Typically Available: 1 x \$1,000

#### **THE DIANE AND COLIN WOOD ACADEMIC GRANT IN BUSINESS**

Established in 2008 by Diane Wood and Colin Wood, B.Com. (Class of '78).

**Requirements:** To be awarded to students in the DeGroot School of Business who have completed Business I with a high Fall-Winter Average, are enrolled in a Level 2 Commerce program, and have demonstrated financial need.

Typically Available: 1 x \$1,800

### **Open to the Faculty of Engineering**

#### **THE GORDON AND AGNES (TWAMBLEY) BRASH ACADEMIC GRANT**

Established in 2008 by the bequest of Ron Brash, B.Eng. (Class of '64) in memory of his parents.

**Requirements:** A variable number to be awarded to students enrolled in an Electrical Engineering program who attained a high Fall-Winter Average and demonstrate financial need.

Typically Available: 7 x \$8,000

#### **THE CANADIAN PROCESS CONTROL ASSOCIATION ACADEMIC GRANT**

Established in 2012 by The Canadian Process Control Association.

**Requirements:** To be awarded to students enrolled in the Bachelor of Technology, Process Automation Technology program who have achieved notable academic standing and who demonstrate financial need.

Typically Available: 1 x \$2,500

#### **THE CHAMBERS ACADEMIC GRANT**

Established in 2012 by Dean Chambers, B.Eng.Mgt. (Class of '78) and his wife, Carol-Lynn Chambers, in memory of Dean's father, Leslie Wayne Chambers, who inspired his son's educational and career choices.

**Requirements:** To be awarded to a student who has completed at least Level 2 in a Chemical Engineering and Management program with a high Fall-Winter Average, and who demonstrates financial need.

Typically Available: 2 x \$2,000

#### **THE NESMITH AND INGRID CHINGCUANCO ACADEMIC GRANT**

Established in 2013 by Nesmith and Ingrid Chingcuanco.

**Requirements:** To be awarded to a student who has completed at least Level 2 of an Electrical Engineering program with a high Fall-Winter Average and who demonstrates financial need.

Typically Available: 1 x \$2,500

#### **THE KRISTINA FERRIS ACADEMIC GRANT**

Established in 2011 by Kristina Ferris, B.Sc. (Class of '94) and B.Eng. (Class of '99) to encourage students to pursue and continue studies in Engineering Physics.

**Requirements:** To be awarded to a student who has completed at least Level 2 with a high Fall-Winter Average and is continuing in an Engineering Physics program, and who demonstrates financial need.

Typically Available: 1 x \$1,500

#### **THE HATCH ACADEMIC GRANT IN ENGINEERING**

Established in 2005 by Hatch to celebrate their 50th anniversary and their success in providing engineering expertise to clients around the world.

**Requirements:** Two grants to be awarded to students in a program in Civil, Chemical, Materials or Mechanical Engineering who have a high Fall-Winter Average and demonstrate financial need: a) one to a student in Level 3, and b) one to a student in Level 4 or above.

Typically Available: 2 x \$5,000 each

#### **THE HOWE FAMILY ACADEMIC GRANT**

Established in 2019 by Stephen Howe, B.Eng. (Class of '90), in memory of his parents, Peter and Doreen Howe, who were passionate and committed educators.

**Requirements:** To be awarded to female students in Level 2 or above in the Faculty of Engineering who attain high averages and demonstrate financial need.

Typically Available: 1 x \$4,000

#### **THE JACK HOWETT ACADEMIC GRANT**

Established in 2005 by the Organization of CANDU Industries (OCI) in honour of Jack Howett, a founding member.

**Requirements:** To be awarded to a student who has completed at least Level 2 with a high Fall-Winter Average and is continuing in an Engineering Physics program specializing in the Nuclear Engineering and Energy Systems Stream, and who demonstrates financial need.

Typically Available: 1 x \$2,000

#### **THE JONES FAMILY ACADEMIC GRANT**

Established in 2015 by Dr. Richard Jones, B.Eng. (Class of '82), Ph.D. (Class of '93) and Kathryn Jones, B. Eng. (Class of '81), M.Eng. (Class of '86) to allow the opportunity for education to McMaster Students.

**Requirements:** To be awarded to a student in the Faculty of Engineering who has completed at least Level 2 with a high Fall-Winter Average and who demonstrate financial need.

Typically Available: 1 x \$5,000

#### **THE JOYCE AND ROSS KELLY ACADEMIC GRANT**

Established in 2008 by Joyce and Ross Kelly to provide support for students who wish to pursue their educational goals.

**Requirements:** To be awarded to a student who has completed Level 1 with a high Fall-Winter Average, is enrolled in the Department of Materials Science and Engineering, and demonstrates financial need.

Typically Available: 1 x \$2,000

#### **THE TERENCE JAMES KENNETT ACADEMIC GRANT**

Established in 2015 by friends of Dr. Kennett (1927-2013).

**Requirements:** To be awarded to a student in the Faculty of Engineering, Department of Engineering Physics who has completed at least Level 2 with a high Fall-Winter Average and demonstrates financial need.

Typically Available: Variable

#### **THE LIBURDI ENGINEERING ACADEMIC GRANT**

Established in 2019 by Joseph Liburdi.

**Requirements:** To be granted to students enrolled in Level 2 or above in the Faculty of Engineering who attain high averages and demonstrate financial need.

Typically Available: 1 x \$40,000 (\$10,000 per year)

#### **THE JOHN B. MCDUGALL ACADEMIC GRANT**

Established in 2009 in memory of the late John B. McDougall, B.Sc. (Class of '40) by his family and friends in recognition of his 25 years of service to McMaster. After 10 years at the Chalk River Reactor, John returned to McMaster in 1957 where, in 1959, he helped open the first university-based research reactor in the British Commonwealth.

**Requirements:** To be awarded to students who use the nuclear reactor in their course work, have attained high academic standing in ENGPY 3D03, are currently enrolled in ENGPY 4U02, and demonstrate financial need.

Typically Available: 1 x \$3,000

#### **THE PETER MILNE ACADEMIC GRANT**

Established in 2016 by Peter Milne, B.Eng. (Class of '79) to encourage students to pursue their goals and aspirations.

**Requirements:** To be awarded to students enrolled in the Faculty of Engineering who have completed Level 1 with a high Fall-Winter Average and who demonstrate financial need.

Typically Available: 1 x \$1,000

#### **THE RICHARD C. NEWMAN ACADEMIC GRANT**

Established in 2007 by the Newman family in memory of Richard Carson Newman, father of Mark Newman, B.Sc. (Class of '86) and Toni Newman, B.A. (Class of '83).

**Requirements:** To be awarded to a student in the Faculty of Engineering who has completed at least Level 1, attains a high Fall-Winter Average, and demonstrates financial need.

Typically Available: 1 x \$1,500

**THE LYNN NICKERSON '97 ACADEMIC GRANT**

Established in 2012 in memory of Lynn Nickerson, B.Eng.Society (Class of '97).

**Requirements:** To be awarded to a student in the Faculty of Engineering who has completed Level 2 or Level 3 of an Engineering and Society program and who has achieved notable academic standing and demonstrates financial need.

**Typically Available:** 1 x \$2,000

**THE POLLOCK FAMILY ACADEMIC GRANT**

Established in 2006 by Dr. Ken Pollock, Dr. Gary Pollock, Dr. Mark Pollock and Dr. Ted Pollock.

**Requirements:** To be awarded to students in the Faculty of Engineering who have completed Level 1, attained high Fall-Winter Averages and demonstrate financial need.

**Typically Available:** 5 x \$2,500

**THE PATRICK TAN ACADEMIC GRANT**

Established in 2008 by Dr. Patrick Guong-Ching Tan, B.Eng. (Class of '70), M.Eng. (Class of '72), LL.D. (2003).

**Requirements:** Two grants to be awarded to students in a program in Engineering who have a high Fall-Winter Average and demonstrate financial need.

**Typically Available:** 2 x \$2,000

**Open to the Faculty of Health Sciences****THE MARGARET ELIZABETH BURKE MEMORIAL ACADEMIC GRANT**

Established in 2005 by Dr. Dennis Burke in memory of his wife, Margaret.

**Requirements:** To be awarded to a student who has completed Level 1 in the B.Sc.N. program and who, in the judgment of the School of Nursing, has attained the highest grade in the required Level 1 Anatomy/Physiology courses and demonstrates financial need.

**Typically Available:** 1 x \$3,500

**THE PAT FITZHENRY NURSING ACADEMIC GRANT**

Established in 2016 by Sean Fitzhenry in honour of his mother, Pat Fitzhenry, in honour of her lifelong commitment to providing the best care.

To be granted to students who have completed at least Level 1 in the School of Nursing with a high Fall-Winter Average, and demonstrate financial need.

**Typically Available:** 2 x \$10,000

**THE CYNTHIA AND RUTH GOULD ACADEMIC GRANT**

Established in 2016 by I. David Gould, (Class of 1962), and his wife Ruth Gould as a tribute to Cynthia, their daughter.

**Requirements:** To be awarded to a student enrolled in the Faculty of Health Sciences who attains a high average and demonstrates financial need.

**Typically Available:** 1 x \$1,000

**THE KAREN M. MASON ACADEMIC GRANT IN NURSING**

Established in 2017 by Ross Mason ('59), in loving memory of his wife and in honour of her compassionate palliative care nurse, Mona.

**Requirements:** To be awarded to a student in the School of Nursing who has attained a high Fall-Winter Average and demonstrates financial need.

**Typically Available:** 1 x \$1,000

**THE WILLIAM MCKEON MEMORIAL ACADEMIC GRANT IN PHYSICS**

Established in 2007 by Mary McKeon, B.A. (Class of '46) in honour of her cousin William McKeon.

**Requirements:** To be awarded to a student in a Level 2 Honours Physics program who attained a high Fall-Winter Average in Level 1 and demonstrates financial need.

**Typically Available:** 1 x \$2,000

**THE ELEANOR MORRIS ACADEMIC GRANT**

Established in 2005 by Sandra Morris, B.A. (Class of '82) in memory of her mother, Eleanor Morris.

**Requirements:** To be awarded to a student in the B.Sc.N. program in the School of Nursing who has completed Level 1 with a high Fall-Winter Average and demonstrates financial need.

**Typically Available:** 1 x \$1,000

**THE ROBERT AND DONNA WEST FAMILY ACADEMIC GRANT IN NURSING**

Established in 2015 by Robert West B.A. (Class of '93) and Donna West.

**Requirements:** To be granted to students enrolled in the School of Nursing who have attained a high Fall-Winter Average and demonstrate financial need.

**Typically Available:** 1 x \$2,000

**Open to the Faculty of Humanities****THE DONALD H.L. BANNERMAN ACADEMIC GRANT**

Established in 2017 in honour of Donald Bannerman, B.A. (Class of '69).

**Requirements:** To be awarded to a student enrolled in a Communication Studies or Multimedia program who attained a high average and demonstrates financial need.

**Typically Available:** 1 x \$1,000

**THE MARGARET C. DIXON ACADEMIC GRANT**

Established in 2006 by Mrs. Geraldine Phenix in memory of her mother, Margaret C. Dixon, to honour her love of music and the piano.

**Requirements:** To be awarded to a student in an Honours Music program who attains a high Fall-Winter Average and demonstrates financial need.

**Typically Available:** 1 x \$1,600

**THE FARQUHAR/FIRTH ACADEMIC GRANT**

Established in 2011 by Andrea and Craig Farquhar in honour of Ben Firth, B.A. (Class of '56).

**Requirements:** To be awarded to a student enrolled in Level 3 of an Honours English or History program, who attains a high Fall-Winter Average, and demonstrates financial need.

**Typically Available:** 1 x \$1,000

**THE P.J. FERGUSON ACADEMIC GRANT**

Established in 2007 by P. J. Ferguson, B.A. (Class of '87), President of ABL Employment Inc. in support of her belief that all students should be able to pursue their educational goals.

**Requirements:** To be awarded to a student enrolled in Level 3 of a History program, who attains a high Fall-Winter Average and demonstrates financial need.

**Typically Available:** 1 x \$1,000

**THE JAMES R. (JAMIE) GREILICH MEMORIAL ACADEMIC GRANT**

Established in 2014 by Mr. George and Mrs. Rita Greilich in memory of their son Jamie Greilich B.A. (Class of '88) who passed away at the age of 25 years old.

**Requirements:** The intent of the award is to provide the opportunity of education. To be awarded to a student enrolled in a program within the Faculty of Humanities with a high Fall-Winter Average and who demonstrates financial need.

**Typically Available:** 1 x \$5,000

**THE KUDSIA ACADEMIC GRANT**

Established in 2016 by Mrs. Wendy and Dr. Chandra Kudsia.

**Requirements:** To be awarded to a student enrolled in a Classics program in the Faculty of Humanities who has attained a high Fall-Winter Average and demonstrates financial need.

**Typically Available:** 1 x \$5,000

**THE LINARDIC FAMILY ACADEMIC GRANT**

Established in 2007 by Daniel Linardic, B.A. (Class of '91) and Kim Linardic.

**Requirements:** To be awarded to a student enrolled in Level 3 or above in an Honours Philosophy program, who attained a high Fall-Winter Average, and demonstrates financial need.

**Typically Available:** 1 x \$1,700

**THE GRAEME MACQUEEN ACADEMIC GRANT**

Established in 2012 by Dr. Paul McArthur, B.Sc. (Class of '88) and Dr. Susan McArthur in recognition of their friend Graeme MacQueen, a retired McMaster professor who taught from 1974-2003 and was the Director, Centre for Peace Studies from 1989-1996.

**Requirements:** To be granted to a student who has obtained a high Fall-Winter Average in a Peace Studies program and who demonstrates financial need.

**Typically Available:** 1 x \$1,500

#### **THE MARION D. MAITLAND MEMORIAL ACADEMIC GRANT IN ART HISTORY**

Established in 2010 by John O. Maitland, in memory of his beloved wife, Marion D. Maitland, in support of her belief that all students should have the opportunity to achieve their educational goals.

**Requirements:** To be granted to a student enrolled in the School of the Arts who has completed Level 1, achieved academic excellence in any Level 1 Art History course, and demonstrates financial need.

**Typically Available:** 1 x \$1,750

#### **THE OBU ACADEMIC GRANT**

Established in 2014 by Marcus Udokang, B.A. (Class of '98).

**Requirements:** To be awarded to a student in the Department of English and Cultural Studies with a high Fall-Winter Average who demonstrates financial need.

**Typically Available:** 1 x \$1,000

#### **THE BARBARA PATRICIA PECKHAM ACADEMIC GRANT**

Established in 2008 by John Marinucci, B.Com. (Class of '80) and Tracy Marinucci in memory of her mother, Barbara Patricia Peckham, who had a passion for dance and music and was always willing to help those who were prepared to help themselves.

**Requirements:** To be awarded to students who have completed Level 1 in the Faculty of Humanities with high Fall-Winter Averages, are enrolled in a Level 2 Honours program in the School of the Arts, and demonstrate financial need. The grant is tenable for up to three years provided the recipient remains enrolled full-time, maintains a minimum Fall-Winter Average of 9.5 and continues to be enrolled in the School of the Arts.

**Typically Available:** 1 x \$15,000 (\$5,000 per year)

#### **THE CARRIE SCHAMEHORN ACADEMIC GRANT**

Established in 2009 to honour Carrie Schamehorn, a proud grandmother and life-long music lover.

**Requirements:** To be awarded to a student in a Music program who attained a high Fall-Winter Average and demonstrates financial need.

**Typically Available:** 1 x \$800

#### **THE CLIFFORD AND ALINE SMITH ACADEMIC GRANT**

Established in 2011 by Joyce and Ross Kelly in memory of Joyce's parents, Clifford and Aline Smith, to provide support for students who wish to pursue their educational goals.

**Requirements:** To be awarded to a student who is enrolled in at least a Level 2 Honours English program in the Department of English and Cultural Studies, attained a high Fall-Winter Average, and demonstrates financial need.

**Typically Available:** 1 x \$1,000

### **Open to the Faculty of Science**

#### **THE ART JEROME ACADEMIC GRANT**

Established in 2014 by his family in memory of Art Jerome (Class of '49) who was a McMaster Hall of Fame Inductee and an athlete who was very passionate about sport as well as education.

**Requirements:** To be awarded to students enrolled in the Kinesiology program in the Faculty of Science with high Fall-Winter Averages and who demonstrate financial need.

**Typically Available:** 1 x \$2,500

#### **THE LIVING PROOF ACADEMIC GRANT**

Established in 2012 by Dr. Sachin B. Patel (Class of '01).

**Requirements:** To be awarded to a student in a Kinesiology program who attained a high Fall-Winter Average and demonstrates financial need.

**Typically Available:** 3 x \$2,000

#### **THE MANSON OLSON ACADEMIC GRANT**

Established in 2005 by Marguerite Olson (Class of '50) in honour of her father Gordon Manson (Class of '38), her brother John Manson (Class of '56) and her husband Theodore Olson (Class of '51).

**Requirements:** To be awarded to a student in the Faculty of Science who has attained a high Fall-Winter Average and demonstrates financial need.

**Typically Available:** 1 x \$1,000

#### **THE LINDA (PAOLIN) TONINI '71 ACADEMIC GRANT**

Established in 2013 by Lenora Paolin, B.A. (Class of '77).

**Requirements:** To be awarded to a student who is enrolled in Level 2 of a Kinesiology program, attained a high Fall-Winter Average, and demonstrates financial need.

**Typically Available:** 1 x \$1,000

#### **THE WALLER FAMILY ACADEMIC GRANT**

Established in 2014 by the Waller Family in memory of Thomas Edward and Norma Waller.

**Requirements:** To be awarded to a student in a Biology program who has attained a high Fall-Winter Average and demonstrates financial need.

**Typically Available:** 1 x \$2,000

#### **THE DR. JOHN WARKENTIN ACADEMIC GRANT**

Established in 2014 by friends and family in memory of Dr. John Warkentin.

**Requirements:** To be awarded to students who have completed at least Level 2 in an Honours Chemistry program with a high Fall-Winter Average and demonstrate financial need.

**Typically Available:** 1 x \$1,000

### **Open to the Faculty of Social Sciences**

#### **THE MCMASTER AMICUS ACADEMIC GRANT IN SOCIOLOGY**

Established in 2014 by a Bachelor of Arts alumnus (Class of '85).

**Requirements:** To be granted to a student who has completed at least Level 1 of a Sociology program with a high Fall-Winter Average and who demonstrates financial need.

**Typically Available:** 1 x \$1,000

#### **THE DOREEN MORRISON ACADEMIC GRANT**

Established in 2007 in memory of Doreen O'Neill Morrison by her children, Rod, Brent and Jane, and the Morrison and Collis families.

**Requirements:** To be awarded to a student who has completed at least Level 2 of any program in the Department of Health, Aging and Society, and who attains a high Fall-Winter Average and demonstrates financial need.

**Typically Available:** 1 x \$1,200

#### **THE ALAN RENNER ACADEMIC GRANT**

Established in 2018 by Alan Renner, B.A. (Class of '63) to encourage students to pursue their goals and aspirations.

**Requirements:** To be awarded to students enrolled in an Economics program in the Faculty of Social Sciences who attained high averages and demonstrate financial need.

**Typically Available:** 1 x \$1,000

#### **THE T.H.B. SYMONS ACADEMIC GRANT IN CANADIAN POLITICS**

Established in 2018 by Thomas H.B. Symons.

**Requirements:** To be awarded to students who meet provincial residency requirements, are enrolled in level 2 or above of a Political Science program and in at least six units of Canadian Politics courses, attain a high average and demonstrate financial need.

**Typically Available:** 1 x \$2,000

#### **THE BRENDA SYMONS-MOULTON ACADEMIC GRANT**

Established in 2018 by family to honour Brenda Symons-Moulton B.A./B.S.W (Class of '76) for her dedication to the social work community in Hamilton.

**Requirements:** To be granted to a student enrolled in Level 3 or above of a Social Work program who attains a high average and demonstrates financial need.

**Typically Available:** 1 x \$3,000



**THE THOMPSON ACADEMIC GRANT**

Established in 2006 by family and friends in memory of Professor Robert Thompson (Economics) and his wife, Dorothy Thompson.

**Requirements:** To be awarded to a student enrolled in Level 3 or above in an Honours Economics program, who attains a high Fall-Winter Average and demonstrates financial need.

**Typically Available:** 1 x \$1,000

## Indigenous Student Entrance Academic Grants

### Indigenous Student Entrance Academic Grant Regulations

1. Indigenous Student Entrance Academic Grants are monetary awards allocated on the basis of academic merit, and in some cases other forms of earned merit, and demonstrated financial need.
2. Indigenous Student Entrance Academic Grants are available to students entering Level 1 of their first baccalaureate degree program whether direct from high school or an alternate pathway including, but not limited to, college, an Indigenous post-secondary institution or other University.
3. Indigenous Student Entrance Academic Grants are available to students who are Canadian Citizens or Permanent Residents of Canada, and those who self-identify as First Nations, Metis, or Inuit, regardless of status under the Indian Act or where they completed their high school education.
4. Indigenous Student Entrance Academic Grants are available to full-time and part-time students entering Level 1 of their first baccalaureate degree program.
5. Indigenous Student Entrance Academic Grants first consider one or more McMaster University calculated admission and scholarship averages (e.g. final admission average).
6. Students must achieve the minimum final admission average required for their program to be eligible for an Indigenous Student Entrance Academic Grant.
7. Averages for Indigenous Student Entrance Academic Grants are calculated using the course grades that form the basis for admission to the Level 1 program. Final grades for courses completed after June 30th in the year of admission application will not be considered in assessing eligibility for Entrance Academic Grants.
8. Indigenous Student Entrance Academic Grants requiring full-time status are available to students enrolled full-time or equivalent in both the fall and winter.
9. Indigenous Student Entrance Academic Grants may also consider other forms of earned merit. In order to evaluate earned merit, students may need to complete one or more additional requirements including, but not limited to, submitting an application, participating in an interview, performing an audition or developing a portfolio.
10. In order to be considered for an Indigenous Student Entrance Academic Grant by application, students must submit a complete application by the specified deadline date.
11. Indigenous Student Entrance Academic Grant applications which meet eligibility criteria are forwarded to a selection committee for review and ranking.
12. Indigenous Student Entrance Academic Grants are allocated on the basis of an eligible course load and financial need as demonstrated through a completed Canadian federal and/or provincial government student aid application (e.g. full-time OSAP) or a completed standard University need profile for the academic year in which the student is entering Level 1 of their program.
13. The greater calculated financial need is used to break any tie.
14. Students may receive a maximum of one Entrance Academic Grant or Indigenous Student Entrance Academic Grant.
15. Students must be enrolled in at least the full-time OSAP eligible course load used to determine their eligibility to have an Indigenous Student Entrance Academic Grant payment processed.
16. All Indigenous Student Entrance Academic Grant payments are disbursed through the McMaster Student Account and are applied to outstanding charges. A few exceptions to this regulation may be approved by the Office of the Registrar, Aid & Awards.
17. Indigenous Student Entrance Academic Grants are disbursed September through the end of December.
18. Indigenous Student Entrance Academic Grant recipients will have their awards noted on their University transcript.
19. Registration in, or transfer to, another program of study and/or a change in course load may result in forfeiture or adjustment in the value of the Indigenous Student Entrance Academic Grant. Students are advised to consult with the Office of the Registrar prior to making any changes to their program of study or course load.
20. Students withdrawing from courses without failure by default in the Winter term will forfeit their Indigenous Student Entrance Academic Grant.
21. Students who forfeit their Indigenous Student Entrance Academic Grant will have their grant cancelled and their transcript notation removed. Students must return the Indigenous Student Entrance Academic Grant funding to their McMaster Student Account.
22. Some Indigenous Student Entrance Academic Grants are renewable (see In-Course and Renewal Academic Grant Regulations).
23. The University may choose not to grant an Indigenous Student Entrance Academic Grant in the absence of a suitable candidate; may choose to limit the number of recipients selected where funding is limited; may choose to limit the number of recipients selected where too few suitable candidates exist; and/or may choose to generate applicant pools for awards by application, where complete applications have not been received.
24. The University may remove specific Indigenous Student Entrance Academic Grants from the University Calendar, may revise the terms and stated value and/or suspend the granting of Indigenous Student Entrance Academic Grants (e.g. donor funds).
25. Indigenous Student Entrance Academic Grants supported by donor funds may have additional eligibility requirements.

## Indigenous Student Entrance Academic Grants

### Academic Grants by Application

Application details are available in Mosaic.

### Open to Two or More Faculties

#### THE MARJORIE ANDERSON ACADEMIC GRANT FOR INDIGENOUS STUDENTS

Established in 2017 by McMaster University in honour of Marjorie Anderson (Class of '35), from the Six Nations of the Grand River, who was the first Indigenous woman to graduate from McMaster. The establishment of the academic grant allows McMaster University to recognize and acknowledge that it is located on the traditional territories of the Mississaugas and Haudenosaunee nations, and within the lands protected by the "Dish With One Spoon" wampum agreement. It also allows the University to recognize the City of Hamilton's role in treating Inuit peoples with tuberculosis after the Second World War. The Hamilton Sanatorium on the Mountain was once home to the largest year-round community of Inuit anywhere in the country.

**Requirements:** To be awarded to students who self-identify as Inuit, or as

Status/Non-status First Nations from the Six Nations of the Grand River or the Mississaugas of the New Credit, who are entering a Level 1 baccalaureate degree program with a minimum average of 75%, and demonstrate financial need. The academic grant is renewable for three additional years at the same value for those who remain enrolled full-time and achieve a minimum Grade Point Average of 8.0.

**Typically Available:** 4 x \$80,000 (\$20,000 per year) by award application through the Office of the Registrar, Aid & Awards.

## In-Course and Renewal Award Regulations

### In-Course and Renewal Award Regulations

- In-Course Awards are monetary and non-monetary awards allocated on the basis of academic merit and, in some cases, other forms of earned merit. Non-monetary awards such as medals and books as well as monetary awards of nominal value (currently \$100 or less) are called prizes.
- In-Course Awards are available to full-time and part-time students enrolled in an undergraduate degree program (excluding the Physician Assistant and M.D. Programs), at the time of award application and selection, who are returning to McMaster to continue their studies.
- In-Course Awards requiring full-time status are available to students enrolled full-time or equivalent in both the fall and winter terms.
- In-Course Awards requiring part-time status are available to students who are not enrolled full-time in the fall and/or winter terms. In addition, true part-time awards are only available to students who have completed at least 50% of all units attempted at McMaster on a part-time basis.
- In-Course Awards are available to all domestic and international students.
- In-Course Awards are not available to second degree students unless the terms of a particular donor award specify eligibility and they have not received the award previously.
- In-Course Awards are not available to students in their graduating term.
- In-Course Awards may also consider other forms of earned merit. In order to evaluate earned merit, students may need to complete one or more additional requirements, including, but not limited to, submitting an application.
- In-Course Awards requiring an application that are determined by Cumulative Grade Point Average require a minimum Cumulative Grade Point Average of 8.0 on at least 18 graded units, while those determined by Fall-Winter Average require a minimum Fall-Winter Average of 9.5 on at least 18 graded units.
- In-Course Awards adjudicated without need of an application that are determined by Cumulative Grade Point Average require a minimum 8.0 on at least 24 graded units, while those determined by Fall-Winter Average require a minimum 9.5 on at least 24 graded units.
- Available averages, units upon which averages are calculated, program level, and enrolled units, may be used to break any ties in an award competition.
- In order to be considered for an In-Course Award by application, students must submit a complete application by the specified deadline date.
- In-Course Award applications which meet award eligibility criteria are forwarded to a selection committee for review and ranking.
- Some In-Course Awards are renewable.
- Entrance, Indigenous Entrance, and In-Course Award renewals determined by Cumulative Grade Point Average or Fall-Winter Average require a minimum 8.0 on at least 18 graded units.
- All In-Course Award payments are disbursed through the McMaster Student Account and applied to outstanding charges. A few exceptions to this regulation may be approved by the Office of the Registrar, Aid & Awards.
- In-Course Awards are typically disbursed no later than the end of September.
- In-Course Awards will be disbursed if the recipient continues to be enrolled in a McMaster degree program, or a specific McMaster program, when explicitly required by the terms of the award, or the student's record reflects they are on exchange, on letter of permission, or participating in a coop or internship opportunity at McMaster University.
- In-Course Award recipients will have their awards noted on their University transcripts. Entrance and In-Course renewals are not noted on transcripts.
- Registration in, or transfer to, another program of study and/or a change in course load may result in forfeiture of an In-Course Award or Entrance or In-Course Award renewal. Students are advised to consult with the Office of the Registrar prior to making any changes to their program of study or course load.
- If a student is approved to graduate or transfers to graduate in the fall, after the awarding decision and/or disbursement is made, the student will forfeit the award.
- Students withdrawing from courses without failure by default will forfeit their In-Course Award or Entrance or In-Course Award renewal.
- Students who forfeit their In-Course award will have their award cancelled and their transcript notation removed if forfeited in first year of payment only. Students must return the In-Course Award or Entrance or In-Course Award renewal funding to their McMaster Student Account.
- Forfeiture of a renewable Entrance or In-Course Award also cancels all future instalments of the award.
- Students wishing to defer the stated value of an In-Course Award or Entrance or In-Course Award renewal to the next academic year should make the request in writing to the Office of the Registrar, Aid & Awards. Approval is not automatic and deferrals are not normally granted for more than one academic year.
- Students holding renewable Entrance or In-Course Awards who choose to accelerate their program and to complete their degree earlier than normal by completing Spring/Summer courses and who wish to employ the benefits of their renewable Entrance and/or In-Course Awards to defray the tuition and compulsory fees for those courses should make the request in writing to the Office of the Registrar, Aid & Awards.
- The University may choose not to grant an In-Course Award in the absence of a suitable candidate; may choose to limit the number of recipients selected where funding is limited; may choose to limit the number of recipients selected where too few suitable candidates exist; and/or may choose to generate applicant pools where complete applications have not been received.
- The University may remove specific In-Course Awards from the University Calendar, may revise the terms and stated value and/or suspend the granting of In-Course Awards (e.g. donor funds).
- In-Course Awards supported by donor funds may have additional eligibility and renewal requirements.

## In-Course Awards

### In-Course and Renewal Award Regulations

- In-Course Awards are monetary and non-monetary awards allocated on the basis of academic merit and, in some cases, other forms of earned merit. Non-monetary awards such as medals and books as well as monetary awards of nominal value (currently \$100 or less) are called prizes.
- In-Course Awards are available to full-time and part-time students enrolled in an undergraduate degree program (excluding the Physician Assistant and M.D. Programs), at the time of award application and selection, who are returning to McMaster to continue their studies.

3. In-Course Awards requiring full-time status are available to students enrolled full-time or equivalent in both the fall and winter terms.
4. In-Course Awards requiring part-time status are available to students who are not enrolled full-time in the fall and/or winter terms. In addition, true part-time awards are only available to students who have completed at least 50% of all units attempted at McMaster on a part-time basis.
5. In-Course Awards are available to all domestic and international students.
6. In-Course Awards are not available to second degree students unless the terms of a particular donor award specify eligibility and they have not received the award previously.
7. In-Course Awards are not available to students in their graduating term.
8. In-Course Awards may also consider other forms of earned merit. In order to evaluate earned merit, students may need to complete one or more additional requirements, including, but not limited to, submitting an application.
9. In-Course Awards requiring an application that are determined by Cumulative Grade Point Average require a minimum Cumulative Grade Point Average of 8.0 on at least 18 graded units, while those determined by Fall-Winter Average require a minimum Fall-Winter Average of 9.5 on at least 18 graded units.
10. In-Course Awards adjudicated without need of an application that are determined by Cumulative Grade Point Average require a minimum 8.0 on at least 24 graded units, while those determined by Fall-Winter Average require a minimum 9.5 on at least 24 graded units.
11. Available averages, units upon which averages are calculated, program level, and enrolled units, may be used to break any ties in an award competition.
12. In order to be considered for an In-Course Award by application, students must submit a complete application by the specified deadline date.
13. In-Course Award applications which meet award eligibility criteria are forwarded to a selection committee for review and ranking.
14. Some In-Course Awards are renewable.
15. Entrance, Indigenous Entrance, and In-Course Award renewals determined by Cumulative Grade Point Average or Fall-Winter Average require a minimum 8.0 on at least 18 graded units.
16. All In-Course Award payments are disbursed through the McMaster Student Account and applied to outstanding charges. A few exceptions to this regulation may be approved by the Office of the Registrar, Aid & Awards.
17. In-Course Awards are typically disbursed no later than the end of September.
18. In-Course Awards will be disbursed if the recipient continues to be enrolled in a McMaster degree program, or a specific McMaster program, when explicitly required by the terms of the award, or the student's record reflects they are on exchange, on letter of permission, or participating in a coop or internship opportunity at McMaster University.
19. In-Course Award recipients will have their awards noted on their University transcripts. Entrance and In-Course renewals are not noted on transcripts.
20. Registration in, or transfer to, another program of study and/or a change in course load may result in forfeiture of an In-Course Award or Entrance or In-Course Award renewal. Students are advised to consult with the Office of the Registrar prior to making any changes to their program of study or course load.
21. If a student is approved to graduate or transfers to graduate in the fall, after the awarding decision and/or disbursement is made, the student will forfeit the award.
22. Students withdrawing from courses without failure by default will forfeit their In-Course Award or Entrance or In-Course Award renewal.
23. Students who forfeit their In-Course award will have their award cancelled and their transcript notation removed if forfeited in first year of payment only. Students must return the In-Course Award or Entrance or In-Course Award renewal funding to their McMaster Student Account.
24. Forfeiture of a renewable Entrance or In-Course Award also cancels all future instalments of the award.
25. Students wishing to defer the stated value of an In-Course Award or Entrance or In-Course Award renewal to the next academic year should make the request in writing to the Office of the Registrar, Aid & Awards. Approval is not automatic and deferrals are not normally granted for more than one academic year.
26. Students holding renewable Entrance or In-Course Awards who choose to accelerate their program and to complete their degree earlier than normal by completing Spring/Summer courses and who wish to employ the benefits of their renewable Entrance and/or In-Course Awards to defray the tuition and compulsory fees for those courses should make the request in writing to the Office of the Registrar, Aid & Awards.
27. The University may choose not to grant an In-Course Award in the absence of a suitable candidate; may choose to limit the number of recipients selected where funding is limited; may choose to limit the number of recipients selected where too few suitable candidates exist; and/or may choose to generate applicant pools where complete applications have not been received.
28. The University may remove specific In-Course Awards from the University Calendar, may revise the terms and stated value and/or suspend the granting of In-Course Awards (e.g. donor funds).
29. In-Course Awards supported by donor funds may have additional eligibility and renewal requirements.

## In-Course Awards

### Automatically Assessed

#### OPEN TO TWO OR MORE FACULTIES

##### THE CAMERON D. ALLEN BOOK PRIZE

Established in 1978 in memory of Cameron D. Allen.

**Requirements:** To be awarded to a student in an Honours program in the School of Geography and Earth Sciences who, in the judgment of the School of Geography and Earth Sciences, shows outstanding achievement in climatology. Preference will be given to a graduating student.

**Typically Available:** 2 x \$200 for books

##### THE ALUMNI ASSOCIATION SCHOLARSHIP

Established in 1974 by the McMaster University Alumni Association and later augmented by bequest of Harold E. Amy.

**Requirements:** One scholarship to be awarded to a part-time student who has attained the highest Grade Point Average at the most recent review.

**Typically Available:** 1 x \$475

##### THE ALUMNI CANADIAN GEOGRAPHY PRIZE

Established in 1985 by the Geography Branch of the McMaster University Alumni Association in recognition of Dr. Lloyd G. Reeds for his contribution to teaching during more than 35 years of service.

**Requirements:** To be awarded to the student who attains the highest grade in GEOG 20C3.

**Typically Available:** 1 x \$300

##### THE ANATOMY PRIZE

Established in 1992.

**Requirements:** To be awarded every other year to a student who has completed Level 3 (or equivalent), has studied biological structure and who, in the judgment of the Education Program in Anatomy, has demonstrated excellence in Anatomy.

**Typically Available:** 1 x \$3,500 and a Medal

##### THE EDGAR R. ASHALL SCHOLARSHIP

Established in 1965 by bequest of his wife, Edith M. Ashall.

**Typically Available:** 1 x \$200 for books

**THE BATES RESIDENCE SCHOLARSHIP**

**Requirements:** Awarded to the student who resides in the residence with the highest Fall-Winter Average (at least 9.5) in an undergraduate program, with the exception of those in their graduating term.

**Typically Available:** 1 x \$800

**THE BENTALL SCHOLARSHIPS**

Established in 2001 by Dr. C. Howard Bentall (Class of '37) and Dr. Shirley F. Bentall (Class of '46).

**Requirements:** A variable number of scholarships to be awarded to students in any Faculty who demonstrate outstanding academic achievement.

**Typically Available:** 3 x \$1,500

**THE ABE BLACK MEMORIAL PRIZE**

Established in 1982 by friends and colleagues of Dr. A.H. Black in memory of a distinguished member of the Department of Psychology, Neuroscience & Behaviour from 1958 to 1978.

**Requirements:** To be awarded to students enrolled in Level 2 or above in an Honours Psychology, Neuroscience & Behaviour program who attain high averages.

**Typically Available:** 1 x \$600

**THE JAMES ROBERTSON CARRUTHERS MEMORIAL PRIZE**

Established in 1984 in memory of James Robertson Carruthers (Class of '74) by his family and friends.

**Requirements:** To be awarded to the student who, in the judgment of the Department of History, attains notable standing in HISTORY 2R03 or HISTORY 2RR3 (United States History).

**Typically Available:** 1 x \$425

**THE WILLIAM G. CARTER SCHOLARSHIP IN GOLF**

Established in 2006 by William G. Carter (Class of '50).

**Requirements:** To be awarded to a student who has completed Level 1 or above in any program with notable academic achievement and who demonstrates outstanding athletic achievement in men's or women's golf. The recipient must meet the eligibility requirements of the Ontario University Athletics (OUA). Not open to students in their graduating year.

**Typically Available:** 1 x \$800

**THE CFUW-HAMILTON SCHOLARSHIP**

Established in 1945 by the University Women's Club of Hamilton, now the CFUW.

**Requirements:** To be awarded to the woman student who attains the highest Fall-Winter Average in the penultimate level of any program.

**Typically Available:** 1 x \$2,000

**THE CHANCELLOR'S GOLD MEDAL**

Established in 1938.

**Requirements:** To be awarded to the student who has completed the penultimate year of any four or five-level program at the most recent spring review, and who ranks highest in scholarship, leadership and influence.

**Typically Available:** 1 x Medal

**THE CHEMICAL INSTITUTE OF CANADA (HAMILTON SECTION) PRIZES**

Established in 1947 by the Hamilton Section.

**Requirements:** Two prizes to be awarded to students enrolled in Level 2: (a) one to a student in an Honours program in Chemistry, or Chemical Biology who, in the judgment of the Department, shows particular promise in Chemistry; and (b) one to a student in a program in Chemical Engineering who, in the judgment of the Department, shows particular promise in Chemical Engineering.

**Typically Available:** 2 x \$150

**THE CLASS OF '44 SCHOLARSHIP**

Established by the Class of '44 in celebration of their 50th anniversary.

**Requirements:** To be awarded to the student entering the penultimate year of any program who has attained the highest Fall-Winter Average.

**Typically Available:** 2 x \$1,500

**THE CLASS OF 1966 50TH ANNIVERSARY SCHOLARSHIP**

Established by the Class of 1966 in honour of its 50th reunion.

**Requirements:** A variable number of scholarships to be awarded to students who are enrolled in a Level 2 program in the Faculty of Humanities or in the Faculty of Science who have attained a high Fall-Winter Average.

**Typically Available:** 1 x \$1,000

**THE DENTON COATES MEMORIAL SCHOLARSHIP**

Established in 1982 in memory of Denton E. Coates (Class of '70) by his friends.

**Requirements:** To be awarded to the student who, in the judgment of the Department of Materials Science and Engineering, has demonstrated outstanding achievement in independent research.

**Typically Available:** 1 x \$750

**THE BEATRICE CORRIGAN MEMORIAL BOOK PRIZE**

Established in 1980 in memory of Professor Beatrice Corrigan by her friends and colleagues.

**Requirements:** To be awarded to the student enrolled in Level 2 or above and who, in the judgment of the Department of Linguistics and Languages, has achieved notable standing in Italian.

**Typically Available:** 1 x \$125 for books

**THE EDWIN MARWIN DALLEY MEMORIAL SCHOLARSHIPS**

Established in 1965 by bequest of Edwin Marwin Dalley of Hamilton.

**Typically Available:** 38 x \$800 each

**THE EDWARDS HALL RESIDENCE SCHOLARSHIP**

**Requirements:** Awarded to the student who resides in the residence with the highest Fall-Winter Average (at least 9.5) in an undergraduate program, with the exception of those in their graduating term.

**Typically Available:** 1 x \$800

**THE ENVIRONMENTAL ISSUES PRIZE**

Established in 1993 by the Regional Municipality of Hamilton-Wentworth in recognition of Metal Recovery Industries and Philip Environmental, Industrial Filter Fabrics Ltd., and Laidlaw Waste Systems.

**Requirements:** To be awarded to the student who attains the highest grade in GEOG 4MT6 A/B (or GEO 4R06).

**Typically Available:** 1 x \$100

**THE FEDERATION OF CHINESE CANADIAN PROFESSIONALS EDUCATION FOUNDATION SCHOLARSHIPS**

Established in 1988 by the Foundation of Chinese Canadian Professionals (Ontario).

**Requirements:** Two scholarships to be awarded to students who attained high averages: (a) one to a student in a program in Arts and Science, and (b) one, to a student enrolled in a program in Chemistry, Chemical Biology, Mechanical Engineering, or Physics.

**Typically Available:** 2 x \$1,000

**THE NEIL FORSYTH PRIZE**

Established in 1992 by The Steel Founders' Society of America in honour of Neil Forsyth, president of the organization in 1990 and 1991, in recognition of his outstanding service to the steel castings industry.

**Requirements:** To be awarded to the student who attains the highest grade in MATLS 3E04.

**Typically Available:** 1 x \$120

**THE R. LOUIS GENTILCORE PRIZE**

Established in 1989 by the family and friends of Professor R. Louis Gentilcore on the occasion of his retirement from the Department of Geography.

**Requirements:** To be awarded to a student in an Honours Geography program in the School of Geography and Earth Sciences who, in the judgment of the School, has demonstrated exceptional achievement in regional geography.

**Typically Available:** 1 x \$550

**THE GILMOUR MEMORIAL PRIZE**

Established in 1927 by Year '27, in memory of Dr. Joseph Leeming Gilmour, Honorary President of their first year in 1923, and subsequently enlarged by his children.

**Requirements:** To be awarded to the student who attains the highest standing in POLSCI 4D06 A/B RELIGST 2HH3.



Typically Available: 1 x \$125

#### **THE GUPTA FAMILY INTERNATIONAL SCHOLARSHIPS**

Established in 2005 by Kulbushan (Joe) Gupta and family.

**Requirements:** A variable number of scholarships to be awarded to international students enrolled in Level 2 with the highest Fall-Winter Averages.

Typically Available: 2 x \$2,000

#### **THE HAMILTON INDUSTRIAL SCHOLARSHIPS**

Established in 1958.

Typically Available: 1 x \$800

#### **THE HEDDEN HALL RESIDENCE SCHOLARSHIP**

**Requirements:** Awarded to the student who resides in the residence with the highest Fall-Winter Average (at least 9.5) in an undergraduate program, with the exception of those in their graduating term.

Typically Available: 1 x \$800

#### **THE ANNA MARIE HIBBARD SCHOLARSHIP**

Established in 1992 from the bequest of Anna Marie Hibbard.

**Requirements:** To be awarded to the student completing Level 1 who attains the highest Fall-Winter Average. The recipient may not hold another scholarship of equal or greater value.

Typically Available: 1 x \$1,500

#### **THE DR. HARRY LYMAN HOOKER SCHOLARSHIPS**

Established in 1981, and resulting from the bequest of Dr. H.L. Hooker.

**Requirements:** Awarded to undergraduate students who attain high Fall-Winter Averages.

Typically Available: 80 x \$1,500

#### **THE NINA LOUISE HOOPER SCHOLARSHIP**

Established in 1959 by bequest of Bertram O. Hooper.

**Requirements:** To be awarded to students in any program with high averages.

Typically Available: 1 x \$500

#### **THE MUNICIPAL CHAPTER OF HAMILTON, IODE, MURIEL E. SKELTON AWARD**

Established in 1944 by the Municipal Chapter of Hamilton, Imperial Order Daughters of the Empire.

**Requirements:** To be awarded to the student who attains the highest standing in a Level 1 History course.

Typically Available: 2 x \$500

#### **THE MARY E. KEYES RESIDENCE SCHOLARSHIP**

**Requirements:** Awarded to the student with the highest Fall-Winter Average (at least 9.5) in an undergraduate program, with the exception of those in their graduating term, who resides in the residence.

Typically Available: 1 x \$800

#### **THE J. BEVERLY KRUGEL SCHOLARSHIPS IN GERMAN LANGUAGE STUDIES**

Established in 2010 by Mrs. J. Beverly Krugel, B.A. (Class of '53).

**Requirements:** To be awarded to students with an interest in German language studies who, in the judgment of the Department of Linguistics and Languages, demonstrate high academic achievement in German language courses. Two scholarships each in beginner, intermediate, and advanced German language courses.

Typically Available: 2 x \$2,500 per level of German (6 total)

#### **THE LATIN PRIZE**

Established in 1987 by Dr. John B. Clinard.

**Requirements:** To be awarded to a student who, in the judgment of the Department of Classics, has demonstrated notable achievement in LATIN 1Z03 and LATIN 1ZZ3.

Typically Available: 1 x \$150

#### **THE MATTHEWS HALL RESIDENCE SCHOLARSHIP**

**Requirements:** Awarded to the student who resides in the residence with the highest Fall-Winter Average (at least 9.5) in an undergraduate program, with the exception of those in their graduating term.

Typically Available: 1 x \$800

#### **THE ANNE & ALLAN MCKAY SCHOLARSHIP**

Established in 2019 by Allan McKay.

**Requirements:** To be awarded to students enrolled in the Faculty of Science or the Faculty of Health Sciences who attain high averages.

Typically Available: 5 x \$1,500

#### **THE MCKAY HALL RESIDENCE SCHOLARSHIP**

**Requirements:** Awarded to the student who resides in the residence with the highest Fall-Winter Average (at least 9.5) in an undergraduate program, with the exception of those in their graduating term.

Typically Available: 1 x \$800

#### **THE MCMASTER UNDERGRADUATE SCHOLARSHIPS**

Established in 1998 by McMaster University.

**Requirements:** To be awarded to students in any undergraduate degree program on the basis of academic merit and, in some cases, other forms of earned merit.

Typically Available: 1 x \$1,500 per Faculty

#### **THE MCMASTER UNIVERSITY - HONG KONG FOUNDATION INTERNATIONAL SCHOLARSHIP**

Established in 2011 by the McMaster University - Hong Kong Foundation.

**Requirements:** A variable number of scholarships to be awarded to international students enrolled in Level 2 with the highest Fall-Winter Averages.

Typically Available: 3 x \$1,000

#### **THE MOFFAT FAMILY PRIZE**

The Moffat Family Prize was established in 1990.

**Requirements:** To be awarded to a student who, in the judgment of the School of Geography and Earth Sciences, shows outstanding achievement in urban geography.

Typically Available: 1 x \$300

#### **THE MOLSON SCHOLARSHIP IN ENVIRONMENTAL STUDIES**

Established in 1992 by the Molson Companies Donations Fund.

**Requirements:** To be awarded to the student entering the final level of a program in Geography and Environmental Studies, Earth and Environmental Sciences or Engineering and Society, who attains the highest Fall-Winter Average.

Typically Available: 1 x \$1,100

#### **THE MOULTON COLLEGE SCHOLARSHIPS**

Established in 1957 from funds originally subscribed by the Alumnae of Moulton College during the years 1946 to 1949 for the expansion of Moulton College.

**Requirements:** Two scholarships to be awarded to the students of Moulton Hall with the highest Fall-Winter Averages.

Typically Available: 2 x \$1,000

#### **THE MOULTON HALL RESIDENCE SCHOLARSHIP**

**Requirements:** Awarded to the student who resides in the residence with the highest Fall-Winter Average (at least 9.5) in an undergraduate program, with the exception of those in their graduating term.

Typically Available: 1 x \$800

#### **THE P.L. NEWBIGGING SCHOLARSHIP**

Established in 1994 by family, friends and colleagues in memory of Dr. P.L. Newbigging, founding Chair of the Department of Psychology, Neuroscience & Behaviour (Faculty of Science) and member of the Faculty from 1955-1990, in recognition of his outstanding contributions to the Department and the University.

**Requirements:** To be awarded to the student entering Level 2 of an Honours program in Psychology or Psychology, Neuroscience & Behaviour who, in the judgment of the Department of Psychology, Neuroscience & Behaviour, has demonstrated high academic achievement in PSYCH 1X03 and PSYCH 1XX3.

Typically Available: 1 x \$375

**THE TONY & LUCY PICKARD SCHOLARSHIP**

Established in 1973 by Lucy Pickard, B.A., M.A., and family, in honour of Captain Antony F. Pickard, O.B.E., C.D., R.C.N.

**Requirements:** To be awarded to a student in any program with a high Fall-Winter Average.

Typically Available: 1 x \$425

**THE LES PRINCE RESIDENCE SCHOLARSHIP**

**Requirements:** Awarded to the student with the highest Fall-Winter Average in an undergraduate program, with the exception of those in their graduating term, who resides in the residence.

Typically Available: 1 x \$800

**THE PROVOST'S HONOUR ROLL MEDAL**

Established in 2005.

**Requirements:** To be awarded to students named to the Provost's Honour Roll.

Typically Available: Variable number of medals

**THE PSYCHOLOGY SOCIETY PRIZES**

Established in 1985 by the Psychology Society and the Faculty and Alumni of the Department of Psychology, Neuroscience & Behaviour (Faculty of Social Sciences).

**Requirements:** Three prizes to be awarded to students enrolled in Level 3 with the highest Fall-Winter Average: (a) one in an Honours Psychology or Honours Psychology, Neuroscience & Behaviour B.A. program; (b) one in an Honours Psychology or Honours Psychology, Neuroscience & Behaviour B.Sc. program; and (c) one in a combined Honours program in Psychology.

Typically Available: 3 x \$70

**THE RETIRED TEACHERS OF ONTARIO TRUST FUND - GERONTOLOGY**

Established in 1987 by the Retired Teachers of Ontario, District 13.

**Requirements:** To be awarded to the student who attains the highest standing in HLTHAGE 1BB3.

Typically Available: 1 x \$250

**THE ALMA AND WIL RICE MEMORIAL SCHOLARSHIP**

Established in 2010 by Ellen Rice-Jaaku, B.Sc. (Class of '66), to honour her parents, Alma Rice, B.A. (Class of '40) and Wil Rice, B.A. (Class of '41).

**Requirements:** To be awarded to a student who has completed at least Level 1 in a Kinesiology program who demonstrates outstanding academic achievement. Preference will be given to a student participating in varsity football.

Typically Available: 2 x \$2,000

**THE HERBERT A. RICKER SCHOLARSHIPS**

Established in 1982 by bequest of Mrs. Edna Elizabeth Ross Reeves of Hamilton in memory of her husband, Herbert A. Ricker.

**Requirements:** Four scholarships to be awarded on the basis of scholarship (Fall-Winter Average of at least 9.5) and character to: (a) two to students who have completed Engineering 1 or above of a program in Engineering, and (b) two to students who have completed Science 1 or above of a program in Science.

Typically Available: 4 x \$2,500

**THE MORRIS AND SARAH ROSENHEAD MEMORIAL PRIZE**

Established in 1988 by bequest of Sarah Rosenhead of Hamilton.

**Requirements:** To be awarded to the student who attains the highest standing in ENGLISH 1A03 and ENGLISH 1AA3.

Typically Available: 1 x \$125

**THE ROTARY CLUB OF HAMILTON SCHOLARSHIP**

Established in 1989.

Typically Available: 1 x \$575

**THE HILDA SAVAGE MEMORIAL SCHOLARSHIP**

Established in 1960 by bequest of Bertha Savage.

Typically Available: 1 x \$500

**THE SHEILA SCOTT SCHOLARSHIP FOR BRANDON HALL**

**Requirements:** Awarded to the student who resides in the residence with the highest Fall-Winter Average (at least 9.5) in an undergraduate program, with the exception of those in their graduating term.

Typically Available: 1 x \$800

**THE SHEILA SCOTT SCHOLARSHIP FOR WALLINGFORD HALL**

**Requirements:** Awarded to the student who resides in the residence with the highest Fall-Winter Average (at least 9.5) in an undergraduate program, with the exception of those in their graduating term.

Typically Available: 1 x \$800

**THE MARGARET A. SERVICE BOOK PRIZE**

Established in 1990 by friends, colleagues and former students in memory of Margaret A. Service.

**Requirements:** To be awarded to the student who upon completion of Level 1 attains the highest average in BIOLOGY 1A03 and BIOLOGY 1M03.

Typically Available: 1 x \$120 for books

**THE SHAHRAM SHIRANI & MEHRNOOSH FAGHIH SCHOLARSHIP**

Established by Dr. Shahrnam Shirani, McMaster Professor of Electrical & Computer Engineering and Dr. Mehrnoosh Faghih, Post-Graduate, Obstetrics and Gynecology who wish to acknowledge the impact McMaster made on their lives and careers.

**Requirements:** To be awarded to students who have completed Level 1 of the Integrated Biomedical Engineering and Health Sciences program and attained high averages.

**THE PATRICIA L. SMYE MEMORIAL PRIZES**

Established in 1972 by the Patricia Smye Memorial Fund Committee.

**Requirements:** Two scholarships to be awarded to students enrolled in Level 2 and who attain the highest Fall-Winter Average: (a) one in the three-level English program and (b) one in the three-level Psychology B.A. program.

Typically Available: 2 x \$400

**THE SOMERVILLE SCHOLARSHIPS**

Established in 1966 by bequest of William L. Somerville, architect of the McMaster University buildings of 1930.

**Requirements:** To be awarded to students in any program with high averages. The recipient of this award is eligible to receive the corresponding donor bursary if financial need is demonstrated.

Typically Available: 2 x \$800

**THE GEORGE H. STEDMAN ESTATE FOUNDATION SCHOLARSHIP**

Established in 2017 by The George H. Stedman Estate Foundation.

**Requirements:** To be awarded to undergraduate students enrolled in any program who have attained a high average.

Typically Available: 1 x \$1,000

**THE STOBO SCHOLARSHIP**

Established in 1957 by bequest of William Q. Stobo.

Typically Available: 2 x \$400

**THE SWISS MINISTER TO CANADA BOOK PRIZES**

Established in 1950.

**Requirements:** To be awarded from time to time to in-course students for proficiency in French, German, or Italian.

Typically Available: 1 x Book

**THE THEATRE & FILM STUDIES BOOK PRIZE**

Established in 1974 by Professor Ronald W. Vince.

**Requirements:** To be awarded to the student who attains the highest grade in THTRFLM 1T03.

Typically Available: 1 x Book

**THE HUGH R. THOMPSON MEMORIAL PRIZE**

Established in 1960 in memory of Dr. Hugh R. Thompson.

**Requirements:** To be awarded to the student enrolled in Level 2 of an Honours program in the School of Geography and Earth Sciences with the highest Fall-Winter Average.

Typically Available: 2 x \$250

**THE MICHAEL THOMSON MEMORIAL BOOK PRIZES**

Established in 1975 by the members of the Departments of German and Russian in memory of Michael Thomson, Supervisor of the McMaster University language laboratories from 1961 to 1975.

**Requirements:** Two prizes to be awarded: (a) one to the student who attains the highest standing in GERMAN 1Z06 A/B and (b) one to the student who attains the highest standing in any Russian course.

**Typically Available:** 2 x \$50 each for books

**THE UNIVERSITY ACHIEVEMENT AWARDS**

Established in 2006 by authorization of the Board of Governors of McMaster University.

**Requirements:** Awarded to undergraduate students who are enrolled part-time in any program and attain high averages.

**Typically Available:** 2 x \$800 per Faculty

**THE UNIVERSITY PRIZES FOR SPECIAL ACHIEVEMENT**

Established in 1973.

**Requirements:** Two prizes to be awarded in each Faculty and other academic units to individual students who exhibit exceptional skill and originality in a creative project (such as an essay, poem, sculpture, mathematical or scientific problem, engineering design) or a related series of such projects.

**Typically Available:** 2 x \$500 per Faculty

**THE UNIVERSITY SENATE SCHOLARSHIPS**

Established in 1982 by authorization of the Board of Governors of McMaster University.

**Requirements:** Awarded to undergraduate students who attain high Fall-Winter Averages.

**Typically Available:** 300 x \$800

**THE WHIDDEN HALL RESIDENCE SCHOLARSHIP**

**Requirements:** Awarded to the student who resides in the residence with the highest Fall-Winter Average (at least 9.5) in an undergraduate program, with the exception of those in their graduating session.

**Typically Available:** 1 x \$800

**THE R.M. WILES MEMORIAL BOOK PRIZE**

Established in 1975 in memory of Professor Roy McKeen Wiles by his friends and colleagues.

**Requirements:** To be awarded to the student who, in the judgment of the Department of English and Cultural Studies, has written the best essay on a topic relating to English literature of the period 1660-1800.

**Typically Available:** 1 x \$250 for books

**THE WOODSTOCK HALL RESIDENCE SCHOLARSHIP**

**Requirements:** Awarded to the student who resides in the residence with the highest Fall-Winter Average (at least 9.5) in an undergraduate program, with the exception of those in their graduating term.

**Typically Available:** 1 x \$800

**THE IVOR WYNNE MEMORIAL PRIZE**

Established in 1971 in memory of Ivor Wynne, Dean of Students.

**Requirements:** To be awarded to a student who has completed Level 3 of the Kinesiology program and who attained the highest Grade Point Average.

**Typically Available:** 1 x \$300

**THE MARGUERITE Z. YATES SCHOLARSHIP**

Established in 1960 by bequest of Mrs. W.H. Yates of Hamilton.

**Requirements:** To be awarded to students in any program with high averages.

**Typically Available:** 1 x \$225

**THE YATES SCHOLARSHIPS**

Established in 1963 by bequest of William Henry Yates of Hamilton.

**Requirements:** To be awarded to students in any program with high averages.

**Typically Available:** 12 x \$800

**OPEN TO THE ARTS AND SCIENCE PROGRAM****THE ARTS AND SCIENCE PROGRAM BOOK AWARD**

Established in 1995.

**Requirements:** To be awarded from time to time to an Arts and Science

student who, in the judgment of the Arts and Science Program Awards Committee, has demonstrated outstanding academic achievement in both arts and science.

**Typically Available:** 1 x \$75

**THE ARTS AND SCIENCE SCHOLARSHIPS**

Established in 2019 by McMaster University.

**Requirements:** To be awarded to students enrolled in the Arts and Science program on the basis of academic and, in some cases, other forms of earned merit.

**Typically Available:** 1 x \$1,500

**THE BAIN-PEART AWARD**

Established in 2018 by the Estate of Helen Jean Bain.

**Requirements:** To be awarded to students entering Level 2 of an Arts & Science Program who have demonstrated outstanding academic achievement and who, in the judgment of the Program, have made a significant contribution to the program. The award is tenable for up to 3 years provided the student remains enrolled full-time and achieves a Fall-Winter Average of 9.5.

**Typically Available:** \$2,000 per year

**THE CLASS OF 1953 50TH ANNIVERSARY SCHOLARSHIP**

Established by the Class of 1953 in honour of its 50th reunion.

**Requirements:** A variable number of scholarships to be awarded to students in Level 2 and above in a program in Arts and Science who, in the judgment of the Arts and Science Program, have attained high academic standing and demonstrated community involvement.

**Typically Available:** 3 x \$1,500

**THE BARBARA FRANCIS SCHOLARSHIP**

Established in 1985 by Laura Dodson (Class of '56) in memory of her sister.

**Requirements:** To be awarded to the student enrolled in Level 2 or above of an Arts and Science program and who has demonstrated outstanding achievement in both arts and science.

**Typically Available:** 1 x \$400

**THE GEORGE P. GILMOUR MEMORIAL SCHOLARSHIP**

Established in 1987 by the Graduating Class of 1962 in honour of Dr. G.P. Gilmour (Class of '21), Chancellor of McMaster University from 1941 to 1950 and President and Vice-Chancellor from 1950 to 1961.

**Requirements:** To be awarded to a student enrolled in Level 3 of an Honours program in the Arts and Science Program and who, in the judgment of the Arts and Science Program Admissions, Awards, and Review Committee, has demonstrated outstanding academic achievement and has made notable contribution to the campus or community by participation in extracurricular activities.

**Typically Available:** 1 x \$375

The recipient of this award is eligible to receive the corresponding bursary if financial need is demonstrated.

**THE HERBERT M. JENKINS PRIZE**

Established in 1990 as a tribute to Dr. Herbert M. Jenkins, first Director of the Arts and Science Program, by his many friends, colleagues and students on the occasion of his retirement from McMaster University.

**Requirements:** To be awarded to a student in an Arts and Science program whose work, in the judgment of the Arts and Science Program Awards and Review Committee, best reflects scholarship and the spirit of inquiry.

**Typically Available:** 1 x \$150

**THE CHARON BURKE MCCAIN MEMORIAL SCHOLARSHIP**

Established in 2004 in memory of Charon Burke McCain by family, friends, colleagues and students.

**Requirements:** To be awarded to an Honours Arts and Science student who has completed Level 3 and who, in the judgment of the Arts and Science Program, has demonstrated exceptional qualities of leadership and service at McMaster University or in the community, as well as notable academic achievement.

**Typically Available:** 2 x \$500

**OPEN TO THE FACULTY OF BUSINESS****THE SCOTT BARTLETT MEMORIAL PRIZE**

Established in 1985 in memory of Scott N. Bartlett by his family and friends.

**Requirements:** To be awarded to a student enrolled in Level 3 of the Honours Commerce Program and who has achieved high standing in COMMERCE 3FA3 and 3FB3, taken in the Fall/Winter terms.

**Typically Available:** 2 x \$200

**THE M. BANKER BATES SCHOLARSHIP**

Established in 1975 by Dr. M. Banker Bates and augmented in 1978 in his memory by his family, friends and colleagues.

**Requirements:** To be awarded to the student enrolled in Level 3 of a program in Commerce and who attains the highest Fall-Winter Average.

**Typically Available:** 1 x \$1,600

**THE CANADIAN ITALIAN PROFESSIONAL ASSOCIATION OF HAMILTON-HALTON SCHOLARSHIP IN COMMERCE**

Established in 2013 by the Canadian Italian Business and Professional Association of Hamilton-Halton.

**Requirements:** To be awarded to a student in a Commerce program with high academic achievement and who, in the judgment of an Awards Selection Committee, has volunteer involvement in the community-at-large. Preference will be given to students who have volunteered in Hamilton or Halton Region. Not open to students in their graduating year.

**Typically Available:** 2 x \$1,000

**THE CHARTERED PROFESSIONAL ACCOUNTANTS OF ONTARIO SCHOLARSHIP**

Established in 2010 by Certified General Accountants of Ontario.

**Requirements:** To be awarded to students who have completed Level 2 or above in a Commerce program at the DeGroote School of Business with notable academic standing.

**Typically Available:** 4 x \$1,000

**THE CITY OF HAMILTON ECONOMIC DEVELOPMENT DEPARTMENT SCHOLARSHIPS**

Established in 1976.

**Requirements:** (a) Two scholarships to be awarded on the basis of Fall-Winter Average to students entering Level 2 of a Commerce program; (b) Four scholarships to be awarded on the basis of Fall-Winter Average: two to students who are enrolled in Level 2, and two to students who are enrolled in Level 3 of a program in Commerce. Recipients must have obtained all their secondary school education in the Hamilton-Wentworth Region.

**Typically Available:** 6 x \$800 each

**THE COCCO FAMILY SCHOLARSHIP**

Established by Dom Cocco, B.Com. (Class of '83).

**Requirements:** To be awarded to a student enrolled in Level 3 of the Honours Commerce program who, in the judgment of the Faculty of Business has attained a high Fall-Winter Average and demonstrates an interest in accounting.

**Typically Available:** 1 x \$1,000

**THE DEGROOTE SCHOOL OF BUSINESS SCHOLARSHIPS**

Established in 2019 by McMaster University.

**Requirements:** To be awarded to students enrolled in the DeGroote School of Business on the basis of academic and, in some cases, other forms of earned merit.

**Typically Available:** 1 x \$1,500

**THE DONALD HART SCHOLARSHIP**

Established in 1985 by Mrs. Pamela Hart and Joel Jordan in honour of Donald Neil Hart (Class of '70).

**Requirements:** To be awarded to a student enrolled in Level 2 of a program in Commerce and who, in the judgment of the School of Business, has achieved high standing in the required Level 2 Commerce courses, taken in the Fall/Winter terms.

**Typically Available:** 2 x \$500

**THE HITACHI CAPITAL CANADA CORP. SCHOLARSHIP**

Established in 2019 by Hitachi Capital Canada Corp.

**Requirements:** To be awarded to students enrolled in Level 3 or above in a Commerce program who attain high averages.

**Typically Available:** 1 x \$1,000

**THE PAUL HYPHER PRIZE**

Established in 1988 in memory of Paul F. Hypher by his friends and classmates.

**Requirements:** To be awarded to the student in a program in Commerce who attains the highest standing in COMMERCE 2MA3.

**Typically Available:** 1 x \$250 for books

**THE ROBERT ALAN KENNEDY SCHOLARSHIP**

Established in 1998 by Robert Alan Kennedy.

**Requirements:** To be awarded to any student entering a Level 2, 3 or 4 program in the Faculty of Business who demonstrates outstanding academic achievement.

**Typically Available:** 1 x \$475

**THE CLAUDE G. LISTER SCHOLARSHIP**

Established in 1990 by bequest of Pauline Detwiler Lister in memory of her husband.

**Requirements:** To be awarded to a student in a program in the DeGroote School of Business.

**Typically Available:** 1 x \$625

**THE DR. ANDREW SZENDROVITS MEMORIAL SCHOLARSHIP**

Established in 1999 by family, friends and colleagues in memory of Dr. Andrew Szendrovits, a former professor of Production and Management Science since 1962 and Dean of the Faculty of Business from 1979 to 1984 at McMaster University.

**Requirements:** To be awarded to the student enrolled in a Commerce program who achieves the highest average in the required operations/management science courses (COMMERCE 20C3 and COMMERCE 3QA3) taken in the same term.

**Typically Available:** 1 x \$450

**THE TAX EXECUTIVES INSTITUTE SCHOLARSHIP**

Established in 2016 by the Tax Executives Institute, Inc. - Toronto Chapter to support students entering the taxation field.

**Requirements:** To be awarded to a level 3 student in the DeGroote School of Business who attains the highest combined average in COMMERCE 3AB3 and COMMERCE 3AC3.

**Typically Available:** 1 x \$1,000

**THE ROBERT TAYLOR SCHOLARSHIP IN COMMERCE**

Established in 2009 by Robert Taylor, M.B.A. (Class of '76).

**Requirements:** To be awarded to students in a Commerce program who attains a high Fall-Winter Average.

**Typically Available:** Variable x \$1,000

**THE WILLIAMSON FAMILY COMMERCE SCHOLARSHIP**

Established by David Williamson (Class of '83), Margot Roberts and family in 2015.

**Requirements:** To be awarded to a student enrolled in the DeGroote School of Business who has completed Level 1 with a high Fall-Winter Average.

**Typically Available:** 1 x \$1,500

**THE STEVE WILSON SCHOLARSHIP IN CORPORATE FINANCE**

Established in 2013 by Steve Wilson.

**Requirements:** To be awarded to a student enrolled in Level 3 of a Commerce program and who, in the judgment of the DeGroote School of Business, shows outstanding academic merit with a heavy concentration in corporate finance.

**Typically Available:** 1 x \$2,000

**OPEN TO THE FACULTY OF ENGINEERING****THE AIR LIQUIDE CANADA INC. SCHOLARSHIPS**

Established in 1999 by Air Liquide Canada.

**Requirements:** One scholarship to be awarded to a student in a Level 2 or 3 program in Chemical Engineering, Materials Science and Engineering and/



or Mechanical Engineering who, in the judgment of the Faculty of Engineering, has demonstrated outstanding academic achievement. The recipient must attain a minimum Fall-Winter Average of 9.5 at the most recent Fall/Winter terms.

Typically Available: 1 x \$1,500

#### **THE A.H. ATKINSON PRIZE**

Established in 1980 by Atkinson Engineering Consultants Limited.

**Requirements:** To be awarded to the student in a Civil Engineering program who achieves the highest average in CIVENG 3G04 and CIVENG 3J04, taken in one term.

Typically Available: 1 x \$200

#### **THE DR. CHRIS BART SCHOLARSHIP**

Established in 2010 by Tom Jenkins, B.Eng.Mgt. (Class of '82) and Toby Jenkins to honour Tom's Business Policy professor, Dr. Chris Bart.

**Requirements:** To be awarded to students who have completed Level 1 with the highest Fall-Winter Average and who are entering in a Level 2 Engineering and Management program. The recipient may not hold another scholarship of equal or greater value.

Typically Available: 1 x \$6,500

#### **THE CANADIAN SOCIETY FOR CHEMICAL ENGINEERING PRIZE**

Established in 1947 by the Chemical Institute of Canada.

**Requirements:** To be awarded to the student who is entering his/her final year of study of a program in Chemical Engineering and who attained the highest Fall-Winter Average.

Typically Available: 1 x \$50, Medal and Certificate

#### **THE CANADIAN SOCIETY FOR CHEMICAL ENGINEERING (CSCHE) SCHOLARSHIP**

Established in 2004 by the organizing committee of the 2003 CSCHE Annual Meeting.

**Requirements:** To be awarded to a student entering Level 2 of a program in the Department of Chemical Engineering who has attained the highest academic standing in Level 1.

Typically Available: 1 x \$600

#### **THE GRACE DOROTHY AND WILLIAM P. CARPENTER AWARD**

Established in 2001 by the Hamilton Community Foundation.

**Requirements:** To be awarded to a student entering Level 2 in Mechanical Engineering who has demonstrated outstanding academic achievement in a Level 1 program. Preference will be given to a student who has graduated from a publicly funded secondary school in the Hamilton or Burlington area.

Typically Available: 1 x \$2,500

#### **THE CANADIAN SOCIETY OF CIVIL ENGINEERS (HAMILTON SECTION) PRIZE**

Established in 1987.

**Requirements:** To be awarded to a student entering the final level of a program in Civil Engineering who, in the judgment of the Department of Civil Engineering, has demonstrated participation in extracurricular activities and has attained high academic standing.

Typically Available: 1 x Plaque

#### **THE CFUW-HAMILTON PAST PRESIDENT'S PRIZE**

Established in 1976 by the Past Presidents of the University Women's Club of Hamilton which became the CFUW (Hamilton) on the occasion of the Club's 50th anniversary.

**Requirements:** To be awarded to the woman student enrolled in Level 3 of a program in Engineering with the highest Grade Point Average.

Typically Available: 1 x \$1,000

#### **THE CREATECH SCHOLARSHIP IN COMPUTER SCIENCE**

Established in 2009 by The Createch Group.

**Requirements:** To be awarded to a student in the Faculty of Engineering who is enrolled in Level 2 or above of the Honours Computer Science (B.A.Sc.) or the Business Informatics program with the highest Fall-Winter Average. Preference to students who have completed Level 2 in the current term.

Typically Available: 1 x \$1,000

#### **THE DR. CAMERON M. CROWE SCHOLARSHIP**

Established in 2013 by Dr. Cameron M. Crowe, professor emeritus in the Faculty of Engineering.

**Requirements:** To be awarded to students who have completed Level 1 with the highest Fall-Winter Average and who are entering a Level 2 program in the Department of Chemical Engineering.

Typically Available: 1 x \$5,000

#### **THE FACULTY OF ENGINEERING SCHOLARSHIPS**

Established in 2019 by McMaster University.

**Requirements:** To be awarded to students enrolled in the Faculty of Engineering on the basis of academic and, in some cases, other forms of earned merit.

Typically Available: 1 x \$1,500

#### **THE RUTH AND JACK HALL PRIZE**

Established in 1983 by Jackie MacDonald in memory of her parents.

**Requirements:** To be awarded to a student enrolled in Level 3 of an Honours program in Computer Science, or enrolled in Level 3 of a program in Computer Engineering, and who attains the highest Fall-Winter Average.

Typically Available: 1 x \$225

#### **THE RONALD K. HAM MEMORIAL PRIZE**

Established in 1971 in memory of Professor R.K. Ham by his friends and former colleagues.

**Requirements:** Awarded to the student enrolled in Level 3 or above and who, in the judgment of the Department of Materials Science and Engineering, shows most promise as a materials scientist or engineer.

Typically Available: 1 x \$125

#### **THE HAMILTON AND DISTRICT HEAVY CONSTRUCTION ASSOCIATION SCHOLARSHIPS**

Established in 2003 by the Hamilton and District Heavy Construction Association.

**Requirements:** To be awarded to students who, in the judgment of the Department of Civil Engineering, have demonstrated outstanding academic achievement and who have attained a grade of at least A- in CIVENG 4CM4.

Typically Available: 1 x \$1,000

#### **THE PROFESSOR TERENCE HOFFMAN SCHOLARSHIP**

Established in 2013 by Dr. Terrence Hoffman, professor emeritus in the Faculty of Engineering.

**Requirements:** To be awarded to the student who has completed Level 1 with the highest Fall-Winter Average and who is entering a Level 2 program in the Department of Chemical Engineering.

Typically Available: 1 x \$5,000

#### **THE INTERMETCO LIMITED SCHOLARSHIP**

Established in 1977.

**Requirements:** To be awarded to the student enrolled in Level 3 of a program in Mechanical Engineering and who, in the judgment of the Department of Mechanical Engineering, has attained notable standing.

Typically Available: 1 x \$625

#### **THE LORNA AND ALVIN KINNEAR SCHOLARSHIP**

Established in 2007 by Scott Kinnear, B.Eng. (Class of '88) and Betty Ann Kinnear in honour of his parents, Lorna and Alvin Kinnear.

**Requirements:** To be awarded to a student entering Level 2 of a program in the Department of Chemical Engineering who attained the highest Fall-Winter Average in Level 1. The scholarship is tenable for up to three years. (To be awarded every three years.)

Typically Available: 1 x \$3,000 (\$1,000 per year)

#### **THE KUDSIA FAMILY SCHOLARSHIP**

Established in 2009 by Dr. & Mrs. Chandra & Wendy Kudsia.

**Requirements:** To be awarded to students enrolled in the Department of Electrical and Computer Engineering who demonstrate outstanding academic achievement.

Typically Available: 1 x \$2,000

**THE RAY LAWSON SCHOLARSHIPS**

Established in 1975 by the Honourable Ray Lawson, O.B.E., D.C.L, D.Cn.L., LL.D., K.G.St.J., Lieutenant-Governor of Ontario from 1946 to 1952.

**Requirements:** Two scholarships to be awarded for the highest Fall-Winter Averages in an Engineering and Management program: (a) one to a student enrolled in Level 3, and (b) one to a student enrolled in Level 4 or above.

**Typically Available:** 2 x \$275

**THE DR. JASON LO MATERIALS SCIENCE AND ENGINEERING SCHOLARSHIP**

Established in 2019 in memory of Dr. Jason Lo a leader in emerging materials, and an outstanding scientist, renowned for his deep commitment to student research, who had a passion for innovation.

**Requirements:** To be awarded to students enrolled in Level 2 of any Materials Science and Engineering program who attain high averages.

**Typically Available:** 1 x \$2,500

**THE JOHN MAYBERRY SCHOLARSHIPS**

Established in 1998 by John Mayberry.

**Requirements:** One scholarship to be awarded to a student who has completed Level 2 or 3 of a program in Chemical Engineering, Mechanical Engineering or Materials Engineering and who, in the judgment of the Faculty of Engineering, has demonstrated outstanding academic achievement. The recipients must attain a minimum Fall-Winter Average of 9.5 at the most recent Fall/Winter terms.

**Typically Available:** 1 x \$1,000

**THE DR. PAULA ALEXANDRA MEYER SCHOLARSHIP**

Established in 2019 by the estate of Dr. E. Constance Meyer who, along with her late husband Dr. Roberto J. Meyer, acknowledge the impact of McMaster University on the life and career of their daughter Dr. Paula Alexandra Meyer.

**Requirements:** To be awarded to students enrolled in Level 2 or above of a Mechanical Engineering program who attain high averages.

**Typically Available:** 1 x \$1,500

**THE DR. F.A. MIRZA SCHOLARSHIP**

Established in 1997 in memory of Farooque Mirza by family, friends and colleagues.

**Requirements:** To be awarded to a student enrolled in a Civil Engineering program who achieves the highest average in CIVENG 2C04 and ENGINEER 2P04 taken in the Fall/Winter terms.

**Typically Available:** 1 x \$300

**THE JOHN F. MOORE PRIZE**

Established in 1990 by the Steel Founders' Society of America in honour of John Moore's contributions to the Society over the past 25 years.

**Requirements:** To be awarded to the student who attains the highest grade in MATLS 3F03.

**Typically Available:** 1 x \$125

**THE PARKER CANADA DIVISION ENGINEERING EXCELLENCE AWARD**

Established in 2014 by Parker Canada.

**Requirements:** To be awarded to a student in the Faculty of Engineering enrolled in Level 3 or above in a Mechanical Engineering program and who, in the judgment of the Department of Mechanical Engineering, has demonstrated outstanding academic achievement. Preference will be given to a student who demonstrates community involvement through volunteerism.

**Typically Available:** 1 x \$1,000

**THE LEO SETO SCHOLARSHIP**

Established in 2017 by Leo Seto, B.Eng.Mgt. (Class of '87) and M.Eng. (Class of '90).

**Requirements:** To be awarded to a student who has completed Level 2 or above of an Engineering Physics program with a high average.

**Typically Available:** 1 x \$1,000

**THE SHELL CANADA SCHOLARSHIPS IN ENGINEERING AND MANAGEMENT**

Established in 1983.

**Requirements:** Three scholarships to be awarded to students enrolled in Level 4 or above of a program in Engineering and Management. Awards will be

based on scholarship and on the quality of and creativity shown in written and oral reports.

**Typically Available:** 3 x \$1,100

**THE STANTEC CONSULTING LTD. ENGINEERING SCHOLARSHIP**

Established in 2005 by Stantec Consulting Ltd. (Hamilton office).

**Requirements:** To be awarded to a student who has completed Level 1 with the highest Fall-Winter Average and who is entering a Level 2 program in Civil Engineering.

**Typically Available:** 1 x \$3,000

**THE MARK JOHN STOJCIC SCHOLARSHIPS**

Established in 1997 by bequest of Mark John Stojcic.

**Requirements:** Two scholarships to be awarded to students who have completed Level 3 of a Materials Science and Engineering program who, have attained the highest Fall-Winter Average.

**Typically Available:** 2 x \$1,800

**THE ROBERT SOWERBY MEMORIAL SCHOLARSHIP**

Established in 2002 by family, friends and colleagues, in memory of Dr. R. Sowerby, a professor of Mechanical Engineering.

**Requirements:** To be awarded to a student who has completed at least Level 1 in the Bachelor of Technology program with the highest Grade Point Average.

**Typically Available:** 1 x \$150

**THE DR. DAVID THOMPSON SCHOLARSHIP**

Established in 2010 by Tom Jenkins, B.Eng.Mgt. (Class of '82) and Toby Jenkins to honour Tom's Engineering Physics professor, Dr. David Thompson.

**Requirements:** To be awarded to students who have completed Level 1 with the highest Fall-Winter Average and who are entering a Level 2 Engineering Physics program. The recipient may not hold another scholarship of equal or greater value.

**Typically Available:** 1 x \$5,000

**THE PROFESSOR DAVID THOMPSON SCHOLARSHIP**

Established in 2016 by Robert Walker (M.Eng. '75, Ph.D. '77 & D.Sc. 2013) and Karen Walker to honour Robert's Engineering Physics graduate supervisor Dr. David Thompson. Robert Walker was Dr. Thompson's first Ph.D. student.

**Requirements:** To be awarded to a student who has completed Level 1 Engineering with a high Fall-Winter Average and who is entering a Level 2 Engineering Physics program.

**Typically Available:** 1 x \$5,000

**THE WALTERS INC. SCHOLARSHIP**

Established in 2018 by Walters Inc.

**Requirements:** To be awarded to students who have completed Level 4 of a Civil Engineering and Management program and attained high averages.

**Typically Available:** 2 x \$5,000

**OPEN TO THE FACULTY OF HEALTH SCIENCES****THE HENRIETTA ALDERSON SCHOLARSHIP**

Established in 2002 in memory of Henrietta Jane Alderson.

**Requirements:** Two scholarships to be awarded to students in the B.Sc.N. program who are entering Level 2 (A or E Stream) and, in the judgment of the School of Nursing, have demonstrated exceptional achievement in required science courses.

**Typically Available:** 2 x \$3,950 each

**THE CHARU LATE BHADURI SCHOLARSHIP IN NURSING**

Established in 2011 by Dr. Basanti Majumdar, M.Sc. (Class of '87) and faculty member of the School of Nursing since 1971, in memory of her mother.

**Requirements:** To be awarded to a student enrolled in the McMaster nursing program who, in the judgment of the School of Nursing, demonstrates academic excellence and a commitment to the patient-nurse relationship. Preference will be given to students who have enrolled in, or completed, an overseas clinical placement in a developing country.

**Typically Available:** 1 x \$800

**THE DR. GARTH BOULTER MEMORIAL AWARD**

Established in 2007 by G. Stanley Boulter, B.A. (Class of '49) and Irma E. Boulter in memory of their son, Garth E. Boulter, Associate Professor of Obstetrics and Gynecology in the School of Medicine.

**Requirements:** A variable number to be awarded to students who have completed an overseas' clinical placement elective in Level 3 of the Midwifery program and who, in the judgment of the Midwifery Program, have demonstrated academic excellence, leadership and social awareness. Preference will be given to students who have completed their electives in Africa.

Typically Available: 5 x \$2,000

**THE DEBORAH M. BROWN SCHOLARSHIP IN BIOMEDICAL DISCOVERY AND COMMERCIALIZATION**

Established in 2012 by Canada's Research-Based Pharmaceutical Companies (Rx&D) and EMD Inc., Canada in honour of Ms. Deborah M. Brown, Past Chair of the Rx&D Board of Directors and President and Managing Director, EMD Inc., Canada.

**Requirements:** To be awarded to a student in the Bachelor of Biomedical Discovery and Commercialization who, in the judgment of a selection committee from the program, has demonstrated excellence in academic achievement.

Typically Available: 3 x \$5,000

**THE CLASS OF 1966 NURSING SCHOLARSHIP**

Established in 2012 by the School of Nursing, Class of '66.

**Requirements:** One scholarship to be awarded to a student in the School of Nursing who, in the judgment of the School of Nursing, has demonstrated outstanding academic achievement in any level.

Typically Available: 1 x \$1,000

**THE MICHAEL KAMIN HART MEMORIAL FUND**

Established in 2011 by the Michael G. DeGroot Institute for Infectious Disease Research along with family, friends and donors in memory of Michael Kamin Hart, who was a student within the Institute.

**Requirements:** Aligned with Michael's academic trajectory, to be awarded to: (a) an undergraduate summer student in either their third or fourth year of study who plans to go on to graduate work at McMaster; and (b) an MSc student; and (c) a PhD student and (d) a recipient of the Staff Award of Excellence. The recipients must be associated with the Michael G. DeGroot Institute for Infectious Disease Research and have demonstrated academic excellence. To be awarded on the recommendation of the Executive Committee of the Michael G. DeGroot Institute for Infectious Disease Research.

Typically Available: 1 x \$500

**THE FACULTY OF HEALTH SCIENCES SCHOLARSHIPS**

Established in 2019 by McMaster University.

**Requirements:** To be awarded to students enrolled in the Faculty of Health Sciences on the basis of academic and, in some cases, other forms of earned merit.

Typically Available: 1 x \$1,500

**THE DR. SHIGEAKI HINOHARA SCHOLARSHIP**

Established in 2003 by Dr. Shigeaki Hinohara and the School of Nursing.

**Requirements:** To be awarded every three years to a student who has completed Level 1 in the B.Sc.N. Program and who, in the judgment of the School of Nursing, has demonstrated outstanding academic achievement in health sciences and behavioural science courses. The scholarship is tenable for up to three years provided the recipient maintains a Grade Point Average of 8.0.

Typically Available: 1 x \$2,400 (\$800 each year)

**THE DONALD LAVIGNE MEMORIAL SCHOLARSHIP**

Established in 2007 by Willis McConnell and Ray Skelton in memory of Donald Lavigne to honour his dedication as a registered practical nurse at Chedoke Hospital ('65-'89).

**Requirements:** A variable number to be awarded to students in their first year

of study who, in the judgment of the School of Nursing, have demonstrated academic excellence in a Post Registered Nursing or Post Registered Practical Nursing program.

Typically Available: 4 x \$800

**THE JANET MCKNIGHT AWARD**

Established in 1994 by faculty, friends and students in memory of Janet McKnight, beloved colleague and teacher, a recognized expert in educational methodology and small-group, problem-based learning.

**Requirements:** To be awarded to a student entering Level 4 of a program in Nursing who, in the judgment of the School of Nursing has demonstrated notable academic achievement and leadership in clinical and educational aspects of gerontology or, problem based, self-directed learning in nursing education.

Typically Available: 2 x \$600

**THE DR. O.W. NIEMEIER SCHOLARSHIP**

Established in 1938 and augmented in 1952 by Dr. O.W. Niemeier, M.D.FRCPS(E).

**Requirements:** To be awarded to the student who has completed Level 2 in the Nursing program with the highest Grade Point Average.

Typically Available: 2 x \$1,100

**THE FRED AND DOROTHY O'LEARY SCHOLARSHIP**

Established in 2017 by Jennifer O'Leary, BSc (Class of '90), MA, MLT in honour of her grandparents, Fred and Dorothy O'Leary, who though unable to attend higher education themselves, valued its role in the lives of individuals and Canadian society.

**Requirements:** This scholarship continues her grandparents' tradition of supporting education for others, and is to be awarded to an undergraduate student enrolled in the Bachelor of Health Sciences (Honours).

Typically Available: 1 x \$1,000

**THE CLARENCE L. STARR PRIZE**

Established in 1946 in memory of Dr. C.L. Starr, M.D., LL.D., F.A.S.S., Professor of Surgery at the University of Toronto, and an honorary alumnus of McMaster University (LL.D. 1922).

**Requirements:** To be awarded to the student who has completed Nursing I and who attains the highest Fall-Winter Average.

Typically Available: 1 x \$150

**THE CORELENE HELEN TOSTEVIN SCHOLARSHIPS**

Established in 1998 by bequest of Corelene Tostevin.

**Requirements:** To be awarded to students enrolled in an accelerated BScN program and who, in the judgment of the School of Nursing, have demonstrated notable academic achievement.

Typically Available: 5 x \$250

**OPEN TO THE FACULTY OF HUMANITIES****THE MARGARET E. ORR AND EDWARD C. ALLEN PRIZE**

Established in 2011 in memory of Margaret Elizabeth Orr and Edward Charles Allen.

**Requirements:** To be awarded to a student enrolled in a program in English who, in the judgment of the Department of English and Cultural Studies, has submitted an essay on Irish literature that demonstrates the highest degree of analytical skill and critical insight.

Typically Available: 1 x \$1,000

**THE MAQBOOL AZIZ MEMORIAL SCHOLARSHIP**

Established in 2001 by family, friends and colleagues in memory of Maqbool Aziz, Professor of English from 1969 to 2000.

**Requirements:** To be awarded to a student in an English program who attains the highest grade in ENGLISH 2BL3-Twentieth and Twenty-First Century British Literature and Film.

Typically Available: 2 x \$450

**THE LAURA BALDWIN SCHOLARSHIP**

Established in 2005 from the bequest of Laura Baldwin.

**Requirements:** To be awarded to a student enrolled in a program in English

who, in the judgment of the Department of English and Cultural Studies, has submitted an original literary work or poem that demonstrates the highest degree of literary excellence.

Typically Available: 1 x \$650

#### **THE BANK OF MONTREAL HUMANITIES MULTIMEDIA SCHOLARSHIPS**

Established in 1999 by the Bank of Montreal.

**Requirements:** A variable number of scholarships to be awarded to students entering Level 2, 3 or 4 of the Humanities Combined Honours Multimedia program who, in the judgment of the Department of Communication Studies and Multimedia, demonstrate outstanding academic achievement in the Humanities Multimedia program or great promise in the area of Humanities multimedia.

Typically Available: 8 x \$1,000

#### **THE LOUISE E. BETTGER SCHOLARSHIPS IN MUSIC**

Established in 1982 in memory of Louise E. Bettger of New Hamburg, Ontario, by her nieces and nephews.

**Requirements:** Three scholarships to be awarded to students in an Honours program in Music who, in the judgment of the School of the Arts, are outstanding: (a) one in the area of choral or vocal music to a student enrolled in Level 2 or above; (b) one to a keyboard student enrolled in Level 2 or above; and (c) one to a student who has completed Music 1 and who has demonstrated overall musical excellence.

Typically Available: 3 x \$500 each

#### **THE BRIAN BLAKEY MEMORIAL SCHOLARSHIP**

Established in 1979 in memory of Dr. Brian Blakey, Professor of French, by his friends, colleagues and former students, on behalf of his wife, Dorothy.

**Requirements:** To be awarded to the student who attains the highest Fall-Winter Average in Level 3 of an Honours program in Classics, Theatre & Film Studies, English, French or Linguistics and Languages. Students must have achieved a B- in either LINGUIST 1A03 or LINGUIST 1AA3.

Typically Available: 1 x \$500

#### **THE HILDA DOROTHY BORMAN SCHOLARSHIP**

Established in 1998 by bequest of Hilda Dorothy Borman.

**Requirements:** To be awarded to a student studying piano who, in the judgment of the School of the Arts, has attained high academic standing.

Typically Available: 1 x \$1,050

#### **THE JOAN FRANCES BOWLING SCHOLARSHIPS**

Established in 1997 from the estate of Marie Bowling in memory of her daughter, Joan Frances Bowling.

**Requirements:** Two scholarships to be awarded to outstanding classical music scholars enrolled in Level 2 and above of a Music program and who, in the judgment of the School of the Arts, have demonstrated excellence in Music.

Typically Available: 1 x \$1,650

#### **THE BRIEN SCHOLARSHIP IN PHILOSOPHY**

Established in 1944 by Dr. J.W. Brien of Windsor.

**Requirements:** To be awarded to the student who is enrolled in Level 2 of an Honours program in Philosophy and who, in the judgment of the Department of Philosophy, shows the most academic promise.

Typically Available: 1 x \$475

#### **THE TEN BROEKE-BENSEN MEMORIAL SCHOLARSHIP**

Established in 1990 in memory of Dr. James Ten Broeke and Dr. Roy C. Bensen, former Heads of the Department of Philosophy.

**Requirements:** To be awarded to a student enrolled in Level 2 or above of an Honours Program in Philosophy who, in the judgment of the Department of Philosophy, has demonstrated outstanding academic achievement.

Typically Available: 2 x \$1,000

#### **THE ELLA HALSTEAD CAMPBELL PRIZE**

Established in 1978 by Mrs. Verna Caskey and Miss June Caskey in memory of Ella Halstead Campbell and augmented by Mrs. Edna M. Miller in 1987.

**Requirements:** To be awarded to a keyboard student, enrolled in any level of a solo performance course, who is outstanding in the judgment of the School of

the Arts.

Typically Available: 1 x \$200

#### **THE CANADIAN ITALIAN PROFESSIONAL ASSOCIATION OF HAMILTON-HALTON SCHOLARSHIP IN ITALIAN STUDIES**

Established in 2011 by the Canadian Italian Business and Professional Association of Hamilton-Halton.

**Requirements:** A variable number to be awarded to students who, in the judgment of the Department of Linguistics and Languages, have demonstrated high academic achievement in Italian studies.

Typically Available: 1 x \$1,000

#### **THE NORMAN N. CASKEY MEMORIAL PRIZE**

Established in 1983 by Mrs. Verna Caskey and Miss June Caskey in memory of husband and father.

**Requirements:** To be awarded to a student enrolled in Level 2 or above of an Honours program in Music and who, in the judgment of the School of the Arts, has demonstrated musical excellence.

Typically Available: 1 x \$150

#### **THE CHIN-CHIN AWARD IN ELECTROACOUSTIC STUDIES/SOUND ART**

Established in 2011, the award celebrates the continuing artistic contribution of Chin-Chin Chen, the Taiwanese-American composer whose music degree is in both performance and composition.

**Requirements:** To be awarded to a student who has completed the Introduction to Digital Audio (MMEDIA 2G03/MUSIC 2Z03) or equivalent and at least Level 2 of any program in the Faculty of Humanities who, in the judgment of the Faculty, has demonstrated a deep interest in the area of electroacoustic studies or sound art. Preference given to a student in an Honours program.

Typically Available: 1 x \$800

#### **THE COMPARATIVE LITERATURE PRIZE**

Established in 1988.

**Requirements:** To be awarded to a student who, in the judgment of the Department of English and Cultural Studies, has achieved notable standing in Level 2 comparative literary studies courses.

Typically Available: 1 x \$250

#### **THE CRANSTON PRIZES**

Established in 1958 by William H. Cranston of Midland in honour of his parents, J. Herbert Cranston (Class of '05) and Eva Wilkins Cranston (Class of '07).

**Requirements:** Two prizes to be awarded for excellence in the study of Canadian literature: (a) one for the highest grade in ENGLISH 2G06 A/B, and (b) one for the highest grade in ENGLISH 2C03.

Typically Available: 2 x \$225 each

#### **THE MARGERY E. DIXON MEMORIAL SCHOLARSHIP**

Established in 2003 in loving memory of Margery E. Dixon (Class of '35) by Geraldine Phenix.

**Requirements:** To be awarded to a student who has completed Level 2 of an Honours English program and who attains the highest Fall-Winter Average.

Typically Available: 2 x \$2,000

#### **THE ROSEMARY DOUGLAS-MERCER MEMORIAL PRIZE**

Established in 1989.

**Requirements:** To be awarded to a student enrolled in Level 2 of an Honours program in French and who has attained the highest average in FRENCH 2BB3 and one of FRENCH 2J03 or FRENCH 2JJ3.

Typically Available: 2 x \$175

#### **THE HORACE A. DULMAGE PRIZE IN PHILOSOPHY**

Established in 1976 in honour of Professor Horace A. Dulmage by his colleagues and friends upon the occasion of his retirement from McMaster University.

**Requirements:** To be awarded to the full-time student in Level 2 of an Honours program in Philosophy who attained the most notable standing in his or her Level 1 program.

Typically Available: 1 x \$200



**THE FACULTY OF HUMANITIES SCHOLARSHIPS**

Established in 2019 by McMaster University.

**Requirements:** To be awarded to students enrolled in the Faculty of Humanities on the basis of academic and, in some cases, other forms of earned merit.

**Typically Available:** 1 x \$1,500

**THE HAROLD AND GERTRUDE FREEMAN SCHOLARSHIP IN FRENCH**

Established in 1981 by members of the Class of '43 as a grateful tribute to Harold A. and Gertrude Freeman; Professor Freeman was honorary president of the Class of '43 and was a long-time teacher of French at McMaster University.

**Requirements:** To be awarded to the student returned from completing Level 3 abroad as part of the Humanities Study Abroad Program and entering the final term of an Honours program in French who, in the judgment of the Department of French, has attained the highest level of accomplishment in knowledge of French language, literature and culture. The recipient must obtain a Grade Point Average of at least 8.0 and no failures in the review at the end of the Fall/Winter terms immediately prior to enrolling in the Humanities Study Abroad Program.

**Typically Available:** 2 x \$1,000

**THE FRENCH GOVERNMENT BOOK PRIZES**

**Requirements:** To be awarded from time to time to in-course students for proficiency in Level 1 French.

**Typically Available:** 3 x Book

**THE FRENCH SCHOLARSHIP**

Established in 2006 by James McCollum, M.A. (Class of '67).

**Requirements:** To be awarded to a student who is enrolled in a program in French and who, in the judgment of the Department of French, demonstrates high academic achievement.

**Typically Available:** 1 x \$6,000

**THE MERRILL FRANCIS GAGE SCHOLARSHIPS**

Established in 1982 from the estate of Merrill Francis Gage of Hamilton.

**Requirements:** Two scholarships to be awarded to a student enrolled in Level 2 or above of an Honours program in Music and who, in the judgment of the School of the Arts, has demonstrated excellence in performance on a keyboard or orchestral instrument.

**Typically Available:** 2 x \$1,000 each

**THE SAMUEL GELLER MEMORIAL BOOK PRIZE**

Established in 1999 by Libby Geller in memory of her husband Samuel Geller (Class of '33).

**Requirements:** To be awarded to a student who has completed Level 3 of an Honours Program in History and who, in the judgment of the Department of History, has attained notable academic standing.

**Typically Available:** 1 x \$425 for books

**THE GERMAN CONSULATE TORONTO BOOK AWARD**

Established in 2012 by the Consulate General of the Federal Republic of Germany, Toronto.

**Requirements:** To be awarded from time to time to in-course students for proficiency in German.

**Typically Available:** 1 Book

**THE JIM & MARGARET GIBSON MEMORIAL SCHOLARSHIP**

Established in 2020 by the Estate of Margaret Janet Wilson Gibson B.A. (Class of '89), in memory of Jim and Margaret Gibson.

**Requirements:** To be awarded to students enrolled in Level 3 or above of an English and Cultural Studies program in the Faculty of Humanities who attain high averages.

**Typically Available:** 1 x \$4,800

**THE DAPHNE ETHERINGTON GRAHAM MEMORIAL SCHOLARSHIP IN ENGLISH**

Established in 1989, in memory of a former student and dedicated servant of the University, by her friends, family, and Professor Emeritus R.P. Graham.

**Requirements:** To be awarded to the student, enrolled for a first degree after completing Level 1, who attains the highest standing in 18 units of English, all

taken in the same Fall/Winter terms, with an average standing of at least A-, provided that the recipient is not the holder of another scholarship of equal or greater value.

**Typically Available:** 1 x \$975

**THE DAPHNE ETHERINGTON GRAHAM MEMORIAL SCHOLARSHIP IN HISTORY**

Established in 1997 in memory of a former student and dedicated servant of the University, by her friends, family and Professor Emeritus R.P. Graham.

**Requirements:** To be awarded to the student, enrolled for a first degree after completing Level 1, who attains the highest standing in 15 units of History, all taken in the same Fall/Winter terms, with an average of at least A-.

**Typically Available:** 1 x \$1,000

**THE H.B. GREENING BOOK PRIZE**

Established in 1969 by bequest of Gladys Powis Greening in memory of her husband, Herald Benjamin Greening.

**Requirements:** To be awarded to the student enrolled in Level 2 of an Honours program in Music and who, in the judgment of the School of the Arts, has demonstrated excellence in music.

**Typically Available:** 1 x \$100 for books

**THE FRED AND BARBARA HACKER SCHOLARSHIP**

Established in 2015 by Fred Hacker, B.A. (Class of '68), J.D., Q.C. and Barbara (Macaulay) Hacker, B.A. (Class of '69) to recognize students for their achievements and inspire them to contribute to the cultural fabric of their communities.

**Requirements:** To be awarded to a student enrolled in the School of the Arts who has attained a high Fall-Winter Average.

**Typically Available:** 2 x \$1,000

**THE ALISE ALEXANIAN HASSEL MEMORIAL SCHOLARSHIP**

Established in 2007 by family and friends in memory of Alise Alexanian Hassel, B.A. (Class of '98). A gifted young artist and graduate of the Studio Art Program who did not live to fulfill her potential.

**Requirements:** To be awarded to a student enrolled in Level 2 or above in an Honours Art program who, in the judgment of the School of the Arts, has demonstrated outstanding achievement in Studio Arts.

**Typically Available:** 2 x \$800

**THE BERTRAM OSMER HOOPER SCHOLARSHIP**

Established in 1957 by bequest of Isobel F. Hooper.

**Requirements:** To be awarded in Arts.

**Typically Available:** 1 x \$250

**THE HUGHES SCHOLARSHIP**

Established in 1993 by Heidi Dickensen-Hughes in memory of her husband Peter Hughes (Class of '69).

**Requirements:** To be awarded to a student enrolled in Level 2 or above of the Music Program who, in the judgment of the School of the Arts, has displayed outstanding achievement in Music Education.

**Typically Available:** 1 x \$200

**THE JOSH AND JANE HUNTER SCHOLARSHIP**

Established in 2015 by Josh Hunter, B.A.Hon. (Class of '99), and Jane (Sterling) Hunter, B.Eng.Mgt. (Class of '99), MBA (Class of '02), M.Sc. (Class of '13), to recognize outstanding academic achievement.

**Requirements:** To be awarded to a student in a Classics or English program with the highest GPA.

**Typically Available:** 1 x \$1,000

**THE ROBERT H. JOHNSTON UNDERGRADUATE SCHOLARSHIP IN HISTORY**

Established in 2005 to honour Bob Johnston's contribution to undergraduate teaching in history.

**Requirements:** To be awarded to a student entering Level 2 of an Honours History program who, in the judgment of the Faculty of Humanities, has achieved the highest Fall-Winter Average in a Level 1 program.

**Typically Available:** 1 x \$800

**THE JURY PRIZE**

Established in 1941 by bequest of J.H. Jury of Bowmanville.

**Requirements:** To be awarded to the student enrolled in Level 2 of the Honours History program and who attains the highest Fall-Winter Average.

**Typically Available:** 1 x \$1,500

**THE KILPATRICK SCHOLARSHIP IN ENGLISH**

Established in 2018 from the estate of Eleanor Jean McLeish.

**Requirements:** To be awarded to undergraduate students enrolled in a Level 1 program in the Faculty of Humanities who attain high grades in one or more Level 1 English courses.

**Typically Available:** 1 x \$4,000

**THE KIT MEMORIAL SCHOLARSHIP**

Established in 1936 by the Hamilton Branch of the Canadian Women's Press Club (now the Media Club of Canada, Hamilton Branch) in memory of the brilliant journalist and writer, the first president of the Canadian Women's Press Club, Kathleen Blake Coleman, widely known on this continent as Kit.

**Requirements:** To be awarded to a woman student either enrolled in Level 2 on the basis of journalistic ability or enrolled in Level 3 of an Honours program in English on the basis of Fall-Winter Average.

**Typically Available:** 1 x \$200

**THE E. DORIS LAWRENCE SCHOLARSHIP**

Established in 1999 in memory of E. Doris Lawrence (Class of '47).

**Requirements:** To be awarded to a student who, in the judgment of the Department of French, has demonstrated academic excellence in French.

**Typically Available:** 2 x \$2,200

**THE LINGUISTICS PRIZE**

Established in 1988.

**Requirements:** To be awarded to a student in an Honours program in Linguistics who, in the judgment of the Department of Linguistics and Languages, has achieved notable standing in Level 2 courses in Linguistics.

**Typically Available:** 2 x \$250

**THE ELEANOR DORNBUSH MARPLES PRIZE IN ART HISTORY**

Established in 1985 by Mrs. Barbara Niedermeier and her family in memory of her sister.

**Requirements:** To be awarded to a student who, in the judgment of the School of the Arts, has demonstrated outstanding achievement.

**Typically Available:** 2 x \$175

**THE ELEANOR DORNBUSH MARPLES PRIZE IN THEATRE & FILM STUDIES**

Established in 1987 by Vaughan W. Marples in memory of his wife.

**Requirements:** To be awarded to a student in Level 2 of a Theatre & Film program who, in the judgment of the School of the Arts, has achieved academic excellence.

**Typically Available:** 1 x \$150

**THE H.W. MCCREADY PRIZE IN BRITISH HISTORY**

Established in 1981 in memory of Professor H.W. McCready, a member of the Department of History from 1943 to 1975, by former students, colleagues, and friends.

**Requirements:** To be awarded to a Level 2 student who, in the judgment of the Department of History, attains notable standing in British History courses.

**Typically Available:** 1 x \$100

**THE MCGREGOR-SMITH-BURR MEMORIAL SCHOLARSHIP**

Established in 1910 by the Class of 1912 in Arts, in memory of their classmates, Percy Neil McGregor, Lee Wilson Smith and George William Burr, and supplemented in 1944 by bequest from Professor R. Wilson Smith, father of Lee Wilson Smith.

**Requirements:** To be awarded to the student enrolled in Level 3 of the Honours English and History program and who has the highest Fall-Winter Average.

**Typically Available:** 1 x \$525

**THE ALEXANDER GORDON MCKAY SCHOLARSHIP**

Established in 1990 by friends and colleagues of Professor A.G. McKay, first Dean of the Faculty of Humanities from 1968 to 1973, to mark his retirement after 33 years of service at McMaster University.

**Requirements:** To be awarded to a student enrolled in Level 3 of an Honours

Classics program and who, in the judgment of the Department of Classics, has attained high academic standing. Preference will be given to students from the Regional Municipality of Hamilton-Wentworth.

**Typically Available:** 1 x \$500

**THE EVELYN RUTH MCLEAN SCHOLARSHIP IN CANADIAN HISTORY**

Established in 2012 by Laurie R. McLean (Class of '74) in memory of her mother Evelyn Ruth McLean who loved teaching, believed in the value of education and had a passion for Canadian history.

**Requirements:** To be awarded to a student taking courses in Canadian history who, in the judgment of the Department of History, has demonstrated outstanding academic achievement and the desire to excel in the study of Canada's past.

**Typically Available:** 1 x \$1,150

**THE PETER MCPHATER MEMORIAL SCHOLARSHIP**

Established in 1988 by Peter McPhater's friends in recognition of his art, craftsmanship and humanitarianism.

**Requirements:** To be awarded to a student enrolled in Level 3 of a program in Honours Art or Honours Art History and who, in the judgment of the School of the Arts, is outstanding.

**Typically Available:** 1 x \$450

**THE MERRIAM SCHOOL OF MUSIC SCHOLARSHIP**

Established in 2003 by the Merriam School of Music.

**Requirements:** To be awarded to an Honours Music student enrolled in Level 2 or above and who, in the judgment of the School of the Arts, has demonstrated good academic standing, excellent musicianship skills, a strong commitment to teaching and community service.

**Typically Available:** 2 x \$1,000

**THE ANNE MURRAY SCHOLARSHIP**

Established in 1985 in memory of Anne M. Murray (Class of '82) by her family.

**Requirements:** To be awarded to a student enrolled in Level 2 or above and who, in the judgment of the Department of Linguistics and Languages, has attained notable standing in at least nine units of German courses above Level 1.

**Typically Available:** 2 x \$300

**THE ORDER SONS OF ITALY - TRIESTE LODGE #4 SCHOLARSHIP IN ITALIAN STUDIES**

Established in 2014 by the Order Sons of Italy - Trieste Lodge #4, in Hamilton.

**Requirements:** To be awarded to a student who, in the judgment of the Department of Linguistics and Languages, has demonstrated high academic achievement in Italian studies.

**Typically Available:** 1 x \$1,000

**THE IRENE PEARCE SCHOLARSHIP**

Established in 1994 by Centenary United Church of Hamilton in honour of Irene Pearce, organist and choir director for fifty-four years.

**Requirements:** To be awarded to a student enrolled in Level 1 or above of an Honours Music Program who, in the judgment of the School of the Arts, has attained notable academic standing and demonstrated excellence in keyboard performance.

**Typically Available:** 1 x \$1,500

**THE BRIAN POCKNELL MEMORIAL SCHOLARSHIP**

Established in 2004 in memory of Brian Pocknell.

**Requirements:** To be awarded to an undergraduate student who has completed Level 2 in a French program and, in the judgment of the Department of French, has achieved notable academic standing.

**Typically Available:** 1 x \$750

**THE DR. JOHN A. PYLYPIUK SCHOLARSHIP**

Established in 1967 in memory of Dr. John A. Pylypiuk and in recognition of Canada's Centennial Year.

**Requirements:** To be awarded to the student who has completed Level 2 of an Honours program in History with the highest Fall-Winter Average and who in that term achieves a grade of at least A- in HISTORY 2T03 and HISTORY 2TT3.

Typically Available: 1 x \$700

#### **THE RAND MEMORIAL PRIZE OF CLASS '98**

Established by the Class of 1898 in Arts, on the occasion of the 25th anniversary of graduation, 1923, in memory of Chancellor Theodore Harding Rand, to encourage original literary work.

**Requirements:** To be awarded to the student enrolled in Level 3 and who, in the judgment of the Department of English and Cultural Studies, has made the most notable original contribution to student publications.

Typically Available: 2 x \$250

#### **THE HELEN RAY SCHOLARSHIP IN FINE ARTS**

Established in 2012 by Dr. Jim Ray (Class of '75) and Annette Ray, in honour of Jim's mother, Helen (Burkholder) Ray, and in recognition of her lifelong passion for the fine arts.

**Requirements:** To be awarded to a student in the Studio Art program who has completed Studio Art I and who, in the judgment of the School of the Arts, has demonstrated outstanding academic achievement in Studio Art.

Typically Available: 1 x \$2,000

#### **THE SHARON REEVES SCHOLARSHIP**

Established in 1987 by Kevin W. Reeves (Class of '80) in memory of his wife, Sharon (Class of '79).

**Requirements:** To be awarded to a student entering Level 3 or 4 of an Honours program in Music (Education) and who, in the judgment of the School of the Arts, has attained notable standing.

Typically Available: 1 x \$425

#### **THE ELLA JULIA REYNOLDS SCHOLARSHIPS**

Established in 1984 by bequest of Ella Julia Reynolds of Hamilton.

**Requirements:** Two scholarships to be awarded on the basis of scholarship and character to students enrolled in Level 2 or above of the Honours English or the Honours English and History programs with a Fall-Winter Average of at least 9.5. The recipients must not be holders of another scholarship.

Typically Available: 2 x \$1,000

#### **THE GLADYS RICHARDS SCHOLARSHIP**

Established in 2002 by bequest of Gladys Richards.

**Requirements:** Two scholarships to be awarded to students who have completed at least Level 2 of a single Honours program in English or a Combined Honours English and History program who, in the judgment of the Departments, have demonstrated outstanding academic achievement. Students may not hold another scholarship of equal or greater value.

Typically Available: 2 x \$2,000

#### **THE RONALD J. ROLLS SCHOLARSHIP**

Established in 2012 by bequest to recognize the exceptional achievements of Ronald J. Rolls, B.A. (Class of '54), LL.B., Q.C., L.S.M.

**Requirements:** To be awarded to a student who has completed Humanities I with the highest Fall-Winter Average and who is entering an Honours English program.

Typically Available: 2 x \$2,000

#### **THE E. TOGO SALMON PRIZE IN HISTORY**

Established in 1973 by friends and colleagues of Professor E.T. Salmon on his retirement, in recognition of his outstanding contribution to the Department of History.

**Requirements:** To be awarded to the student enrolled in Level 3 and who, in the judgment of the Department of History, attains notable standing in an Honours program in History.

Typically Available: 1 x \$200

#### **THE NOEL SANDUSKY MEMORIAL PRIZE**

Established in 1994 by family and friends in memory of Noel Sandusky.

**Requirements:** To be awarded to a student enrolled in Level 2 of a program in History who, in the judgment of the Department of History, attains notable academic standing in at least nine units of History courses.

Typically Available: 1 x \$200 for books

#### **THE LARRY SAYERS PRIZE IN EAST ASIAN HISTORY**

Established in 1983 in memory of Larry P. Sayers (Class of '82) by his friends.

**Requirements:** To be awarded to the student who, in the judgment of the Department of History, has demonstrated outstanding achievement in at least six units of courses work in East Asian history.

Typically Available: 1 x \$275

#### **THE FEDOR SCHNEIDER SCHOLARSHIP IN ITALIAN**

Established in 2004 by bequest of Mary Anna Schneider.

**Requirements:** To be awarded to a student entering Level 3 who, in the judgment of the Department of Linguistics and Languages, has achieved notable academic standing in Italian courses. Open to non-native speakers of Italian only.

Typically Available: 3 x \$2,000

#### **THE SCHOOL OF THE ARTS SCHOLARSHIP IN MUSIC**

Established in 1993 by the Department of Music which later became part of the School of the Arts.

**Requirements:** To be awarded to a student who, in the judgment of the School of the Arts, has demonstrated academic excellence in Music.

Typically Available: 1 x \$1,000

#### **THE SHEILA SCOTT SCHOLARSHIP IN ENGLISH**

Established in 1983 by graduates of McMaster University and friends in honour of Sheila Scott, Dean of Women from 1965 to 1982, in recognition of her outstanding contribution to the University community during 25 years of service.

**Requirements:** To be awarded to the student enrolled in Level 3 of the Honours English program, and who attains the highest Fall-Winter Average.

Typically Available: 2 x \$800

#### **THE LOUIS J. SHEIN SCHOLARSHIP**

Established in 1990 by family and friends in memory of Dr. L.J. Shein, founding chair of the Russian Studies program and faculty member from 1958 to 1980.

**Requirements:** To be awarded to a student who, in the judgment of the Department of Linguistics and Languages, has achieved notable standing in a Russian language course.

Typically Available: 1 x \$375

#### **THE LEONA ALLERSTON RYAN AND GORDON HENRY STEVENS MEMORIAL SCHOLARSHIP**

Established in 1995 by Elaine Keillor in memory of Leona and Gordon Stevens.

**Requirements:** To be awarded to a student enrolled in Level 2 or above of an Honours program in Music or Art who, in the judgment of the School of the Arts, has demonstrated outstanding achievement.

Typically Available: 1 x \$525

#### **THE MARIE L. STOCK SCHOLARSHIP**

Established in 1987 by the French Section of the Department of Romance Languages in honour of Marie L. Stock, Professor Emeritus of French, and Chair of the Department of Romance Languages from 1962 to 1965.

**Requirements:** To be awarded to the student enrolled in Level 3 of an Honours program in French and who, in the judgment of the Department of French, has achieved notable academic standing.

Typically Available: 1 x \$450

#### **THE JOHN TOTH MEMORIAL PRIZE**

Established in 1983 in memory of John Toth by his friends.

**Requirements:** To be awarded to the student who attains the highest average in any six units of Level 3 or 4 Latin courses.

Typically Available: 1 x \$50

#### **THE JOHN H. TRUEMAN SCHOLARSHIP**

Established in 1989 as a tribute to Professor John H. Trueman by his many friends, colleagues and students on the occasion of his retirement from McMaster University.

**Requirements:** To be awarded to the student who has completed Level 1, and who in the judgment of the Department of History, has achieved notable academic standing in Level 1 History courses.

Typically Available: 1 x \$250

**THE VAREY SCHOLARSHIP**

Established in 1978 by J.C. Varey, Dundas, in memory of Albert E. Varey.  
**Requirements:** To be awarded to a student in an Honours Program in Classics who, in the judgment of the Department of Classics has achieved notable academic standing.

Typically Available: 1 x \$300

**THE WALLER FAMILY MUSIC SCHOLARSHIP**

Established in 2014 by the Waller Family in memory of Thomas Edward and Norma Waller.

**Requirements:** To be awarded to a student in Honours Music who, in the judgment of the School of the Arts, has attained notable academic standing and musical proficiency. Preference will be given to students studying brass instruments.

Typically Available: 1 x \$2,000

**THE F.W. WATERS SCHOLARSHIP IN PHILOSOPHY**

Established in 1990 by the former students, colleagues and friends of Dr. F.W. Waters, Professor from 1935 to 1959.

**Requirements:** To be awarded to the student entering Level 4 of an Honours Program in Philosophy who, in the judgment of the Department of Philosophy, shows the most academic promise.

Typically Available: 1 x \$750

**THE THOMAS E. WILLEY SCHOLARSHIP**

Established in memory of Dr. Thomas E. Willey in 1996 by his family, colleagues and friends.

**Requirements:** To be awarded to students enrolled in Level 3 in the Faculty of Humanities and who, in the judgment of the Faculty, have demonstrated excellence in History.

Typically Available: 2 x \$400

**OPEN TO THE FACULTY OF SCIENCE**

**THE W.K. ALLAN MEMORIAL SCHOLARSHIP**

Established in 1994 in memory of William Kellock Allan (Class of '31) by his wife, Yvonne and augmented in 2002 by his family.

**Requirements:** To be awarded to a student entering in the final level of a program in Mathematics or Physics who attains the highest Fall-Winter Average.

Typically Available: 1 x \$1,100

**THE CHARLES MURRAY BALL SCHOLARSHIPS IN EARTH SCIENCES**

Established in 1991 by May A. Ball in memory of her brother Murray Ball.

**Requirements:** Four scholarships to be awarded to students entering Level 2, 3, 4 or 5 of a B.Sc. program in the School of Geography and Earth Sciences who, in the judgment of the School of Geography and Earth Sciences, have attained notable standing. Ordinarily, not more than one scholarship will be awarded to any one program.

Typically Available: 4 x \$2,300

**THE J. DOUGLAS BANKIER MEMORIAL SCHOLARSHIP**

Established in 1977 in memory of Professor J. Douglas Bankier by his friends, colleagues, and former students.

**Requirements:** To be awarded to the student enrolled in Level 3 or above of an Honours program in the Department of Mathematics and Statistics, who attains the highest Fall-Winter Average and who in that term achieves a grade of at least B in STATS 3D03.

Typically Available: 1 x \$400

**THE STANLEY T. BAYLEY SCHOLARSHIP IN BIOLOGY**

Established in 2007 by the friends, former students and colleagues of Stanley T. Bayley in recognition of contributions to research and leadership in the Department of Biology.

**Requirements:** To be awarded to a student enrolled in Level 2 or above of an Honours Biology program who, in the judgment of the Department of Biology, has demonstrated outstanding academic achievement and has focused on studies in Cell Biology.

Typically Available: 2 x \$800

**THE BEAUTY COUNSELORS OF CANADA SCHOLARSHIP**

Established in 1956 by Beauty Counselors of Canada Limited.

**Requirements:** To be awarded to the student who has completed Science I with the highest Fall-Winter Average and who is entering in Level 2 of the Honours Biochemistry, Honours Chemistry, or Honours Chemical Biology program.

Typically Available: 1 x \$350

**THE DR. AND MRS. F.R. BRITTON SCHOLARSHIP IN MATHEMATICS**

Established in 1962 by Dr. and Mrs. F.R. Britton and augmented by Mrs. Britton's bequest in 1982.

**Requirements:** To be awarded to the student enrolled in Level 2 of an Honours program in Mathematical Sciences who attains the highest Fall-Winter Average. Tenable in Levels 3 and 4 provided that the recipient maintains satisfactory standing in an Honours program in which mathematics, pure or applied, is the major subject of study.

Typically Available: 1 x \$1,200 (\$600 each year)

**THE CRISPIN CALVO SCHOLARSHIPS**

Established in 1992 by Dr. J.S. Kirkaldy and Dr. W.W. Smeltzer.

**Requirements:** Two scholarships to be awarded, one to a student with the highest combined average in CHEM 2LB3 and CHEM 2PD3, the other to a student with the highest combined average in MATLS 2B03 and 2D03.

Typically Available: 2 x \$2,000 each

**THE CANADIAN SOCIETY FOR CHEMISTRY PRIZES**

Established in 1947 by the Chemical Institute of Canada.

**Requirements:** Two awards to be made to students who are entering their final year of study: (a) one to a student in an Honours Chemistry program who attained high standing; (b) one to a student in an Honours Biochemistry or Honours Chemical Biology program who attained high standing.

Typically Available: 2 x Medal and Certificate

**THE DOUGLAS DAVIDSON SCHOLARSHIP IN GENETICS**

Established in 2006 by the friends and colleagues of Dr. D. Davidson in recognition of his many years of contributions to research and undergraduate teaching.

**Requirements:** To be awarded to a student enrolled in Honours Molecular Biology and Genetics who obtains the highest grade in MOLBIOL 2C03.

Typically Available: 1 x \$400

**THE DUBECK BIOCHEMISTRY AWARD**

Established in 2004 by Dr. Michael Dubeck, B.Sc. (Class of '51) and M.Sc. (Class of '52).

**Requirements:** To be awarded to a student enrolled in Level 3 or above of an Honours program in Biochemistry who, in the judgment of the Department of Biochemistry and Biomedical Sciences, has achieved notable academic standing and has an interest in pursuing an academic career in basic biochemical research.

Typically Available: 2 x \$3,000

**THE DUBECK CHEMISTRY AWARD**

Established in 2004 by Dr. Michael Dubeck, B.Sc. (Class of '51) and M.Sc. (Class of '52).

**Requirements:** To be awarded to a student in Level 3 or above of an Honours program in Chemistry or Chemical Biology who, in the judgment of the Department of Chemistry and Chemical Biology, has achieved notable academic standing and has an interest in pursuing an academic career in basic chemical research.

Typically Available: 1 x \$3,000

**THE FACULTY OF SCIENCE SCHOLARSHIPS**

Established in 2019 by McMaster University.

**Requirements:** To be awarded to students enrolled in the Faculty of Science on the basis of academic and, in some cases, other forms of earned merit.

Typically Available: 1 x \$1,500



**THE KLAUS FRITZE MEMORIAL PRIZE**

Established in 1980 by friends of Professor K. Fritze.

**Requirements:** To be awarded to the student enrolled in Level 2 of an Honours Chemistry or Chemical Biology program with the highest Fall-Winter Average.

**Typically Available:** 1 x \$350

**THE J.L.W. GILL PRIZES**

Established in 1944 by bequest of J.L.W. Gill, B.A., Principal of Hamilton Technical School.

**Requirements:** Nine scholarships to be awarded on the basis of Grade Point Averages to students enrolled in Level 3 of Honours B.Sc. programs. Ordinarily, not more than one scholarship will be awarded in any one discipline.

**Typically Available:** 9 x \$325

**THE HAMILTON CHEMICAL ASSOCIATION PRIZE**

Established in 1953 by the Trustees of the Hamilton Chemical Association in memory of Dean C.E. Burke.

**Requirements:** To be awarded to the student who has completed Level 1 and an additional 30 - 45 units of an Honours program in Chemistry or Chemical Biology and who attains the highest Grade Point Average.

**Typically Available:** 1 x \$150

**THE BILL AND RIA HART SCHOLARSHIP**

Established in 2011 by bequest of Ria Maude Hart.

**Requirements:** To be awarded to a student in an Honours B.Sc. program in the School of Geography and Earth Sciences who, in the judgment of the School of Geography and Earth Sciences, has demonstrated outstanding academic achievement in the area of environmental or ecological studies.

**Typically Available:** 2 x \$1,000

**THE RUSSELL AND WINIFRED HEWETSON SCHOLARSHIP**

Established in 2017 by the estate of Winifred Patricia Hewetson.

**Requirements:** Scholarships to be awarded to students enrolled in Level 3 and above in an Earth and Environmental Sciences program.

**Typically Available:** 1 x \$2,500

**THE H.L. JACKSON MEMORIAL SCHOLARSHIP**

Established in 1989 in memory of Professor H.L. Jackson by his friends and colleagues.

**Requirements:** To be awarded to the student enrolled in Level 3 or above of an Honours program in the Department of Mathematics and Statistics, who in the judgment of the department has demonstrated achievement in MATH 3A03 and MATH 3X03 taken in the same Fall/Winter terms.

**Typically Available:** 1 x \$450

**THE STANFORD N. KATAMBALA EARTH SCIENCES PRIZE**

Established in 1965 by contributions from friends and associates of Stanford N. Katambala, a Year 3 Honours Geology student from Tanzania, killed in a mine accident in Northern Ontario in September 1964.

**Requirements:** To be awarded to a student enrolled in Level 3 of the Honours Earth and Environmental Sciences program and who attains high standing.

**Typically Available:** 1 x \$100

**THE KINESIOLOGY PRIZE**

Established in 1982.

**Requirements:** To be awarded to a student who has completed Level 3 Kinesiology with a high Grade Point Average and who, in the judgment of the Department of Kinesiology, demonstrates outstanding academic achievement.

**Typically Available:** 1 x \$100

**THE GEORGE P. AND LEATHA M. KEYS SCHOLARSHIPS**

Established in 1982 by Mrs. Leatha Keys.

**Requirements:** Two scholarships to be awarded to students who, in the judgment of the Department of Mathematics and Statistics, have demonstrated outstanding achievement in an Honours program in that Department: (a) one to a student enrolled in Level 2; (b) one to a student enrolled in Level 3.

**Typically Available:** 2 x \$750

**THE JOHN N.A. LOTT SCHOLARSHIP IN BIOLOGY**

Established in 2007 by the friends and colleagues of John N.A. Lott in recognition of his many years of contributions to the Department of Biology.

**Requirements:** To be awarded to a student enrolled in Level 2 or above of an Honours Biology program who, in the judgment of the Department of Biology, has demonstrated outstanding academic achievement and shows an interest in biological structure (sub cellular to ecosystem) and function. Preference to be given to a student who demonstrates an interest in plants.

**Typically Available:** 1 x \$500

**THE JOHN AND HELEN MAXWELL SCHOLARSHIP**

Established in 2012 by the bequest of Helen Catharine Maxwell.

**Requirements:** To be awarded to students in a Chemistry or Chemical Biology program who, in the judgment of the Department of Chemistry and Chemical Biology, demonstrate an aptitude in analytical chemistry.

**Typically Available:** 4 x \$5,000

**THE A.B. MCLAY SCHOLARSHIP IN PHYSICS**

Established in 1991 by C. Lucy McLay in memory of her late husband, A. Boyd McLay (Ph.D., F.R.S.C.), a member of the Department of Physics from 1930 to 1967.

**Requirements:** To be awarded to a student enrolled in Level 2 of an Honours program in Physics and who, in the judgment of the Department of Physics and Astronomy, has attained notable standing.

**Typically Available:** 1 x \$500

**THE BOYD MCLAY SCHOLARSHIP IN PHYSICS**

Established in 1977 to commemorate the contributions of Dr. A. Boyd McLay (Class of '22) to teaching and research in optics and spectroscopy at McMaster University from 1930 to 1967.

**Requirements:** To be awarded to a student enrolled in Level 3 of an Honours program in Physics with a high Fall-Winter Average.

**Typically Available:** 1 x \$625

**THE DONALD G. MCNABB SCHOLARSHIP**

Established in 1989 in memory of Donald G. McNabb (Class of '42) by friends, family and business associates.

**Requirements:** To be awarded to the student enrolled in Level 3 of an Honours program in Chemistry or Chemical Biology who, in the judgment of the Department of Chemistry and Chemical Biology, has achieved notable academic standing. Preference will be given to students who demonstrate leadership, self-motivation, and practical aptitude appropriate for a future in the chemical industry.

**Typically Available:** 1 x \$925

**THE J.J. MILLER PRIZE**

Established in 1984 by friends, colleagues and former students in recognition of Professor J.J. Miller for his outstanding contribution to the Department of Biology during 37 years of service.

**Requirements:** To be awarded to a student in an Honours Biology program with an outstanding Fall-Winter Average and a minimum grade of A- in BIOLOGY 2EE3.

**Typically Available:** 1 x \$600

**THE MICHAEL J. MORTON MEMORIAL BOOK PRIZE**

Established in 1979 in memory of Dr. M.J. Morton.

**Requirements:** To be awarded to a student enrolled in Level 3 in an Honours program in Chemistry or Chemical Biology and who, in the judgment of the Department of Chemistry and Chemical Biology, is outstanding in the field of inorganic chemistry.

**Typically Available:** 1 x \$175 for books

**THE FREDRIC P. OLSEN BOOK PRIZE**

Established in 1974 in memory of Professor F.P. Olsen by his family, friends and former colleagues.

**Requirements:** To be awarded to a student enrolled in Level 3 of an Honours program in Chemistry or Chemical Biology and who, in the judgment of the Department of Chemistry and Chemical Biology, shows particular promise as

an experimental scientist.

**Typically Available:** 1 x \$150 for books

**THE DR. JOHN POTTER SCHOLARSHIP**

Established in 2019 by the family of Dr. John Potter, B.Sc. Honours (Class of '58) to honour his memory and life achievements.

**Requirements:** To be awarded to students enrolled in a Physics or Mathematics program who attain high averages.

**Typically Available:** 5 x \$1,500

**THE BILL PRESTWICH SCHOLARSHIP IN MEDICAL PHYSICS**

Established in 2003 by friends, colleagues and students in recognition of Bill Prestwich and his career as a teacher and researcher.

**Requirements:** To be awarded to a student entering Level 2 of the Medical and Biological Physics program with the highest Fall-Winter Average in any Level 1 program.

**Typically Available:** 2 x \$800

**THE CATHERINE AND ALBERT ROEDER MEMORIAL SCHOLARSHIP**

Established in 2007 by Dr. Robert Roeder, B.Sc. (Class of '59), M.Sc. (Class of '60) in memory of his parents.

**Requirements:** To be awarded to the student in an Honours Physics program with the highest Grade Point Average.

**Typically Available:** 1 x \$1,200

**THE DR. SINA SAZGAR MEMORIAL SCHOLARSHIP**

Established in 1999 in memory of Dr. Sina Sazgar, Hon. B.Sc. (Class of '93), a young, exceptionally gifted and caring medical doctor who tragically passed away on October 26, 1993.

**Requirements:** One scholarship to be awarded to a student enrolled in an Honours Bachelor of Science program who, in the judgment of the Faculty of Science, has demonstrated outstanding academic performance.

**Typically Available:** 1 x \$1,000

**THE SHENSTONE PRIZE**

Established in 1903 by J.N. Shenstone of Toronto, and continued by members of his family.

**Requirements:** To be awarded to the student who has completed Science I and who attains the highest average in any four of the Level 1 courses in Chemistry, Physics and Biology.

**Typically Available:** 1 x \$200

**THE GERALD AND VERNA SIMPSON MEMORIAL SCHOLARSHIP**

Established in 1957 by the children in memory of their parents.

**Requirements:** To be awarded to the student enrolled in Level 2 of an Honours Physics program with the highest Fall-Winter Average.

**Typically Available:** 3 x \$600

**THE S.L. SQUIRE SCHOLARSHIPS**

Established in 1938 by bequest of S.L. Squire of Toronto.

**Requirements:** Two scholarships to be awarded to students entering Level 2 of a Mathematics and Statistics program who, in the judgment of the Department of Mathematics and Statistics, attained notable standing in Mathematics and Statistics Gateway.

**Typically Available:** 2 x \$950

**THE DR. R.A. THOMPSON PRIZE IN MATHEMATICS**

Established in 1954 by bequest of Dr. William Bethune, in memory of R.A. Thompson, B.A., LL.D., Principal of Central Collegiate Institute, Hamilton, from 1897-1919, in recognition of his contribution to education in Hamilton.

**Requirements:** To be awarded to the student enrolled in Level 3 of an Honours program in Mathematics and/or Statistics, who attains a high Fall-Winter Average.

**Typically Available:** 1 x \$300

**THE VALLEY CITY MANUFACTURING CO. LTD. SCHOLARSHIPS**

Established in 1991 by the Valley City Manufacturing Co. Ltd. of Dundas, Ontario.

**Requirements:** Two scholarships to be awarded to the students enrolled in an Honours B.Sc. program: one to the student entering Level 2 and one to

the student entering Level 3 who attain the highest Fall-Winter Average.

Recipients may not hold another scholarship of equal or greater value.

**Typically Available:** 2 x \$1,600

**THE JIM WADDINGTON PRIZE IN PHYSICS AND ASTRONOMY**

Established in 2004 by friends, colleagues and students in recognition of Jim Waddington and his career as a teacher and researcher.

**Requirements:** To be awarded to students entering Level 2 of an Honours program in the Department of Physics and Astronomy who, in the judgment of the Department, have demonstrated outstanding academic achievement in Physics.

**Typically Available:** 2 x \$1,500

**THE WALLER FAMILY MUSIC COGNITION SCHOLARSHIP**

Established in 2014 in memory of Thomas Edward and Norma Waller.

**Requirements:** To be awarded to a student in the Faculty of Science who has completed at least Level 2 in the Music Cognition Program, and who demonstrates outstanding academic achievement.

**Typically Available:** 1 x \$2,000

**THE EMANUEL WILLIAMS SCHOLARSHIP IN PHYSICS**

Established in 1948 by Arabel M. Williams of Port Colborne as a memorial to her brother.

**Requirements:** To be awarded to the student enrolled in Level 2 of an Honours program in Physics with the highest Fall-Winter Average.

**Typically Available:** 1 x \$1,200

**THE GLADYS A. YOUNG SCHOLARSHIP**

Established in 1991 by T.G. Harvey in honour of his wife, Gladys B.Sc., (Class of '37), M.Sc., (Class of '38), one of a group of researchers who commenced radio astronomy research with the National Research Council of Canada.

**Requirements:** To be awarded to the student enrolled in Level 2 or above of an Honours program in Mathematics or Physics with the highest Fall-Winter Average. The recipient must not hold another scholarship of equal or greater value.

**Typically Available:** 1 x \$1,600

**OPEN TO THE FACULTY OF SOCIAL SCIENCES**

**THE CITIZEN ACTION GROUP AWARD IN MEMORY OF HARRY PENNY**

Established in 1984 by the Citizen Action Group, Hamilton, to honour Professor Harry L. Penny, founding Director of the School of Social Work and Board Member of Citizen Action Group.

**Requirements:** To be awarded to the student in a program in Social Work who achieves the highest grade in SOCWORK 4003.

**Typically Available:** 1 x \$1,000

**THE HUGH CLARK SCHOLARSHIP**

Established in 1989 by Hugh Clark in celebration of McMaster's fiftieth year since moving to Hamilton.

**Requirements:** To be awarded to the student enrolled in Level 3 of an Honours program in Social Sciences who attains the highest Fall-Winter Average.

**Typically Available:** 1 x \$2,200

**THE MARGARET CUDMORE SCHOLARSHIP IN POLITICAL SCIENCE**

Established in 2010 by bequest of Margaret Georgina Cudmore.

**Requirements:** To be awarded to a student in the Faculty of Social Sciences enrolled in Level 3 of an Honours Political Science program with a high Fall-Winter Average.

**Typically Available:** 1 x \$2,000

**THE ALICE AND WALTER DAY SCHOLARSHIP**

Established in 2012 by Dr. Graham Knight in honour of his grandparents.

**Requirements:** To be awarded to students enrolled in a Labour Studies program who attain high averages.

**Typically Available:** 1 x \$500

**THE SUSAN FARLEY AND BETH FARLEY-GROVES SCHOLARSHIP**

Established in 2009 by the parents of Susan Farley (Class of '08) in her memory. Susan earned her B.A in Gerontology.

**Requirements:** To be awarded to a student in a program in the Department

of Health, Aging and Society who, in the judgment of the Department, has demonstrated notable academic achievement.

**Typically Available:** 1 x \$1,000

#### **THE CHRISTINE FEAVER SCHOLARSHIP IN ECONOMICS**

Established in 2012 by colleagues of Christine Feaver (Class of 1970), Honours Economics and Mathematics, in her memory, and in recognition of her long and distinguished career as a Research Associate in the Department of Economics.

**Requirements:** To be awarded to a student enrolled in Level 3 of any Honours Economics program with the highest Grade Point Average, and who is entering Level 4.

**Typically Available:** 1 x \$1,000

#### **THE DR. THOMAS HOBLEY PRIZE**

Established in 1936 by bequest of Mrs. A. McNee of Windsor.

**Requirements:** To be awarded to a student on the basis of the Fall-Winter Average obtained in the penultimate level of a program in Economics or Political Science.

**Typically Available:** 1 x \$300

#### **THE HUMAN RIGHTS AWARD**

Established in 1998 by the Theme School on International Justice and Human Rights.

**Requirements:** To be awarded to the student who attains the highest grade in POLSCI 3Y03 or POLSCI 4D06 A/B.

**Typically Available:** 1 x \$275 for books

#### **THE WILLIAM D.G. HUNTER PRIZE**

Established in 1995 by family, friends and colleagues in memory of Professor William D.G. Hunter, member of the Department of Economics from 1951 to 1984.

**Requirements:** To be awarded to the student who, in the judgment of the Department of Economics, has demonstrated outstanding academic achievement in courses within the area of economic history.

**Typically Available:** 2 x \$500

#### **THE LAWRENCE AND KATHLEEN MARY JOHNSTON MEMORIAL PRIZE**

Established in 1963.

**Requirements:** To be awarded to the student enrolled in Level 2 of an Honours program in Religious Studies and who attains the highest Fall-Winter Average.

**Typically Available:** 1 x \$350

#### **THE SAM LAWRENCE PRIZE**

Established in 1957 by the East Hamilton Independent Labour Party C.C.F. Club in honour of Sam Lawrence.

**Requirements:** To be awarded to the student who, in the judgment of the Department of Economics, has demonstrated outstanding academic achievement in courses in labour economics.

**Typically Available:** 1 x \$200

#### **THE MACGIBBON SCHOLARSHIP**

Established in 1970 by bequest of Professor Duncan A. MacGibbon (Class of '08).

**Requirements:** To be awarded to the student in a program in Economics who, in the judgment of the Department of Economics, stands highest in courses in economic history.

**Typically Available:** 1 x \$500

#### **THE WILLIAM MACKENZIE MEMORIAL PRIZE**

Established in 1977 in memory of Professor William MacKenzie by his friends and colleagues.

**Requirements:** To be awarded to the student who, in the judgment of the Department of Economics, has demonstrated outstanding academic achievement in either ECON 3T03 (Economic Development) or ECON 2F03 (The Political Economy of Development) or, in exceptional circumstances, for work in a related area.

**Typically Available:** 1 x \$425

#### **THE BETTY MACMILLAN PRIZE**

Established in 1960 by her classmates in memory of Elizabeth Johnstone MacMillan (Class of '50).

**Requirements:** To be awarded to the student enrolled in Level 3 of an Honours program in Sociology and who, in the judgment of the Department of Sociology, is the most promising student.

**Typically Available:** 1 x \$200

#### **THE MCMASTER UNIVERSITY RETIREES ASSOCIATION SCHOLARSHIP**

Established in 1991 by the McMaster University Retirees Association.

**Requirements:** To be awarded to the student enrolled in Level 2 or above of a program in Aging and Society and who attains the highest Fall-Winter Average. The student must enroll in a program in Aging and Society in the subsequent Fall/Winter terms.

**Typically Available:** 1 x \$2,500

#### **THE JEANNE AND PETER NOLAN AWARD**

Established in 2014 by Kim (Class of 2004 and 2009) and Tim (Class of '86 and 2004) Nolan to celebrate the lives of Jeanne and Peter Nolan.

**Requirements:** To be awarded to a student in a Social Work program who is registered with Student Accessibility Services.

**Typically Available:** 1 x \$1,000

#### **THE DERRY NOVAK PRIZE**

Established in 1984 by the Political Science alumni and colleagues in honour of Professor Derry Novak.

**Requirements:** To be awarded to a student in a program in Political Science who, in the judgment of the Department of Political Science, has achieved high standing in Level 2 and/or 3 courses in political theory or political philosophy.

**Typically Available:** 1 x \$800

#### **THE TONY PAVER MEMORIAL SCHOLARSHIP**

Established in 2020 by CUPE Local 5167 in loving memory of Tony Paver.

**Requirements:** To be awarded to a student enrolled in a Labour Studies program who attains high averages.

**Typically Available:** 1 x \$1,000

#### **THE PEVENING SCHOLARSHIP**

Established in 1987 by David C. Hannaford (Class of '64).

**Requirements:** To be awarded to a student enrolled in Level 3 of an Honours program in Economics and who, in the judgment of the Department of Economics, has attained notable academic standing.

**Typically Available:** 2 x \$1,000

#### **THE JACK RICHARDSON MEMORIAL SCHOLARSHIP**

Established in 2002 in memory of Jack Richardson by family, friends and colleagues.

**Requirements:** To be awarded to a part-time student who has completed at least Level 2 in an Honours Sociology program and who attains the highest Grade Point Average at the most recent review.

**Typically Available:** 2 x \$400

#### **THE ROSART PROPERTIES INC. SCHOLARSHIP**

Established in 1988 by John D. and Dominic J. Rosart of Burlington.

**Requirements:** To be awarded to a student enrolled in Level 3 of an Honours program in Geography and who, in the judgment of the School of Geography and Earth Sciences, has attained high academic standing.

**Typically Available:** 1 x \$325

#### **THE MARY C. SHANE SCHOLARSHIP**

Established in 2016 by the Estate of George Gregory Shane, in honour of Mary Shane, the first female representative of the United Steelworkers of America and secretary to long-standing USWA member Larry Sefton and Lynn Williams.

**Requirements:** To be granted to a student enrolled in Level 3 or 4 of a Labour Studies Program with a high Fall-Winter Average.

**Typically Available:** 1 x \$2,000

#### **THE SOCIAL SCIENCES SCHOLARSHIP FOR LEADERSHIP IN DIVERSITY**

Established in 2015 by Justin Brkovic (Class of '04).

**Requirements:** To be awarded to a student in the Faculty of Social Sciences

with a high Fall-Winter Average and who, in judgment of the Faculty, demonstrates leadership in diversity.

Typically Available: 1 x \$1,000

#### **THE FACULTY OF SOCIAL SCIENCES SCHOLARSHIPS**

Established in 2019 by McMaster University.

**Requirements:** To be awarded to students enrolled in the Faculty of Social Sciences on the basis of academic and, in some cases, other forms of earned merit.

Typically Available: 1 x \$1,500

#### **THE SOCIAL WORK PRIZE**

Established in 1982.

**Requirements:** To be awarded to the student who attains the highest grade in SOCWORK 2A06 A/B.

Typically Available: 1 x \$100

#### **THE ANNE STEIN MEMORIAL PRIZE**

Established in 1971 by friends and colleagues of Anne Stein.

**Requirements:** To be awarded to the student who successfully completes SOCWORK 3DD6 A/B S and attains the highest grade in SOCWORK 3D06 A/B S in the same term.

Courses must be taken during the Fall/Winter terms.

Typically Available: 2 x \$125

#### **THE KENNETH W. TAYLOR BOOK PRIZE**

Established in 1976 by his children in memory of Dr. Kenneth W. Taylor (Class of '21), LL.D. (Class of '50).

**Requirements:** To be awarded to the student who, in the judgment of the Department of Economics, has demonstrated outstanding academic achievement in courses within the areas of monetary economics and financial institutions, and of public finance.

Typically Available: 2 x \$100 for books

#### **THE THOMAS TRUMAN MEMORIAL PRIZE**

Established in 1992 by friends and colleagues in memory of Professor Thomas Truman, a member of the Department of Political Science from 1966 to 1990.

**Requirements:** To be awarded to the student entering the final level of an Honours program in Political Science who, in the judgment of the Department of Political Science, has achieved notable academic standing in at least nine units of Comparative Politics courses.

Typically Available: 1 x \$75

#### **THE ALLAN R. VEALL SCHOLARSHIP IN ENVIRONMENTAL ECONOMICS**

Established in 2009 by the Veall family in memory of Allan R. Veall, B.A. (Class of '45).

**Requirements:** To be awarded to a student enrolled in Level 3 or above of an Economics program and who, in the judgment of the Department of Economics, has demonstrated significant academic achievement in Environmental Economics as well as outstanding overall academic merit.

Typically Available: 1 x \$1,000

#### **THE MELINDA WAPSHAW ACHIEVEMENT AWARD**

Established in 1993 by the Labour Studies Student Association and the Labour Studies Program.

**Requirements:** To be awarded to a student enrolled in Level 3 of an Honours Program in Labour Studies and who, in the judgment of the Committee of Instruction, demonstrates outstanding achievement.

Typically Available: 1 x \$375

#### **THE RALPH WEEKES SCHOLARSHIP**

Established in 1994 by the Investors Group Financial Services to recognize the accomplishments of Ralph Weekes (Class of '73).

**Requirements:** To be awarded to a student enrolled in a program in Economics who, in the judgment of the Department of Economics, has attained notable standing. Preference to be given to a student pursuing studies on a part-time basis.

Typically Available: 1 x \$800

#### **THE MARJORIE AND CHARLES WILKINSON SCHOLARSHIP**

Established in 1991 by the family in honour of Marjorie Wilkinson, author of many books and addresses on religion, and co-founder of the Hamilton Lay School of Theology at McMaster in 1966, and Charles Wilkinson, religion editor and writer for the Hamilton Spectator from 1963-1985.

**Requirements:** To be awarded to the student enrolled in Level 2 or above of an Honours program in Religious Studies and who, in the judgment of the Department of Religious Studies, has attained notable academic standing in courses in Christian thought.

Typically Available: 1 x \$450

#### **THE WOUTERS FAMILY SCHOLARSHIP**

Established in 2011 by Peter Anthony Wouters, B.A. (Class of '76) and B.Sc. (Class of '77).

**Requirements:** To be awarded to a student who has completed at least Level 2 of any program in the Department of Health, Aging and Society and who attains the highest Fall-Winter Average.

Typically Available: 1 x \$1,000

## **Awards by Application**

Application details are available on Mosaic.

### **OPEN TO TWO OR MORE FACULTIES**

#### **THE ACCENTURE INC. SCHOLARSHIP**

Established in 1998 by Andersen Consulting.

**Requirements:** To be awarded to a student entering the final year of study who, in the judgment of a Selection Committee, demonstrates a strong interest in Management Information Systems and qualities of leadership through service to McMaster University and/or the community in athletic, professional or social organizations.

Typically Available: 4 x \$1000

#### **THE ACHIEVEMENT AWARDS OF EXCELLENCE**

Established in 1998.

**Requirements:** A variable number of scholarships to be awarded to students who, demonstrate outstanding academic achievement and are registered with Student Accessibility Services (SAS).

Typically Available: 1 x \$800

#### **THE HERBERT S. ARMSTRONG MEMORIAL FUND**

Established in 1997 in memory of Herbert S. Armstrong.

**Requirements:** To be awarded to a student enrolled in Level 2 or above who, in the judgment of the School of Geography and Earth Sciences, has achieved notable academic standing and who has made a significant contribution to university life through extra-curricular activities.

Typically Available: 1 x \$100

#### **THE ADELLA MARGARET BRAGG SCHOLARSHIPS**

Established in 2010 by bequest of Adella Margaret Bragg.

**Requirements:** To be awarded to female students from the Six Nations of the Grand River territory enrolled at McMaster University in any undergraduate program. The award is tenable up to three years.

Value: \$12,000 (\$4,000 per year)

#### **THE JOSEPHINE STAPLES BRIEN SCHOLARSHIP**

Established in 1936 by Dr. J.W. Brien of Windsor.

**Requirements:** To be awarded to a female student who is entering in her graduating term and who qualifies on the basis of academic standing and interest in undergraduate activities.

Typically Available: 1 x \$350

#### **THE DONALD OSCAR CANNON SCHOLARSHIP**

Established in 2012 by the Cannon Family.

**Requirements:** To be awarded to a student registered with Student Accessibility Services (SAS) who obtained a high Grade Point Average.

Typically Available: 1 x \$2,000



**THE PATRICK DEANE AWARD FOR COMMUNITY ENGAGEMENT**

Established in 2019 in honour of Dr. Patrick Deane, the seventh President and Vice-Chancellor of McMaster University, to recognize his service to the University and deep commitment to community engagement throughout his nine years as President.

**Requirements:** To be awarded to students enrolled in Level 3 or above in any program who have demonstrated exceptional leadership and commitment to community-focused initiatives during their time at McMaster and who intend to continue their engagement by undertaking a community-focused project or initiative while completing their degree at McMaster.

**Typically Available:** 1 x \$2,500

**THE HELEN EMERY SCHOLARSHIPS IN ENVIRONMENTAL SCIENCE**

Established in 1990 by Miss Helen Emery of Barrie, Ontario.

**Requirements:** Two scholarships to be awarded to students in Level 2, 3, 4 or 5 of a B.Sc. program in the School of Geography and Earth Sciences who, in the judgment of the School of Geography and Earth Sciences, demonstrate leadership and influence in addressing environmental matters. Recipients must have attained a Fall-Winter Average of 9.5 or greater.

**Typically Available:** 2 x \$1,650

**THE MAHATMA GANDHI SCHOLARSHIP**

Established in 2017 to promote the Gandhian concepts of non-violence and help foster peace and harmony in the world.

**Requirements:** To be awarded to a student enrolled in any program who has completed at least 6 units in Peace Studies courses and attained a high average in those courses.

**Typically Available:** 1 x \$1,000

**THE GWEN GEORGE AWARD**

Established in 1997 in loving memory of Gwen George by her family and friends.

**Requirements:** To be awarded to students completing any Level 1 program in the current term who, in the judgment of a Selection Committee, have achieved notable academic standing and demonstrated qualities of leadership and service to McMaster University and/or the City of Hamilton, surrounding or world communities.

**Typically Available:** 5 x \$1,500

**THE GWEN GEORGE MEDAL**

Established in 2001 in loving memory of Gwen George by her family.

**Requirements:** To be awarded to a part-time student who has completed at least Level 1 of any program and who, in the judgment of the of a selection committee, has achieved notable academic standing and has demonstrated qualities of leadership and service to McMaster University and/or the Hamilton-Wentworth, surrounding or world communities.

Applications may be submitted at the end of Levels I, II and III (IV if in a five-year program) on Mosaic. Students must have completed a minimum of 18 graded units to be eligible. Not open to students in their graduating year.

**Typically Available:** 1 x \$400 and a Medal

**THE INTER-RESIDENCE COUNCIL SCHOLARSHIP**

Established in 1995 by the McMaster Inter-Residence Council in recognition of the IRC's continued support of the University and its students.

**Requirements:** To be awarded to a student who has completed at least Level 1 of any program who, in the judgment of an Awards Selection Committee of Undergraduate Council, has demonstrated notable academic achievement and has demonstrated leadership and influence in residence life. Not open to students in their graduating year.

**Typically Available:** 1 x \$400

**THE EDWARD JENKINS AWARD**

Established in 2010 by Tom Jenkins, B. Eng. Mgt. (Class of '82) and Toby Jenkins in honour of Tom's father, Edward Jenkins.

**Requirements:** To be awarded to students who have completed any Level 1 program, are current or former members of the Canadian Forces, or are the children or grandchildren of a member of the Canadian Forces, and who have

displayed both academic excellence and community leadership. Preference will be given to students who are current or former members of the Canadian Forces.

**Typically Available:** 1 x \$5,000

**THE DR. RONALD V. JOYCE "AMAZING" GRACE AWARDS**

Established in 2003 by Dr. Ronald V. Joyce '98 in honour of his mother, Grace Joyce.

**Requirements:** A variable number to be awarded to students in Level 2 or above of any program who, in the judgment of the selection committee, demonstrate a commitment to community service by volunteering during the academic year with children who have special needs. Preference will be given to those students who volunteer with underprivileged children. Not open to students in their graduating year.

**Typically Available:** 2 x \$2,500

**THE DR. RONALD V. JOYCE AWARDS FOR ATHLETES**

Established in 2003 by Dr. Ronald V. Joyce '98.

**Requirements:** A variable number to be awarded to students who have completed at least Level 1 of any program who, in the judgment of a selection committee, have demonstrated outstanding athletic ability as members of a McMaster varsity team which competes in the Canadian Interuniversity Sports (CIS). Students must meet the eligibility requirements of the CIS and Ontario University Athletics (OUA). Not open to students in their graduating year. Applications may be submitted at the end of Levels 1, 2 & 3 (Level 4 if in a 5-year program) on Mosaic.

**Typically Available:** 5 x \$2,500

**THE KONRAD GROUP DIGITAL INNOVATION SCHOLARSHIP**

Established in 2018 by Konrad Group, a global digital agency, to support students who have a passion for digital technology.

**Requirements:** To be awarded to students enrolled in Level 3 or above in an Engineering or Business program who attain high averages and demonstrate an interest in pursuing a career in digital technology.

**Typically Available:** 2 x \$2,500

**THE GARY LAUTENS MEMORIAL SCHOLARSHIP**

Established in 1992 by family, friends and colleagues in memory of Gary Lautens (Class of '50), columnist and editor of the Toronto Star (1962-92), the Hamilton Spectator (1950-62) and the McMaster Silhouette (1948-50), remembered as a journalist with wit and insight.

**Requirements:** To be awarded to a student who is completing any Level 1 program who, in the judgment of a Selection Committee, has achieved notable academic standing and has demonstrated journalistic skills in the written media. The scholarship is renewable at the end of Level 2 provided the recipient maintains a Grade Point Average of 8.0.

**Typically Available:** 1 x \$4,000 (\$2,000 each year)

The recipient of this award is eligible to receive the corresponding donor bursary if financial need is demonstrated.

**THE JAMES B. LAWSON SCHOLARSHIP**

Established in 1999 by a grateful student and friend of Professor Lawson.

**Requirements:** To be awarded to a student who has completed either GERMAN 1Z06 A/B or 1BB3 in Level 1 or to a student who has completed GERMAN 2ZZ3 in Level 2 and who, in the judgment of the Department of Linguistics and Languages, has demonstrated progress and interest in German. Eligibility for this award is restricted to non-native speakers of German. The award may be used for travel and study in a German-speaking country and/or for other expenses associated with the student's German studies.

**Typically Available:** 1 x \$150

**THE MCMASTER UNIVERSITY FUTURES FUND IN-COURSE AWARDS**

Established in 2000.

**Requirements:** Four scholarships to be awarded to the children of members of the McMaster University salaried pension plan who have demonstrated outstanding academic achievement. Recipient must obtain a Grade Point Average of 8.0 or greater. Not open to graduating students.

Typically Available: 4 x \$1,800

**THE JOHN D. MCNIE ACHIEVEMENT AWARD OF EXCELLENCE**

Established in 2001 by David O. Davis in honour of John D. McNie.

University salaried pension plan who have demonstrated outstanding academic achievement.

**Requirements:** To be awarded to a student with a visual impairment who, in the judgment of the *Student Accessibility Services (SAS)*, demonstrates notable academic achievement.

Typically Available: 2 x \$800

Students who wish to be considered for this award must be enrolled with *Student Accessibility Services (SAS)*.

**THE ELIZABETH MOSGROVE SCHOLARSHIP**

Established in 1959 by bequest of John W. Mosgrove in memory of his mother.

**Requirements:** To be awarded to descendants of members of Her Majesty's Canadian Armed Forces on the basis of high Grade Point Average. Not open to students in their graduating year.

Typically Available: 1 x \$1,500

**THE PITCHER-RATFORD AWARDS**

Established in 2000 by Bruce Ratford (Class of '71) and Elda Ratford (Pitcher) (Class of '71).

**Requirements:** Two scholarships (one to a male and one to a female) to be awarded to students who have completed Level 3 of an Honours Geography program and who, in the judgment of the School of Geography and Earth Sciences (Faculty of Science), have achieved notable academic standing and demonstrated qualities of leadership at McMaster or in the community.

Typically Available: 2 x \$3,000 each

**THE STANLEY ROBERTSON SCHOLARSHIP**

Established in 2006 by LaDema Dorrine Robertson Macnab in memory of her father, Charles Stanley Robertson (Class of '11), a scholar, an athlete and a volunteer.

**Requirements:** To be awarded to students who have completed at least Level 1 in any program who, in the judgment of a selection committee, have achieved notable academic standing and demonstrate qualities of leadership, service and/or participation in athletics and/or music. Preference will be given to a student in the Faculty of Engineering. Not open to students in their graduating year.

Typically Available: 1 x \$2,500

**THE SHIMCO SCHOLARSHIP**

Established in 2014 by Peter Voss, B.Sc. (Class of '88), B.A. (Class of '89).

**Requirements:** To be awarded to a student in the Faculty of Science or Faculty of Engineering who has completed at least Level 1, has demonstrated outstanding academic achievement, and who demonstrates respect, cooperation and exceptional leadership at McMaster or in the community.

Typically Available: 1 x \$2,500

**THE MARNIE SPEARS SCHOLARSHIP**

Established in 1993 by many friends, colleagues and alumni of McMaster University as a tribute to Marnie Spears (Class of '69), Executive Director, Development and Public Relations from 1986-93 and dedicated alumna who served as President of the McMaster Alumni Council in 1980, in recognition of her outstanding contribution to the University.

**Requirements:** To be awarded to the student enrolled in Level 2 or above of an Honours program with notable academic standing and who, in the judgment of a Selection Committee, has demonstrated leadership in public, community or University alumni relations. Not open to students in their graduating year. Students may only receive this award once.

Typically Available: 2 x \$1,200

**THE MABEL STOAKLEY SCHOLARSHIP**

Established in 1956 by the Young Women's Canadian Club of Toronto (now the Career Women's Canadian Club of Toronto).

**Requirements:** To be awarded to a woman student enrolled in Level 2 of any program and who gives evidence of outstanding academic achievement and

leadership.

Typically Available: 1 x \$425 for books

**THE FRANK AND CAROL TRISTANI SCHOLARSHIP**

Established in 2012 by Frank and Carol Tristani.

**Requirements:** To be awarded to a student who has completed Level 1 with a high Fall-Winter Average, is entering Level 2 in the DeGroot School of Business or the Faculty of Science and who, in the judgment of the selection committee, has demonstrated outstanding leadership through service to McMaster University and/or the community in athletic, professional or social organizations.

Typically Available: 2 x \$2,500

**OPEN TO THE DEGROOTE SCHOOL OF BUSINESS**

**THE DEGROOTE SCHOOL OF BUSINESS ALUMNI UNDERGRADUATE SCHOLARSHIP**

Established in 2004 through the generosity of the DeGroot School of Business alumni and friends.

**Requirements:** To be awarded to a student who has completed Level 1 in the Faculty of Business who, in the judgment of the Faculty of Business, has achieved academic excellence in COMMERCE 1E03, ECON 1B03 and ECON 1BB3, and has demonstrated leadership ability through school activities, work and/or community involvement.

Typically Available: 1 x \$800

**THE DELOITTE SCHOLARSHIP**

Established in 2000 by Deloitte & Touche.

**Requirements:** A variable number of scholarships to be awarded to students enrolled in Level 3 of the Honours Commerce program who, in the judgment of the Faculty of Business, have achieved notable academic standing in COMMERCE 3A03 and COMMERCE 3A03 (taken in the same Fall/Winter terms), and have demonstrated qualities of leadership at McMaster University or in the community.

Typically Available: 4 x \$5,000

**THE RICK D. HACKETT SCHOLARSHIP IN HUMAN RESOURCES MANAGEMENT AND ORGANIZATIONAL BEHAVIOUR**

Established in 2009 by Professor Rick D. Hackett.

**Requirements:** To be awarded to a student enrolled in the DeGroot School of Business entering the 4th year of their program who, in the judgment of the School of Business, has demonstrated outstanding academic achievement in human resource management and organizational behaviour courses, and community service.

Typically Available: 1 x \$1,300

**THE HOPA PORTS SCHOLARSHIP**

Established in 1994 by the Commissioners in recognition of outstanding Canadian students who continue their studies at McMaster University.

**Requirements:** To be awarded to a student enrolled in Level 3 of a program in Commerce who, in the judgment of the Faculty of Business, has demonstrated outstanding academic achievement and involvement in the local community.

Typically Available: 2 x \$1,500

**THE HAWKRIGG FAMILY SCHOLARSHIPS IN BUSINESS**

Established in 1999 by the Hawkrigg Family.

**Requirements:** To be awarded to a student who, in the judgment of the Faculty of Business, has attained notable academic standing in Business I and demonstrated involvement in University or community activities, and outstanding athletic ability. This scholarship is tenable for up to three years provided the recipient maintains a Grade Point Average of 8.0.

Typically Available: 1 x \$7,500 (\$2,500 each year)

**THE KPMG SCHOLARSHIP**

Established in 2015 by the KPMG Foundation.

**Requirements:** To be awarded to a full-time student in the DeGroot School of Business enrolled in Level 3 of the Honours Commerce program who, in the judgment of the DeGroot School of Business, demonstrates outstanding academic achievement, an interest in the accounting profession, and a

commitment to volunteerism. Applicants must include a statement concerning their career aspirations in the accounting profession and volunteer leadership in the community.

**Typically Available:** 1 x \$3,400

#### **THE K. MAC GROUP SCHOLARSHIP**

Established in 2012 by Keith B. McIntyre, B.Com. (Class of '84).

**Requirements:** To be awarded to a student enrolled in Level 3 of the Commerce program who, in the judgment of the School of Business, has demonstrated academic achievement in marketing courses and an interest in the field of Marketing.

**Typically Available:** 1 x \$2,500

#### **THE PWC CANADA SCHOLARSHIPS**

Established in 2000 by PwC Canada (PricewaterhouseCoopers).

**Requirements:** To be awarded to well-rounded full-time students in the DeGroote School of Business who have completed Level 2 or above of the Honours Commerce program, and who, in the judgment of the DeGroote School of Business, demonstrate outstanding academic achievement, an interest in the accounting profession, leadership attributes, and a commitment to community volunteerism.

**Typically Available:** 2 x \$2,500

#### **THE JUDITH STERNTHAL SCHOLARSHIP**

Established in 2009 by John Zbarsky, M.B.A. (Class of '74) in honour of his late mother, Judith Sternthal.

**Requirements:** To be awarded to students enrolled in Level 2 in the DeGroote School of Business and who, in the judgment of the School of Business, have demonstrated notable academic standing and community service.

**Typically Available:** 3 x \$2,000

#### **OPEN TO THE FACULTY OF ENGINEERING**

##### **THE ADI DEVELOPMENT GROUP BACHELOR OF TECHNOLOGY SCHOLARSHIP**

Established in 2018 by Saud Adi (B.Tech 2013) and Tariq Adi, Adi Development Group.

**Requirements:** To be awarded to students enrolled in Level 3 in the Faculty of Engineering Bachelor of Technology Programs who attained high averages.

**Typically Available:** 1 x \$1,000

##### **THE CAE SCHOLARSHIPS IN COMPUTING AND SOFTWARE ENGINEERING**

Established in 2001 by CAE Inc.

**Requirements:** To be awarded to a student who has completed Level 2 of a Software Engineering program who, in the judgment of the Department of Computing and Software, has achieved notable academic standing and demonstrated qualities of leadership at McMaster or in the community.

**Typically Available:** 3 x \$3,400

##### **THE CASEY FAMILY SCHOLARSHIP**

Established in 2008 by the Casey Family.

**Requirements:** To be awarded to a student enrolled in Level 2 of Civil Engineering with a high Grade Point Average who, in the judgment of the Department of Civil Engineering, has demonstrated outstanding academic achievement in an Engineering course promoting sustainability or environmental stewardship and involvement in extra-curricular environmental initiatives.

**Typically Available:** 3 x \$1,000

##### **THE A.I. JOHNSON SCHOLARSHIP**

Established in 1977 in memory of Dr. A.I. Johnson by his friends and former colleagues.

**Requirements:** To be awarded to a student in Level 4 of a program in Engineering and Management. Award to be based on distinguished academic performance during the student's undergraduate career. Consideration will also be given to noteworthy contribution in extracurricular activities.

**Typically Available:** 1 x \$1,000

#### **THE ROBERT J. KULPERGER SCHOLARSHIP**

Established in 2015 by Robert Kulperger, B.Eng. Chemical (Class of '63), and Arlene Price McKay in memory of President Emeritus Harry Thode and Dean Emeritus John Hodgins, and in honour of Professor Emeritus Cameron Crowe.

**Requirements:** To be awarded to a student enrolled in Level 2 or above in a Chemical Engineering program and who, in the judgment of a Selection Committee, has demonstrated academic achievement, leadership on campus or in the community-at-large, and an interest in becoming an entrepreneur in the future.

**Typically Available:** 1 x \$10,000

Applications may be submitted at the end of Levels 2 & 3 (& 4 if in a 5-year program) on Mosaic. Not open to students in their graduating year.

#### **THE DR. VOIKO LOUKANOV ENGINEERING SCHOLARSHIP**

Established in 2018 in memory of Dr. Voiko Loukanov, a trailblazer in automotive electronics testing equipment, an outstanding engineering leader, renowned and respected for his many innovations and expertise, with a deep commitment to student research and a passion for innovation.

**Requirements:** To be awarded to students enrolled in a Level 2 Engineering program with a high average and who, in the judgment of the Faculty of Engineering, demonstrate a commitment to automotive mechatronics and electronics testing technology. The scholarship is tenable for up to three years provided the student remains enrolled in 24 units or more and achieves a Fall-Winter Average of 9.5.

**Typically Available:** 1 x \$15,000 (\$5,000/year)

#### **THE SIMON MCNALLY SCHOLARSHIP**

Established in 1972 by S. McNally and Sons Limited, in honour of Simon McNally.

**Requirements:** One or two scholarships to be awarded to students enrolled in Level 2 of a program in Civil Engineering. Awards are based on scholarship and evidence of practical engineering experience and background.

**Typically Available:** 2 x \$650

#### **THE MOTOROLA SOFTWARE ENGINEERING SCHOLARSHIP**

Established in 1999 by the Motorola Foundation.

**Requirements:** To be awarded to a student entering Level 3 in a Software Engineering program who, in the judgment of the Department of Computing and Software, has achieved notable academic standing, displayed strong communication skills, demonstrated leadership and involvement in extra-curricular activities.

**Typically Available:** 2 x \$1,500

#### **THE ONTARIO PROFESSIONAL ENGINEERS FOUNDATION FOR EDUCATION UNDERGRADUATE SCHOLARSHIPS**

Established in 1961 by the Ontario Professional Engineers Foundation for Education.

**Requirements:** Eight scholarships to be awarded to students enrolled in a CEAB (Canadian Engineering Accreditation Board) accredited program in the Faculty of Engineering with high academic achievement who, in the judgment of the Faculty of Engineering, have demonstrated leadership in professional affairs and involvement in extracurricular activities.

**Typically Available:** 8 x \$1,500

#### **THE TINNEMAN PALNUT ENGINEERED PRODUCTS SCHOLARSHIP IN MECHANICAL ENGINEERING**

Established in 2001 by Tinnerman Palnut Engineered Products.

**Requirements:** To be awarded to a student entering Level 2 of a Mechanical Engineering Program who, in the judgment of the Department of Mechanical Engineering, has achieved notable academic standing and demonstrated qualities of leadership at McMaster or in the community.

**Typically Available:** 1 x \$3,000

#### **THE F.W. PAULIN SCHOLARSHIP**

Established in 1981 by the Canadian Engineering and Contracting Co. Limited in honour of its founder.

**Requirements:** To be awarded to a student enrolled in Level 3 of the Civil

Engineering program, or Level 4 of the Civil Engineering and Management program. Award is based on scholarship Fall-Winter Average of at least 9.5 and evidence of leadership, self-motivation, and practical aptitude appropriate for a future in the construction industry.

Typically Available: 1 x \$1,500

#### **THE PCL SCHOLARSHIP IN ENGINEERING AND MANAGEMENT**

Established in 2010 by PCL to support and encourage academic excellence and creativity, a committed work ethic and service to the community.

**Requirements:** To be awarded to a student who has completed Level 3 of an Engineering and Management program and who, in the judgment of the Faculty of Engineering, has achieved notable academic standing and has made a significant contribution to university life through extra-curricular activities.

Typically Available: 1 x \$1,000

#### **THE NIKOLA TESLA EDUCATIONAL CORPORATION SCHOLARSHIP**

Established in 2016 by the Nikola Tesla Educational Corporation in tribute to Nikola Tesla, engineer and inventor.

**Requirements:** To be awarded to a student who graduated from a high school in the City of Hamilton or Regional Municipality of Halton, has completed Level 1 Engineering with a high Fall-Winter Average and who, in the judgment of the Faculty of Engineering, demonstrates a commitment to continuing in a field of study that is directly related to Nikola Tesla's work and body of knowledge. The scholarship is tenable for up to three years provided the student remains enrolled in 24 units or more and achieves a Fall-Winter Average of 9.5.

Typically Available: 1 x \$10,000 (approximately \$3,333 per year)

#### **THE VALE CANADA LTD. SCHOLARSHIP IN MATERIALS ENGINEERING**

Established in 2000 by Inco Limited.

**Requirements:** To be awarded to a student entering Level 2 of the Materials Engineering, Materials Engineering and Management or Materials Engineering and Society program who, in the judgment of the Department of Materials Science and Engineering has achieved notable academic standing and demonstrated qualities of leadership at McMaster or in the community.

Typically Available: 1 x \$2,500

#### **THE WALTERFEDY ENGINEERING SCHOLARSHIP**

Established in 2015 by WalterFedy.

**Requirements:** To be awarded to a student enrolled in Civil, Electrical, or Mechanical Engineering and who, in the judgment of the Awards Selection Committee, has achieved notable academic standing and demonstrates qualities of leadership through service to McMaster University and/or the community in athletic, professional or social organizations. Not open to students in their graduating year.

Typically Available: 1 x \$2,500

#### **THE JERVIS B. WEBB COMPANY OF CANADA (DAIFUKU) SCHOLARSHIP**

Established in 2019 by the Jervis B. Webb Company of Canada (Daifuku) Scholarship Fund at Hamilton Community Foundation.

**Requirements:** To be awarded to full-time students enrolled in a Bachelor of Technology program who graduated from a publicly funded Ontario high school and who demonstrate leadership experience and involvement in extracurricular activities.

Typically Available: 1 x \$2,500

#### **OPEN TO THE FACULTY OF HEALTH SCIENCES**

##### **THE BACHELOR OF HEALTH SCIENCES (HONOURS) PROGRAM SCHOLARSHIP**

Established in 2004 by students, alumni, faculty, staff, and friends of the Bachelor of Health Sciences (Honours) Program in the Faculty of Health Sciences.

**Requirements:** To be awarded to students in the Bachelor of Health Sciences (Honours) Program who, in the judgment of the program, demonstrate outstanding academic achievement. Preference will be given to students who have made volunteer contributions within the Hamilton and McMaster University communities.

Typically Available: 3 x \$2,500

#### **THE STEVE BAXTER MEMORIAL SCHOLARSHIP**

Established in 2017 in memory of Steve Baxter.

**Requirements:** To be awarded to a student in the B.Sc.N. program who, in the judgment of the School of Nursing, has demonstrated exceptional humble leadership qualities.

Typically Available: 1 x \$1,000

#### **THE ELIZABETH PETRA COOKE MEMORIAL SCHOLARSHIP**

Established in 2006 in memory of Elizabeth Petra Cooke, B.Sc.N. (Class of '03).

**Requirements:** To be awarded to a student in a Post R.N. or Post R.P.N. program who, in the judgment of the School of Nursing, has demonstrated a commitment to the nursing profession as a frontline healthcare provider and/or to mentoring nurses as they further their education.

Typically Available: 1 x \$1,000

#### **THE CLARA I. ELMAN SCHOLARSHIPS**

Established in 2002 by Clara I. (Graham) Elman (Class of '46), faculty member of the School of Nursing from 1949 to 1953.

**Requirements:** A variable number of scholarships to be awarded to students who have completed at least Level 2 in a program in Nursing who, in the judgment of the School of Nursing, demonstrate academic excellence and a commitment to the patient nurse relationship.

Typically Available: 5 x \$5,000

#### **THE MEDICAL-SURGICAL EXCELLENCE IN CLINICAL NURSING AWARD**

Established in 1998 by Professor Gerry Benson.

**Requirements:** To be awarded every two years to a student who has completed at least Level 2 of the Nursing Program who, in the judgment of the School of Nursing, demonstrates academic excellence in medical-surgical nursing. Students who wish to be considered for this award should consult the School of Nursing for terms and conditions.

Typically Available: 1 x \$250

#### **THE DARREN LEE PRATT MEMORIAL AWARD FOR ACADEMIC/CLINICAL ACHIEVEMENT**

Established in 2017 by Maria Pratt (Class of '98, 2004, & 2016), faculty member of the School of Nursing, in loving memory of her husband.

**Requirements:** To be awarded to an undergraduate student who has completed Level 2 or higher of a Nursing program who, in the judgment of the School of Nursing demonstrates academic excellence, an interest in Oncology nursing and commitment to patient and family-centered care.

Typically Available: 1 x \$1,000

#### **THE LORIE SCOTT NURSING SCHOLARSHIP**

Established in 2016 by Lorie Scott, B.Sc.N. (Class of '79) CD.

**Requirements:** To be awarded to students in the School of Nursing who have completed at least Level 1 and who, in the judgment of the School of Nursing, have demonstrated a significant commitment to community through service, teaching, advocacy and/or health promotion in Canada. This award is open to second degree students.

Typically Available: 1 x \$5,000

#### **THE MANUEL AND LILLIAN ZACK SCHOLARSHIP**

Established in 1984 by Manuel and Lillian Zack (Class of '40) of Hamilton.

**Requirements:** To be awarded to a student enrolled in Level 3 or above of a program in Nursing and who, in the judgment of the School of Nursing, has demonstrated achievement, initiative, and commitment to gerontological nursing through clinical practice, term papers, research interest, or community activities and who pursues/pursued these interests in Level 4.

Typically Available: 1 x \$1,800

#### **OPEN TO THE FACULTY OF HUMANITIES**

##### **THE CLASS OF '38 SCHOLARSHIP IN HONOUR OF AMELIA HALL**

Established in 1985 to mark the fiftieth anniversary of the graduation of the Class of '38 and to commemorate the contribution of Amelia Hall, the distinguished actress, to theatre in Canada.

**Requirements:** To be awarded to one or two students in Theatre & Film Studies who, in the judgment of the School of the Arts, have attained notable



academic achievement and demonstrated the ability to make a strong contribution to the study of dramatic performance.

Typically Available: 2 x \$5,000

#### **THE CLASS OF '43 GOLDEN ANNIVERSARY SCHOLARSHIP**

Established by the Class of '43 in celebration of their 50th anniversary.

**Requirements:** To be awarded to the student who is enrolled in Level 3 or above of an Honours program in Theatre & Film Studies who, in the judgment of the School of the Arts, has achieved notable academic standing and has made a significant contribution to theatre on campus.

Typically Available: 5 x \$1,000

#### **THE JAMES R. (JAMIE) GREILICH MEMORIAL SCHOLARSHIP**

Established in 2015 by Mr. George and Mrs. Rita Greulich in memory of their son Jamie, B.A. (Class of '88) who passed away at the age of 25 years old, to recognize the outstanding academic achievement of a student with a disability as they complete their program of study.

**Requirements:** To be awarded to a student in a Humanities program with the highest Grade Point Average and who is registered with Student Accessibility Services. Not open to students in their graduating year.

Typically Available: 1 x \$5,000

Students who wish to be considered for this award must be enrolled with the Student Accessibility Services (SAS). Applications may be submitted at the end of Levels I, II, III (and IV if in a 5-year program) on Mosaic.

#### **THE ITCA COMMUNITY INVOLVEMENT PRIZE**

Established in 1982 by Italian Canadian Community Involvement Incorporated.

**Requirements:** To be awarded to students who are enrolled in Level 2 or above and who, in the judgment of the Department of Linguistics and Languages have attained notable standing in at least six units of Italian courses above Level 1. The recipient must have graduated from a secondary school in the Hamilton area.

Typically Available: 2 x \$350

#### **THE ELAINE NARDOCCHIO MEMORIAL SCHOLARSHIP FUND**

Established in 1998 by family, colleagues and many friends in memory of Dr. Elaine Nardocchio, a professor for over 23 years at McMaster University, Chair of the Department of French from 1990 to 1993 and President of the Canadian Federation for the Humanities from 1994 to 1996.

**Requirements:** To be awarded to an undergraduate student enrolled in a French program who, in the judgment of the Department of French, has shown a strong interest in computer skills as applied to the Humanities.

Typically Available: 2 x \$250

#### **THE NEWCOMBE PRIZE IN PEACE STUDIES**

Established in 1991 in memory of Dr. Alan G. Newcombe (1923-1991) and Dr. Hanna Newcombe (1922-2011) who devoted their lives to Peace Studies and were co-founders, of the Canadian Peace Research and Education Association and the Peace Research Institute - Dundas.

**Requirements:** To be awarded to a student who, in the judgment of the Peace Studies program, demonstrates leadership in extracurricular endeavours and high academic achievement.

Typically Available: 1 x \$1,100

#### **THE ROBERT NIXON SCHOLARSHIP**

Established in 1991 by the Brant-Haldimand Liberal Association in honour of Dr. Robert Nixon (Class of '50, LL.D., '76).

**Requirements:** To be awarded to a student who, in the judgment of the Department of History, has demonstrated academic excellence and an active involvement in community life.

Typically Available: 1 x \$575

#### **THE GRAHAM RONALD TOOP SCHOLARSHIP**

Established in 1989 in memory of Graham Toop (Class of '89) by family and friends.

**Requirements:** To be awarded to the student entering Level 4 of an Honours Philosophy program and who, in the judgment of the Department of Philosophy, has demonstrated leadership and influence in scholarly activities related to the

field of philosophy.

Typically Available: 1 x \$500

#### **OPEN TO THE FACULTY OF SCIENCE**

##### **THE J.P. BICKELL FOUNDATION MINING SCHOLARSHIP**

Established in 2002 by the J.P. Bickell Foundation.

**Requirements:** A variable number of scholarships to be awarded to students who, in the judgment of the School of Geography and Earth Sciences, demonstrate an interest in the field of mining and have completed at least Level 2 of a B.Sc. program in the School of Geography and Earth Sciences.

Typically Available: 2 x \$6,500 minimum

##### **THE BETTY TAYLOR CAMPBELL SCHOLARSHIP**

Established in 1998 by William F. Campbell of Ottawa, Ontario in memory of his wife Betty Taylor Campbell, a 1937 McMaster graduate, an Olympic medalist in 1936 and 1990 inductee into the Athletics Hall of Fame.

**Requirements:** To be awarded to a student who has completed Level 1 in a program in Kinesiology and who, in the judgment of the Department of Kinesiology, demonstrates academic excellence and outstanding athletic ability. The award is renewable for up to three years provided the recipient maintains a Grade Point Average of 8.0.

Typically Available: 1 x \$4,500 (\$1,500 each year)

The recipient of this award is eligible to receive the corresponding donor bursary if financial need is demonstrated.

##### **THE NANCY CAR MEMORIAL SCHOLARSHIP IN KINESIOLOGY**

Established in 2001 in loving memory of Kinesiology student Nancy Car.

**Requirements:** To be awarded to a student entering Level 4 of Kinesiology who, in the judgment of the Faculty of Science, has attained notable academic standing and demonstrated leadership at McMaster University or in the community.

Typically Available: 1 x \$500

##### **THE ROSS HUME HALL MEMORIAL SCHOLARSHIP**

Established in 2007 by family, friends and colleagues in memory of Ross Hume Hall, the first chair of the Department of Biochemistry & Biomedical Sciences.

**Requirements:** To be awarded to a student enrolled in a Biochemistry program who, in the judgment of the Department of Biochemistry and Biomedical Sciences, demonstrates research excellence and a passion for promoting human and environmental health.

Typically Available: 1 x \$600

##### **THE ERNEST ROBERT MACKENZIE KAY SCHOLARSHIPS**

Established in 1999 by Ernest Robert MacKenzie Kay.

**Requirements:** A variable number to be awarded to students in a program in Biology, Biochemistry, Chemical Biology or Chemistry who, in the judgment of the Faculty, show outstanding academic achievement. Preference will be given to students who plan to continue in the field of medical research.

Typically Available: 9 x \$3,000

##### **THE SCIENCE ALUMNI SCHOLARSHIPS**

Established in 2001 by the Faculty of Science through the generosity of its alumni and friends.

**Requirements:** A variable number of scholarships to be awarded to students entering a Level 3 program in Science who, in the judgment of the Faculty of Science, have demonstrated outstanding academic achievement and leadership.

Typically Available: 5 x \$500

##### **THE SOUTH ONTARIO ECONOMIC DEVELOPMENT COUNCIL SCHOLARSHIPS**

Established in 1973 by the South Ontario (formerly Niagara) Economic Development Council.

**Requirements:** Two scholarships to be awarded to students in an Honours Geography program who, in the judgment of the School of Geography and Earth Sciences, demonstrate interest and outstanding achievement in the areas of regional development and urban planning.

Typically Available: 2 x \$3,500

**THE VALE CANADA LTD. SCHOLARSHIP IN ENVIRONMENTAL SCIENCE**

Established in 2000 by Inco Limited.

**Requirements:** To be awarded to a student entering Level 3, 4 (or Year 5 of a Co-op program) in the Honours Earth and Environmental Sciences program who, in the judgment of the School of Geography and Earth Sciences has achieved notable academic standing and demonstrated qualities of leadership at McMaster or in the community.

**Typically Available:** 1 x \$2,500

**THE WALKER/MIDDLETON FIELDWORK SCHOLARSHIP**

Established in 2010 in honour of Gerard Middleton and Roger Walker by a generation of grateful students who studied under them from the mid-1960s until 2000.

**Requirements:** To be awarded to students who are participating in field courses or research undertaken as part of the students' program of study, who have completed at least Level 2 of an Honours B.Sc. program in the School of Geography & Earth Sciences and who, in the judgment of the School, have demonstrated notable academic standing.

**Typically Available:** 1 x \$500

Students who wish to be considered for this award must submit an application to the Director of the School of Geography and Earth Sciences by April 1st.

**THE ROSE HILL SCHOLARSHIPS**

Established in 1985 by the alumni, faculty and staff of the School of Physical Education and Athletics as a tribute to Professor Rose Hill, long-time teacher, coach and administrator in the School.

**Requirements:** Two scholarships to be awarded to students who have completed at least Level 2 in a Kinesiology program and who, in the judgment of the Department of Kinesiology, best demonstrate the philosophy of physical education espoused by Professor Hill throughout her career, namely, excellence in scholarship and leadership and participation in sport, dance or fitness.

**Typically Available:** 2 x \$1,200 each

**OPEN TO THE FACULTY OF SOCIAL SCIENCES****THE BARBARA AND RONALD BAYNE AWARD**

Established in 2001 by Barbara and Ronald Bayne to provide support to students who are engaged in practical learning experience as part of their undergraduate studies.

**Requirements:** To be awarded to a student who has completed at least Level 3 in an Honours program in the Department of Health, Aging and Society, has demonstrated outstanding performance in a field experience course and who, in the judgment of the Department, has demonstrated notable academic achievement and qualities of leadership at McMaster or in the community.

**Typically Available:** 1 x \$750

**THE MIKE BRAGA SCHOLARSHIP**

Established in 2013 by Mike Braga (Class of '01).

**Requirements:** To be awarded to a student in the Faculty of Social Sciences who has demonstrated notable academic achievement and who, in the judgment of the Faculty, demonstrates a commitment to improving his or her community.

**Typically Available:** 1 x \$1,000

**THE CLASS OF '50 SCHOLARSHIP IN HONOURS ECONOMICS**

Established in 1982 by members of the Class of 1950 who graduated in Honours Economics.

**Requirements:** To be awarded to the student who has completed at least Level 2 of an Honours program in Economics, and who, in the judgment of the Department of Economics, has attained a high Fall-Winter Average and has demonstrated leadership in undergraduate extracurricular activities.

**Typically Available:** 1 x \$1,500

**THE PHILIP F. CONNELL SCHOLARSHIP**

Established by Philip F. Connell, B.A. Hon. (Class of '46).

**Requirements:** To be awarded to a student who is enrolled in Level 2 of an Honours Economics program who, in the judgment of the Department of Economics, has demonstrated outstanding academic achievement and an

interest in the study of ethics. Tenable in Level 4 provided that the recipient maintains a Grade Point Average of 8.0 or greater.

**Typically Available:** 1 x \$20,000 (\$10,000 per year)

**THE TONY DEAN SCHOLARSHIP IN LABOUR STUDIES**

Established in 2009 by The Association of Management, Administrative and Professional Crown Employees of Ontario (AMAPCEO) in honour of Mr. Tony Dean, M.A. (Class of '80) for his distinguished thirty-year career in public service in the Province of Ontario.

**Requirements:** To be awarded to a Labour Studies student enrolled in Level 2 or above of a Labour Studies program and who, in the judgment of the School of Labour Studies, has attained notable academic standing and has demonstrated qualities of leadership at McMaster University or in the community. Preference will normally be given to a student who displays a commitment to social justice. This award is not open to students in their graduating term. A student may receive this award only once.

**Typically Available:** 1 x \$1,000

**THE BRUCE M. HAMILTON AWARD**

Established in 1999 by Bruce M. Hamilton.

**Requirements:** To be awarded to a student graduating from the Faculty of Social Sciences who, in the judgment of the Faculty of Social Sciences, has made a significant contribution through extra-curricular activities to the benefit of McMaster University or the local community.

**Typically Available:** 1 x \$1,000

**THE LIANNE MARKS SCHOLARSHIP**

Established by her family, in 1980 as a bursary and in 1985 as a scholarship, in honour of Lianne Marks, a student at McMaster University (1977-80).

**Requirements:** To be awarded to a student enrolled in Level 3 of an Honours program in Sociology and who, in the judgment of the Department of Sociology, has demonstrated outstanding academic achievement and has made notable contribution to the campus or community by participation in activities other than sports.

**Typically Available:** 6 x \$800

**THE PIONEER ENERGY LP SCHOLARSHIP IN GERONTOLOGY**

Established in 1988.

**Requirements:** To be awarded to students enrolled in a program in the Department of Health, Aging and Society, who in the judgment of the Department, demonstrate leadership in the field of Gerontology.

**Typically Available:** 1 x \$4,500

**THE PIONEER ENERGY LP PRIZE IN AGING AND SOCIETY**

Established in 1990.

**Requirements:** To be awarded to a student in an Aging and Society program who, in the judgment of the Department of Health, Aging and Society, has achieved notable academic standing, and demonstrates practical aptitude for a career in health care of the elderly.

**Typically Available:** 1 x \$400

**THE ELLEN BOUCHARD RYAN SCHOLARSHIP**

Established in 2000 by the McMaster Centre for Gerontological Studies, and supported by family, in recognition of Dr. Ellen Bouchard Ryan's outstanding contribution to the field of aging.

**Requirements:** To be awarded to a student who, in the judgment of the Department of Health, Aging and Society, has demonstrated high academic achievement and leadership in age related community activities.

**Typically Available:** 2 x \$400

**THE LARRY SEFTON SCHOLARSHIPS**

Established in 1985 by the Hamilton Steelworkers Area Council in memory of Larry Sefton, area supervisor (1946-53) and director of District 6 (1953-73) of the United Steelworkers of America, to recognize his commitment to education, to working people, to unions and to the City of Hamilton.

**Requirements:** Three scholarships to be awarded to students in the Labour Studies program who, in the judgment of the Committee of Instruction for Labour Studies, have achieved notable standing in any level.

Typically Available: 3 x \$800

## Part-Time In-Course Awards

### In-Course and Renewal Award Regulations

- In-Course Awards are monetary and non-monetary awards allocated on the basis of academic merit and, in some cases, other forms of earned merit. Non-monetary awards such as medals and books as well as monetary awards of nominal value (currently \$100 or less) are called prizes.
- In-Course Awards are available to full-time and part-time students enrolled in an undergraduate degree program (excluding the Physician Assistant and M.D. Programs), at the time of award application and selection, who are returning to McMaster to continue their studies.
- In-Course Awards requiring full-time status are available to students enrolled full-time or equivalent in both the fall and winter terms.
- In-Course Awards requiring part-time status are available to students who are not enrolled full-time in the fall and/or winter terms. In addition, true part-time awards are only available to students who have completed at least 50% of all units attempted at McMaster on a part-time basis.
- In-Course Awards are available to all domestic and international students.
- In-Course Awards are not available to second degree students unless the terms of a particular donor award specify eligibility and they have not received the award previously.
- In-Course Awards are not available to students in their graduating term.
- In-Course Awards may also consider other forms of earned merit. In order to evaluate earned merit, students may need to complete one or more additional requirements, including, but not limited to, submitting an application.
- In-Course Awards requiring an application that are determined by Cumulative Grade Point Average require a minimum Cumulative Grade Point Average of 8.0 on at least 18 graded units, while those determined by Fall-Winter Average require a minimum Fall-Winter Average of 9.5 on at least 18 graded units.
- In-Course Awards adjudicated without need of an application that are determined by Cumulative Grade Point Average require a minimum 8.0 on at least 24 graded units, while those determined by Fall-Winter Average require a minimum 9.5 on at least 24 graded units.
- Available averages, units upon which averages are calculated, program level, and enrolled units, may be used to break any ties in an award competition.
- In order to be considered for an In-Course Award by application, students must submit a complete application by the specified deadline date.
- In-Course Award applications which meet award eligibility criteria are forwarded to a selection committee for review and ranking.
- Some In-Course Awards are renewable.
- Entrance, Indigenous Entrance, and In-Course Award renewals determined by Cumulative Grade Point Average or Fall-Winter Average require a minimum 8.0 on at least 18 graded units.
- All In-Course Award payments are disbursed through the McMaster Student Account and applied to outstanding charges. A few exceptions to this regulation may be approved by the Office of the Registrar, Aid & Awards.
- In-Course Awards are typically disbursed no later than the end of September.
- In-Course Awards will be disbursed if the recipient continues to be enrolled in a McMaster degree program, or a specific McMaster program, when explicitly required by the terms of the award, or the student's record reflects they are on exchange, on letter of permission, or participating in a coop or internship opportunity at McMaster University.
- In-Course Award recipients will have their awards noted on their University transcripts. Entrance and In-Course renewals are not noted on transcripts.
- Registration in, or transfer to, another program of study and/or a change in course load may result in forfeiture of an In-Course Award or Entrance or In-Course Award renewal. Students are advised to consult with the Office of the Registrar prior to making any changes to their program of study or course load.
- If a student is approved to graduate or transfers to graduate in the fall, after the awarding decision and/or disbursement is made, the student will forfeit the award.
- Students withdrawing from courses without failure by default will forfeit their In-Course Award or Entrance or In-Course Award renewal.
- Students who forfeit their In-Course award will have their award cancelled and their transcript notation removed if forfeited in first year of payment only. Students must return the In-Course Award or Entrance or In-Course Award renewal funding to their McMaster Student Account.
- Forfeiture of a renewable Entrance or In-Course Award also cancels all future instalments of the award.
- Students wishing to defer the stated value of an In-Course Award or Entrance or In-Course Award renewal to the next academic year should make the request in writing to the Office of the Registrar, Aid & Awards. Approval is not automatic and deferrals are not normally granted for more than one academic year.
- Students holding renewable Entrance or In-Course Awards who choose to accelerate their program and to complete their degree earlier than normal by completing Spring/Summer courses and who wish to employ the benefits of their renewable Entrance and/or In-Course Awards to defray the tuition and compulsory fees for those courses should make the request in writing to the Office of the Registrar, Aid & Awards.
- The University may choose not to grant an In-Course Award in the absence of a suitable candidate; may choose to limit the number of recipients selected where funding is limited; may choose to limit the number of recipients selected where too few suitable candidates exist; and/or may choose to generate applicant pools where complete applications have not been received.
- The University may remove specific In-Course Awards from the University Calendar, may revise the terms and stated value and/or suspend the granting of In-Course Awards (e.g. donor funds).
- In-Course Awards supported by donor funds may have additional eligibility and renewal requirements.

### Automatically Assessed

#### OPEN TO TWO OR MORE FACULTIES

##### THE ALUMNI ASSOCIATION SCHOLARSHIP

Established in 1974 by the McMaster University Alumni Association and later augmented by bequest of Harold E. Amy.

**Requirements:** One scholarship to be awarded to a part-time student who has attained the highest Grade Point Average at the most recent review.

**Typically Available:** 1 x \$475

##### THE MAPS GOLD MEDAL

Established in 1996 by the McMaster Association of Part-time Students.

**Requirements:** To be awarded to the graduating student completing studies primarily on a part-time basis and who attains the highest Grade Point Average.

**Typically Available:** 1 x Medal

##### THE WILLIAM J. MCCALLION SCHOLARSHIPS

Established in 1984 in honour of Professor McCallion, B.A. (Class of '43), M.A. (Class of '46), first Dean of the School of Adult Education from 1970 to 1978, in recognition of his outstanding contribution to adult education and to the Department of Mathematical Sciences during 41 years of service.

**Requirements:** To be awarded to graduating students who have completed a program primarily on a part-time basis with high averages.

**Typically Available:** 2 x \$800

#### **THE CONNIE O'SHAUGHNESSY MEMORIAL PRIZE**

Established in 1988 by family, friends and associates of Connie O'Shaughnessy (Class of '88), a part-time student who chose to return to complete her degree on a full time basis.

**Requirements:** To be awarded to a student who has completed at least Level 1 and who, in the judgment of a Selection Committee has made a significant contribution to the University life of part-time students.

**Typically Available:** 2 x \$425

#### **THE PART-TIME STUDENTS SCHOLARSHIPS**

Established in 2019 by McMaster University.

**Requirements:** To be awarded to part-time students enrolled in any undergraduate degree program on the basis of academic and, in some cases, other forms of earned merit.

**Typically Available:** 1 x \$800

#### **OPEN TO THE FACULTY OF HUMANITIES**

##### **THE AUDREY DIEMERT MEMORIAL BOOK PRIZE**

Established in 1991 by family, friends and colleagues in memory of Audrey Diemert.

**Requirements:** To be awarded to a part-time student who attains the highest standing in ENGLISH 2G06 A/B or ENGLISH 2I06 A/B.

**Typically Available:** 4 x \$100 for books

##### **THE F.W. WATERS SCHOLARSHIP IN PHILOSOPHY FOR PART-TIME STUDENTS**

Established in 1998 by former students, colleagues and friends of Dr. F. W. Waters, Professor from 1935 to 1959.

**Requirements:** To be awarded to a part-time student in a Philosophy program who, in the judgment of the Department of Philosophy, has demonstrated outstanding academic achievement. No student will be eligible to receive this award more than once.

**Typically Available:** 1 x \$250

#### **OPEN TO THE FACULTY OF SOCIAL SCIENCES**

##### **THE RUTH LANDES PRIZE**

Established in 1982 in honour of Professor Ruth Landes for her outstanding contributions to the Department of Anthropology.

**Requirements:** To be awarded to graduating students who have completed a program in Anthropology primarily on a part-time basis with high averages.

**Typically Available:** 1 x \$100

##### **THE POLITICAL SCIENCE PRIZE**

Established in 1982.

**Requirements:** To be awarded to graduating students who have completed a program in Political Science primarily on a part-time basis with high averages.

**Typically Available:** 1 x \$200

##### **THE RELIGIOUS STUDIES PRIZES**

Established in 1982.

**Requirements:** To be awarded to graduating students who have completed a program in Religious Studies primarily on a part-time basis with high averages.

**Typically Available:** 2 x \$100 each

##### **THE JACK RICHARDSON MEMORIAL SCHOLARSHIP**

Established in 2002 in memory of Jack Richardson by family, friends and colleagues.

**Requirements:** To be awarded to a part-time student who has completed at least Level 2 in an Honours Sociology program and who attains the highest Grade Point Average at the most recent review.

**Typically Available:** 2 x \$400

##### **THE SOCIOLOGY PRIZES**

Established in 1982.

**Requirements:** To be awarded to graduating students who have completed a program in Sociology primarily on a part-time basis with high averages.

**Typically Available:** 2 x \$100 each

##### **THE ANNE STEIN MEMORIAL PRIZE**

Established in 1981.

**Requirements:** To be awarded to the part-time student who successfully completes SOCWORK 3DD6 A/B S and attains the highest grade in SOCWORK 3D06 A/B S in the same term.

**Typically Available:** 1 x \$125

Courses must be taken during the Fall/Winter terms.

##### **THE DAVID WINCH MEMORIAL SCHOLARSHIP**

Established in 2003 in memory of Professor David Winch by his family, friends and colleagues.

**Requirements:** To be awarded to a part-time student in the Faculty of Social Sciences who has completed at least Level 2 and who, in the judgment of the Faculty, has demonstrated notable academic achievement.

**Typically Available:** 1 x \$500

## **Awards by Application**

### **OPEN TO TWO OR MORE FACULTIES**

#### **THE GWEN GEORGE MEDAL**

Established in 2001 in loving memory of Gwen George by her family.

**Requirements:** To be awarded to a part-time student who has completed at least Level 1 of any program and who, in the judgment of a selection committee, has achieved notable academic standing and has demonstrated qualities of leadership and service to McMaster University and/or the Hamilton-Wentworth, surrounding or world communities.

**Typically Available:** 1 x \$400 and a Medal

Applications may be submitted at the end of Levels I, II and III (IV if in a five-year program) on Mosaic. Students must have completed a minimum of 18 graded units to be eligible. Not open to students in their graduating year.

#### **THE GORDON RAYMOND COMMUNITY CONTRIBUTION AWARD**

Established in 1996 by the McMaster Association of Part-time Students and other friends and colleagues in honour of Gord Raymond in recognition of his 27 years of service to McMaster University including 15 years as Coordinator of Part-time Degree Studies.

**Requirements:** To be awarded to the part-time student who, in the judgment of a selection committee, demonstrates enthusiasm for life-long learning and/or had an influence on the lives of part-time students.

**Typically Available:** 1

## **In Course Awards-Second Degree Eligible**

### **In-Course and Renewal Award Regulations**

1. In-Course Awards are monetary and non-monetary awards allocated on the basis of academic merit and, in some cases, other forms of earned merit. Non-monetary awards such as medals and books as well as monetary awards of nominal value (currently \$100 or less) are called prizes.
2. In-Course Awards are available to full-time and part-time students enrolled in an undergraduate degree program (excluding the Physician Assistant and M.D. Programs), at the time of award application and selection, who are returning to McMaster to continue their studies.
3. In-Course Awards requiring full-time status are available to students enrolled full-time or equivalent in both the fall and winter terms.
4. In-Course Awards requiring part-time status are available to students who are not enrolled full-time in the fall and/or winter terms. In addition, true part-time awards are only available to students who have completed at least 50% of all units attempted at McMaster on a part-time basis.
5. In-Course Awards are available to all domestic and international students.
6. In-Course Awards are not available to second degree students unless the terms of a particular donor award specify eligibility and they have not received the award previously.
7. In-Course Awards are not available to students in their graduating term.



8. In-Course Awards may also consider other forms of earned merit. In order to evaluate earned merit, students may need to complete one or more additional requirements, including, but not limited to, submitting an application.
9. In-Course Awards requiring an application that are determined by Cumulative Grade Point Average require a minimum Cumulative Grade Point Average of 8.0 on at least 18 graded units, while those determined by Fall-Winter Average require a minimum Fall-Winter Average of 9.5 on at least 18 graded units.
10. In-Course Awards adjudicated without need of an application that are determined by Cumulative Grade Point Average require a minimum 8.0 on at least 24 graded units, while those determined by Fall-Winter Average require a minimum 9.5 on at least 24 graded units.
11. Available averages, units upon which averages are calculated, program level, and enrolled units, may be used to break any ties in an award competition.
12. In order to be considered for an In-Course Award by application, students must submit a complete application by the specified deadline date.
13. In-Course Award applications which meet award eligibility criteria are forwarded to a selection committee for review and ranking.
14. Some In-Course Awards are renewable.
15. Entrance, Indigenous Entrance, and In-Course Award renewals determined by Cumulative Grade Point Average or Fall-Winter Average require a minimum 8.0 on at least 18 graded units.
16. All In-Course Award payments are disbursed through the McMaster Student Account and applied to outstanding charges. A few exceptions to this regulation may be approved by the Office of the Registrar, Aid & Awards.
17. In-Course Awards are typically disbursed no later than the end of September.
18. In-Course Awards will be disbursed if the recipient continues to be enrolled in a McMaster degree program, or a specific McMaster program, when explicitly required by the terms of the award, or the student's record reflects they are on exchange, on letter of permission, or participating in a coop or internship opportunity at McMaster University.
19. In-Course Award recipients will have their awards noted on their University transcripts. Entrance and In-Course renewals are not noted on transcripts.
20. Registration in, or transfer to, another program of study and/or a change in course load may result in forfeiture of an In-Course Award or Entrance or In-Course Award renewal. Students are advised to consult with the Office of the Registrar prior to making any changes to their program of study or course load.
21. If a student is approved to graduate or transfers to graduate in the fall, after the awarding decision and/or disbursement is made, the student will forfeit the award.
22. Students withdrawing from courses without failure by default will forfeit their In-Course Award or Entrance or In-Course Award renewal.
23. Students who forfeit their In-Course award will have their award cancelled and their transcript notation removed if forfeited in first year of payment only. Students must return the In-Course Award or Entrance or In-Course Award renewal funding to their McMaster Student Account.
24. Forfeiture of a renewable Entrance or In-Course Award also cancels all future instalments of the award.
25. Students wishing to defer the stated value of an In-Course Award or Entrance or In-Course Award renewal to the next academic year should make the request in writing to the Office of the Registrar, Aid & Awards. Approval is not automatic and deferrals are not normally granted for more than one academic year.
26. Students holding renewable Entrance or In-Course Awards who choose to accelerate their program and to complete their degree earlier than normal by completing Spring/Summer courses and who wish to employ the benefits of their renewable Entrance and/or In-Course Awards to defray the tuition

and compulsory fees for those courses should make the request in writing to the Office of the Registrar, Aid & Awards.

27. The University may choose not to grant an In-Course Award in the absence of a suitable candidate; may choose to limit the number of recipients selected where funding is limited; may choose to limit the number of recipients selected where too few suitable candidates exist; and/or may choose to generate applicant pools where complete applications have not been received.
28. The University may remove specific In-Course Awards from the University Calendar, may revise the terms and stated value and/or suspend the granting of In-Course Awards (e.g. donor funds).
29. In-Course Awards supported by donor funds may have additional eligibility and renewal requirements.

## Automatically Assessed

### OPEN TO TWO OR MORE FACULTIES

#### THE JAMES ROBERTSON CARRUTHERS MEMORIAL PRIZE

Established in 1984 in memory of James Robertson Carruthers (Class of '74) by his family and friends.

**Requirements:** To be awarded to the student who, in the judgment of the Department of History, attains notable standing in HISTORY 2R03 or HISTORY 2RR3 (United States History).

**Typically Available:** 1 x \$425

#### THE ENVIRONMENTAL ISSUES PRIZE

Established in 1993 by the Regional Municipality of Hamilton-Wentworth in recognition of Metal Recovery Industries and Philip Environmental, Industrial Filter Fabrics Ltd., and Laidlaw Waste Systems.

**Requirements:** To be awarded to the student who attains the highest grade in GEOG 4MT6 A/B (or GEO 4R06).

**Typically Available:** 1 x \$100

#### THE NEIL FORSYTH PRIZE

Established in 1992 by The Steel Founders' Society of America in honour of Neil Forsyth, president of the organization in 1990 and 1991, in recognition of his outstanding service to the steel castings industry.

**Requirements:** To be awarded to the student who attains the highest grade in MATLS 3E04.

**Typically Available:** 1 x \$120

#### THE GILMOUR MEMORIAL PRIZE

Established in 1927 by Year '27, in memory of Dr. Joseph Leeming Gilmour, Honorary President of their first year in 1923, and subsequently enlarged by his children.

**Requirements:** To be awarded to the student who attains the highest standing in POLSCI 4D06 A/B RELIGST 2HH3.

**Typically Available:** 1 x \$125

#### THE LATIN PRIZE

Established in 1987 by Dr. John B. Clinard.

**Requirements:** To be awarded to a student who, in the judgment of the Department of Classics, has demonstrated notable achievement in LATIN 1Z03 and LATIN 1ZZ3.

**Typically Available:** 1 x \$150

#### THE PROVOST'S HONOUR ROLL MEDAL

Established in 2005.

**Requirements:** To be awarded to students named to the Provost's Honour Roll.

**Typically Available:** Variable number of medals

#### THE UNIVERSITY PRIZES FOR SPECIAL ACHIEVEMENT

Established in 1973.

**Requirements:** Two prizes to be awarded in each Faculty and other academic units to individual students who exhibit exceptional skill and originality in a creative project (such as an essay, poem, sculpture, mathematical or scientific problem, engineering design) or a related series of such projects.

**Typically Available:** 2 per Faculty x \$500

**THE R. M. WILES MEMORIAL BOOK PRIZE**

Established in 1975 in memory of Professor Roy McKeen Wiles by his friends and colleagues.

**Requirements:** To be awarded to the student who, in the judgment of the Department of English and Cultural Studies, has written the best essay on a topic relating to English literature of the period 1660-1800.

**Typically Available:** 1 x \$250 for books

**OPEN TO THE FACULTY OF HEALTH SCIENCES****THE DR. GARTH BOULTER MEMORIAL AWARD**

Established in 2007 by G. Stanley Boulter, B.A. (Class of '49) and Irma E. Boulter in memory of their son, Garth E. Boulter, Associate Professor of Obstetrics and Gynecology in the School of Medicine.

**Requirements:** A variable number to be awarded to students who have completed an overseas' clinical placement elective in Level 3 of the Midwifery program and who, in the judgment of the Midwifery Program, have demonstrated academic excellence, leadership and social awareness. Preference will be given to students who have completed their electives in Africa.

**Typically Available:** 11 x \$1,000

**THE CLASS OF 1966 NURSING SCHOLARSHIP**

Established in 2012 by the School of Nursing, Class of '66.

**Requirements:** One scholarship to be awarded to a student in the School of Nursing who, in the judgment of the School of Nursing, has demonstrated outstanding academic achievement in any level.

**Typically Available:** 1 x \$1,000

**THE LORIE SCOTT NURSING SCHOLARSHIP**

Established in 2016 by Lorie Scott, B.Sc.N. (Class of '79) CD.

**Requirements:** To be awarded to students in the School of Nursing who have completed at least Level I and who, in the judgment of the School of Nursing, have demonstrated a significant commitment to community through service, teaching, advocacy and/or health promotion in Canada. This award is open to second degree students.

**Typically Available:** 1 x \$5,000

**THE CORELENE HELEN TOSTEVIN SCHOLARSHIPS**

Established in 1998 by bequest of Corelene Tostevin.

**Requirements:** To be awarded to students enrolled in an accelerated BScN program and who, in the judgment of the School of Nursing, have demonstrated notable academic achievement.

**Typically Available:** 5 x \$250

**OPEN TO THE FACULTY OF HUMANITIES****THE COMPARATIVE LITERATURE PRIZE**

Established in 1988.

**Requirements:** To be awarded to a student who, in the judgment of the Department of English and Cultural Studies, has achieved notable standing in Level 2 comparative literary studies courses.

**Typically Available:** 1 x \$250

**THE CRANSTON PRIZES**

Established in 1958 by William H. Cranston of Midland in honour of his parents, J. Herbert Cranston (Class of '05) and Eva Wilkins Cranston (Class of '07).

**Requirements:** Two prizes to be awarded for excellence in the study of Canadian literature: (a) one for the highest grade in ENGLISH 2G06 A/B, and (b) one for the highest grade in ENGLISH 2C03.

**Typically Available:** 2 x \$175 each

**THE ELEANOR DORNBUSH MARPLES PRIZE IN ART HISTORY**

Established in 1985 by Mrs. Barbara Niedermeier and her family in memory of her sister.

**Requirements:** To be awarded to a student who, in the judgment of the School of the Arts, has demonstrated outstanding achievement.

**Typically Available:** 2 x \$175

**THE ELEANOR DORNBUSH MARPLES PRIZE IN THEATRE & FILM STUDIES**

Established in 1987 by Vaughan W. Marples in memory of his wife.

**Requirements:** To be awarded to a student in Level 2 of a Theatre & Film program who, in the judgment of the School of the Arts, has achieved academic excellence.

**Typically Available:** 1 x \$125

**THE H.W. MCCREADY PRIZE IN BRITISH HISTORY**

Established in 1981 in memory of Professor H.W. McCready, a member of the Department of History from 1943 to 1975, by former students, colleagues, and friends.

**Requirements:** To be awarded to a Level 2 student who, in the judgment of the Department of History, attains notable standing in British History courses.

**Typically Available:** 1 x \$100

**THE NOEL SANDUSKY MEMORIAL PRIZE**

Established in 1994 by family and friends in memory of Noel Sandusky.

**Requirements:** To be awarded to a student who has completed Level 1 and an additional 30 - 45 units of a program in History who, in the judgment of the Department of History, attains notable academic standing in at least nine units of History courses.

**Typically Available:** 1 x \$150 for books

**THE LARRY SAYERS PRIZE IN EAST ASIAN HISTORY**

Established in 1983 in memory of Larry P. Sayers (Class of '82) by his friends.

**Requirements:** To be awarded to the student who, in the judgment of the Department of History, has demonstrated outstanding achievement in at least six units of courses work in East Asian history.

**Typically Available:** 1 x \$275

**THE JOHN TOTH MEMORIAL PRIZE**

Established in 1983 in memory of John Toth by his friends.

**Requirements:** To be awarded to the student who attains the highest average in any six units of Level 3 or 4 Latin courses.

**Typically Available:** 1 x \$50

**THE JOHN H. TRUEMAN SCHOLARSHIP**

Established in 1989 as a tribute to Professor John H. Trueman by his many friends, colleagues and students on the occasion of his retirement from McMaster University.

**Requirements:** To be awarded to the student who has completed Level 1 and who, in the judgment of the Department of History, has achieved notable academic standing in medieval history.

**Typically Available:** 1 x \$250

**OPEN TO THE FACULTY OF SOCIAL SCIENCES****THE CITIZEN ACTION GROUP AWARD IN MEMORY OF HARRY PENNY**

Established in 1984 by the Citizen Action Group, Hamilton, to honour Professor Harry L. Penny, founding Director of the School of Social Work and Board Member of Citizen Action Group.

**Requirements:** To be awarded to the student in a program in Social Work who achieves the highest grade in SOCWORK 4003.

**Typically Available:** 1 x \$1,000

**THE SAM LAWRENCE PRIZE**

Established in 1957 by the East Hamilton Independent Labour Party C.C.F. Club in honour of Sam Lawrence.

**Requirements:** To be awarded to the student who, in the judgment of the Department of Economics, has demonstrated outstanding academic achievement in courses in labour economics.

**Typically Available:** 1 x \$200

**THE MACGIBBON SCHOLARSHIP**

Established in 1970 by bequest of Professor Duncan A. MacGibbon (Class of '08).

**Requirements:** To be awarded to the student in a program in Economics who, in the judgment of the Department of Economics, stands highest in courses in economic history.

**Typically Available:** 1 x \$500

**THE WILLIAM MACKENZIE MEMORIAL PRIZE**

Established in 1977 in memory of Professor William MacKenzie by his friends and colleagues.

**Requirements:** To be awarded to the student who, in the judgment of the Department of Economics, has demonstrated outstanding academic achievement in either ECON 3T03 (Economic Development: Agriculture and Population) or ECON 2F03 (Globalization and Economic Development) or, in exceptional circumstances, for work in a related area.

**Typically Available:** 1 x \$425

**THE AUDREY EVELYN MEPHAM AWARD**

Established in 2001 by Gordon W. Mepham in loving memory of his wife Audrey Evelyn Mepham.

**Requirements:** To be awarded to a student graduating from an Honours program in the Department of Health, Aging and Society who, in the judgment of the Department of Health, Aging and Society, has demonstrated notable academic achievement. Preference will be given to a student who has completed a thesis or course paper on issues relating to Alzheimer's disease.

**Typically Available:** 3 x \$5,000

**THE KENNETH W. TAYLOR BOOK PRIZE**

Established in 1976 by his children in memory of Dr. Kenneth W. Taylor (Class of '21), LL.D. (Class of '50).

**Requirements:** To be awarded to the student who, in the judgment of the Department of Economics, has demonstrated outstanding academic achievement in courses within the areas of monetary economics and financial institutions, and of public finance.

**Typically Available:** 2 x \$100 for books

**THE MELINDA WAPSHAW ACHIEVEMENT AWARD**

Established in 1993 by the Labour Studies Student Association and the Labour Studies Program.

**Requirements:** To be awarded to a student who has completed Level 1 and an additional 60 - 75 units of an Honours Program in Labour Studies and who, in the judgment of the Committee of Instruction, demonstrates outstanding achievement.

**Typically Available:** 1 x \$300

**THE RALPH WEEKES SCHOLARSHIP**

Established in 1994 by the Investors Group Financial Services to recognize the accomplishments of Ralph Weekes (Class of '73).

**Requirements:** To be awarded to a student enrolled in a program in Economics who, in the judgment of the Department of Economics, has attained notable standing. Preference to be given to a student pursuing studies on a part-time basis.

**Typically Available:** 1 x \$800

**Awards by Application****OPEN TO TWO OR MORE FACULTIES****THE ACHIEVEMENT AWARDS OF EXCELLENCE**

Established in 1998.

**Requirements:** A variable number of scholarships to be awarded to students who, in the judgment of the *Student Accessibility Services (SAS)*, demonstrate outstanding academic achievement. Preference will be given to first-degree students. Students who wish to be considered for this award must be enrolled with the *Student Accessibility Services (SAS)*. Applications may be submitted at the end of Levels I, II, III & IV (or V if in a 5-year program) on Mosaic.

**Typically Available:** 1 x \$800

**THE JOHN D. MCNIE ACHIEVEMENT AWARD OF EXCELLENCE**

Established in 2001 by David O. Davis in honour of John D. McNie. University salaried pension plan who have demonstrated outstanding academic achievement.

**Requirements:** To be awarded to a student with a visual impairment who, in the judgment of the *Student Accessibility Services (SAS)*, demonstrates notable academic achievement.

**Typically Available:** 2 x \$800

Students who wish to be considered for this award must be enrolled with *Student Accessibility Services (SAS)*.

**THE CONNIE O'SHAUGHNESSY MEMORIAL PRIZE**

Established in 1988 by family, friends and associates of Connie O'Shaughnessy (Class of '88), a part-time student who chose to return to complete her degree on a full time basis.

**Requirements:** To be awarded to a student who has completed at least Level 1 and who, in the judgment of a Selection Committee has made a significant contribution to the University life of part-time students.

**Typically Available:** 2 x \$425

**OPEN TO THE FACULTY OF SOCIAL SCIENCES****THE BARBARA AND RONALD BAYNE AWARD**

Established in 2001 by Barbara and Ronald Bayne to provide support to students who are engaged in practical learning experience as part of their undergraduate studies.

**Requirements:** To be awarded to a student who has completed at least Level 3 in an Honours program in the Department of Health, Aging and Society, has demonstrated outstanding performance in a field experience course and who, in the judgment of the Department, has demonstrated notable academic achievement and qualities of leadership at McMaster or in the community.

**Typically Available:** 1 x \$750

The Ellen Bouchard Ryan Scholarship

Established in 2000 by the McMaster Centre for Gerontological Studies, and supported by family, in recognition of Dr. Ellen Bouchard Ryan's outstanding contribution to the field of aging.

**Requirements:** To be awarded to a student who, in the judgment of the Department of Health, Aging and Society, has demonstrated high academic achievement and leadership in ages related community activities.

**Typically Available:** 2 x \$400

**THE LARRY SEFTON SCHOLARSHIPS**

Established in 1985 by the Hamilton Steelworkers Area Council in memory of Larry Sefton, area supervisor (1946-53) and director of District 6 (1953-73) of the United Steelworkers of America, to recognize his commitment to education, to working people, to unions and to the City of Hamilton.

**Requirements:** Three scholarships to be awarded to students in the Labour Studies program who, in the judgment of the Committee of Instruction for Labour Studies, have achieved notable standing in any level.

**Typically Available:** 3 x \$500 each

**OPEN TO THE FACULTY OF HEALTH SCIENCES****THE JANET MCKNIGHT AWARD**

Established in 1994 by faculty, friends and students in memory of Janet McKnight, beloved colleague and teacher, a recognized expert in educational methodology and small-group, problem-based learning.

**Requirements:** To be awarded to a student entering Level 4 of a program in Nursing who, in the judgment of the School of Nursing has demonstrated notable academic achievement and leadership in clinical and educational aspects of gerontology or, problem based, self-directed learning in nursing education.

**Typically Available:** 2 x \$600

**THE MCMASTER NURSING ALUMNI MEMORIAL PRIZE**

Established in 1984 and augmented in 2001 by the McMaster Nursing Alumni Branch to recognize graduates from the McMaster University School of Nursing.

**Requirements:** To be awarded to a student who, in the judgment of the School of Nursing, has demonstrated leadership while participating in undergraduate activities.

**Typically Available:** 1 x \$300

**THE GRACE SENRA-FONTES MEMORIAL PRIZE**

Established in 1989 by the graduating class (Class of '88) in association with the McMaster University Nursing Society and the McMaster Nursing Alumni Executive in memory of Grace Senra-Fontes (Class of '88) of Toronto.

**Requirements:** To be awarded to a student in Level 3 or 4 of the Nursing program and who, in the judgment of the School of Nursing, best demonstrates excellence in scholarship and leadership, and has served as a valuable role model for those qualities deemed important to success in a nursing career. Preference will be given to students enrolled in Level 4 of the Nursing Program. Typically Available: 1 x \$250

## Awards for Physician Assistant Education Program

### In-Course and Renewal Award Regulations

- In-Course Awards are monetary and non-monetary awards allocated on the basis of academic merit and, in some cases, other forms of earned merit. Non-monetary awards such as medals and books as well as monetary awards of nominal value (currently \$100 or less) are called prizes.
- In-Course Awards are available to full-time and part-time students enrolled in an undergraduate degree program (excluding the Physician Assistant and M.D. Programs), at the time of award application and selection, who are returning to McMaster to continue their studies.
- In-Course Awards requiring full-time status are available to students enrolled full-time or equivalent in both the fall and winter terms.
- In-Course Awards requiring part-time status are available to students who are not enrolled full-time in the fall and/or winter terms. In addition, true part-time awards are only available to students who have completed at least 50% of all units attempted at McMaster on a part-time basis.
- In-Course Awards are available to all domestic and international students.
- In-Course Awards are not available to second degree students unless the terms of a particular donor award specify eligibility and they have not received the award previously.
- In-Course Awards are not available to students in their graduating term.
- In-Course Awards may also consider other forms of earned merit. In order to evaluate earned merit, students may need to complete one or more additional requirements, including, but not limited to, submitting an application.
- In-Course Awards requiring an application that are determined by Cumulative Grade Point Average require a minimum Cumulative Grade Point Average of 8.0 on at least 18 graded units, while those determined by Fall-Winter Average require a minimum Fall-Winter Average of 9.5 on at least 18 graded units.
- In-Course Awards adjudicated without need of an application that are determined by Cumulative Grade Point Average require a minimum 8.0 on at least 24 graded units, while those determined by Fall-Winter Average require a minimum 9.5 on at least 24 graded units.
- Available averages, units upon which averages are calculated, program level, and enrolled units, may be used to break any ties in an award competition.
- In order to be considered for an In-Course Award by application, students must submit a complete application by the specified deadline date.
- In-Course Award applications which meet award eligibility criteria are forwarded to a selection committee for review and ranking.
- Some In-Course Awards are renewable.
- Entrance, Indigenous Entrance, and In-Course Award renewals determined by Cumulative Grade Point Average or Fall-Winter Average require a minimum 8.0 on at least 18 graded units.
- All In-Course Award payments are disbursed through the McMaster Student Account and applied to outstanding charges. A few exceptions to this regulation may be approved by the Office of the Registrar, Aid & Awards.
- In-Course Awards are typically disbursed no later than the end of September.
- In-Course Awards will be disbursed if the recipient continues to be enrolled in a McMaster degree program, or a specific McMaster program, when explicitly required by the terms of the award, or the student's record reflects they are on exchange, on letter of permission, or participating in a coop or internship opportunity at McMaster University.
- In-Course Award recipients will have their awards noted on their University transcripts. Entrance and In-Course renewals are not noted on transcripts.
- Registration in, or transfer to, another program of study and/or a change in course load may result in forfeiture of an In-Course Award or Entrance or In-Course Award renewal. Students are advised to consult with the Office of the Registrar prior to making any changes to their program of study or course load.
- If a student is approved to graduate or transfers to graduate in the fall, after the awarding decision and/or disbursement is made, the student will forfeit the award.
- Students withdrawing from courses without failure by default will forfeit their In-Course Award or Entrance or In-Course Award renewal.
- Students who forfeit their In-Course award will have their award cancelled and their transcript notation removed if forfeited in first year of payment only. Students must return the In-Course Award or Entrance or In-Course Award renewal funding to their McMaster Student Account.
- Forfeiture of a renewable Entrance or In-Course Award also cancels all future instalments of the award.
- Students wishing to defer the stated value of an In-Course Award or Entrance or In-Course Award renewal to the next academic year should make the request in writing to the Office of the Registrar, Aid & Awards. Approval is not automatic and deferrals are not normally granted for more than one academic year.
- Students holding renewable Entrance or In-Course Awards who choose to accelerate their program and to complete their degree earlier than normal by completing Spring/Summer courses and who wish to employ the benefits of their renewable Entrance and/or In-Course Awards to defray the tuition and compulsory fees for those courses should make the request in writing to the Office of the Registrar, Aid & Awards.
- The University may choose not to grant an In-Course Award in the absence of a suitable candidate; may choose to limit the number of recipients selected where funding is limited; may choose to limit the number of recipients selected where too few suitable candidates exist; and/or may choose to generate applicant pools where complete applications have not been received.
- The University may remove specific In-Course Awards from the University Calendar, may revise the terms and stated value and/or suspend the granting of In-Course Awards (e.g. donor funds).
- In-Course Awards supported by donor funds may have additional eligibility and renewal requirements.

## Awards for the Michael G. DeGroot School of Medicine

### Michael G. DeGroot School of Medicine Award Regulations

- M.D. Awards are monetary awards allocated on the basis of specific criteria, which may include a minimum expectation of academic achievement, earned merit or other miscellaneous criteria.



2. M.D. Awards are available to students in good standing enrolled in the M.D. Program.
3. M.D. Awards are available to students who are Canadian Citizens, Permanent Residents, Convention Refugees or Protected Persons of Canada.
4. Students who are not Canadian Citizens, Permanent Residents, Convention Refugees or Protected Persons of Canada are not eligible for M.D. Awards.
5. M.D. Program students may receive more than one M.D. Award up to the amount for which they are eligible as determined by the M.D. Program Office.
6. M.D. Awards may also consider other forms of earned merit. In order to evaluate earned merit, students may need to complete one or more additional requirements, including but not limited to, submitting an application.
7. In order to be considered for an M.D. Award that is a named donor award, students must submit a completed application by the specified deadline date.
8. All M.D. Award applications are evaluated for eligibility, and reviewed and ranked according to specific criteria. A selection committee may be struck depending on the award and donor requirements.
9. Students must be enrolled in the M.D. Program to have the M.D. Award payment processed.
10. If an M.D. Award is renewable, students must meet the renewal requirements specified in the award terms to receive a renewal payment.
11. All M.D. Award payments are disbursed through the McMaster Student Account and are applied to outstanding charges. A few exceptions to this regulation may be approved by the M.D. Program Office.
12. All M.D. Awards are typically disbursed no later than the end of November.
13. Forfeiture of a renewable M.D. Award also cancels all future instalments of the award.
14. Change in course load may result in forfeiture or adjustment in the value of the M.D. Award. Students are advised to consult with their M.D. Program Office prior to making any changes to their course load.
15. Students who withdraw or take a leave of absence from the program may see an adjustment in the value of their M.D. Award or see the full amount returned to the University.
16. Any adjustment made to a student's account, in order to return all or a portion of an M.D. Award to the University, will consider the balance available at the time of the adjustment and may put a student's account into deficit.
17. The University may choose not to grant an M.D. Award in the absence of a suitable candidate; may choose to limit the number of recipients selected where funding is limited; may choose to limit the number of recipients selected where too few suitable candidates exist; and/or may choose to generate applicant pools for awards by application, where complete applications have not been received.
18. The University may remove specific M.D. Awards from the University Calendar, may revise the terms and stated value and/or suspend the granting of M.D. Awards (e.g. donor funds).
19. M.D. Awards supported by donor funds may have additional eligibility requirements.

## Awards for the Michael G. DeGroot School of Medicine

### Automatically Assessed

#### THE DR. ROBERT CHU MEMORIAL AWARD

Established in 2017 by Mr. Terrence Donnelly in memory of the late Dr. Robert Chu.

**Requirements:** To be awarded to a graduating student in the Michael G. DeGroot School of Medicine who is pursuing a residency program in

radiology. To be awarded annually by the Faculty of Health Sciences on the recommendation of the Dean and Vice-President (or delegate) and the Chair of the Department of Radiology (or delegate).

### Awards by Application

#### THE JAISAL CHAUHAN RESEARCH BOOK AWARD

Established in 2015 by medical professionals in the Niagara region.

**Requirements:** To be awarded to a student from the Niagara Regional Campus of the Michael G. DeGroot School of Medicine who, in the judgment of the Assistant Dean of the Niagara Regional Campus, has demonstrated inspiring leadership during their undergraduate medical program; exceeded expectations of medical students as researchers; contributed to a successful quality improvement project in health care.

**Typically Available:** 1 x \$500

#### THE CANADIAN MEDICAL ASSOCIATION 150TH ANNIVERSARY AWARD

Established in 2017 by the Canadian Medical Association Foundation in honour of the CMA's 150th anniversary.

**Requirements:** To be awarded to a student enrolled in the Michael G. DeGroot School of Medicine, and is Canadian citizen, permanent resident, or person with protected/refugee status. The Award will be given to students who demonstrate values of medical professionalism, including: honesty and integrity, respect, responsibility and accountability, commitment to self-improvement and collaboration. Preference may be given to members of the Canadian Medical Association.

**Typically Available:** 1 x \$15,000

## Travel and Exchange Awards

### Travel and Exchange Award Regulations

1. Travel and Exchange Awards are monetary awards allocated on the basis of academic merit and, in some cases, other forms of earned merit.
2. Travel and Exchange Awards are available to full-time and part-time students enrolled in Level 2 or above of their first undergraduate degree program, at the time of award application and selection, who are returning to McMaster to continue their studies.
3. Travel and Exchange Awards requiring full-time status are available to students enrolled full-time or equivalent in both the fall and winter terms.
4. Travel and Exchange Awards are available to all domestic and international students.
5. Travel and Exchange Awards are not available to second degree students.
6. Travel and Exchange Awards are not available to students in their graduating term.
7. Students are limited to one Travel and Exchange Award per application cycle.
8. Travel and Exchange Awards are available to students with a minimum Cumulative Grade Point Average of 7.0 on a minimum of 18 graded units.
9. Available averages, units upon which averages are calculated, program level, and enrolled units may be used to break any ties in an award competition.
10. Exchange Awards are available to students participating in an approved formal exchange program during the academic year immediately following the application deadline.
11. Travel Awards are available to students travelling to earn academic credit, pursue experiential learning opportunities, complete research or projects, participate in relief efforts, volunteer or work. Some Travel Awards may be for travel within Canada, while others may support the student outside Canada or internationally. Travel Award recipients must travel during the summer, fall and/or winter terms immediately following the application deadline.

12. Travel and Exchange Awards may also consider other forms of earned merit. In order to evaluate earned merit, students may need to complete one or more additional requirements including, but not limited to, submitting an application.
13. In order to be considered for a Travel and Exchange Award by application, students must submit a complete application by the specified deadline date.
14. Travel and Exchange Award applications which meet award eligibility criteria are forwarded to a selection committee for review and ranking.
15. All Travel and Exchange Award payments are disbursed through the McMaster Student Account and applied to outstanding charges. A few exceptions to this regulation may be approved by the Office of the Registrar, Aid & Awards.
16. Travel and Exchange Awards are typically disbursed no later than the end of April.
17. Travel and Exchange Award recipients will have their awards noted on their University transcripts.
18. It is the responsibility of Travel and Exchange Award recipients to make all travel and exchange arrangements. Recipients are required to assess travel risks, have a plan of action in place for emergencies, and ensure they have proper medical and other insurance in place prior to departure.
19. Travel and Exchange Awards will not be issued for travel to areas deemed as 'do not travel areas' per Global Affairs Canada.
20. Travel and Exchange Award recipients may be required to complete a risk assessment and/or safety component and/or waiver prior to departure as dictated by other University policies. Those participating in exchange opportunities must attend mandatory Exchange Pre-Departure Orientation sessions and complete Terms for Participation Forms, Liability Waivers, and Statement of Responsibilities Forms.
21. Travel and Exchange Award recipients are asked to submit, and consent to the publication of, a report of their travel or exchange experience when they return to their studies at McMaster. Reports are submitted to the Office of the Registrar. Student submitted reports are included in the annual reports made to the Undergraduate Council Awards Committee, Undergraduate Council and Senate, and are shared with donors.
22. Travel and Exchange Awards allocated to students who do not travel or participate in their formal exchange as indicated on their application will forfeit their award.
23. Registration in, or transfer to, another program of study and/or a change in course load may result in forfeiture of a Travel and Exchange Award. Students are advised to consult with the Office of the Registrar prior to making any changes to their program of study or course load.
24. Students who forfeit their award will have their award cancelled and their transcript notation removed. Students must return the Travel and Exchange Award funding to their McMaster Student Account.
25. The University may choose not to grant a Travel and Exchange Award in the absence of a suitable candidate; may choose to limit the number of recipients selected where funding is limited; may choose to limit the number of recipients selected where too few suitable candidates exist; and/or may choose to generate applicant pools where complete applications have not been received.
26. The University may remove specific Travel and Exchange Awards from the University Calendar, may revise the terms and stated value and/or suspend the granting of Travel and Exchange Awards.
27. Travel and Exchange Awards supported by donor funds may have additional eligibility requirements.

## Travel and Exchange Awards by Application

Application details are available on Mosaic.

## Open to Two or More Faculties

### THE BEALE-LINCOLN-HALL TRAVEL SCHOLARSHIP

Established in 1996 by Arnold A. Beale in memory of his parents F. Arnold Beale and Margaret S. Beale and Mr. and Mrs. Walter Gould Lincoln and Commander Harley H. Hall, U.S.N.

**Requirements:** To be awarded to students who demonstrate high academic standing and are participating in one of McMaster's formal exchange programs. Preference will be given to students enrolled in a program in Biochemistry, Biology, Chemistry, Cognitive Science of Language, Commerce, Earth and Environmental Sciences, Engineering Physics, English, French, Geography, History, Linguistics, Materials Science, Mathematics, Physics or Religious Studies and who demonstrate a lively interest in the humanities and the human and social implications of scientific developments.

**Typically Available:** 1 x \$2,000

### THE JOHN P. EVANS TRAVEL SCHOLARSHIP

Established in 1991 by many friends, colleagues, students and graduates of McMaster University as a tribute to John (Jack) P. Evans upon his retirement as Associate Vice-President, University Services and Secretary of the Board of Governors in recognition of his 25 years of outstanding contribution to the University Community.

**Requirements:** To be awarded to a student enrolled in Level 2 or above of an Honours program with notable academic standing and has demonstrated a scholarly interest in some aspect of Asian languages, history or cultures, with preference being given to a student wishing to study in China.

**Typically Available:** 1 x \$1,500

### THE JIMMY FONG INTERNATIONAL OUTREACH TRAVEL AWARD IN ENGINEERING

Established in 2006 by Jimmy Fong, B.Eng.Mgt. (Class of '82).

**Requirements:** To be awarded to students who, in the judgment of a selection committee, demonstrate high academic achievement, and are pursuing either an international relief and development project in an underdeveloped, disadvantaged area or a study, work or co-op placement outside of North America. Preference to be given to students in the Faculty of Engineering.

**Typically Available:** 5 x \$2,500

### THE DRS. JOLIE RINGASH AND GLEN BANDIERA RENAISSANCE AWARD

Established in 2012 by Drs. Jolie Ringash and Glen Bandiera. The award, with its emphasis on experiential learning, is intended to create transformative opportunities for students from all Faculties and programs, from undergraduate to graduate and professional.

**Requirements:** The recipient of the award shall be an individual who wishes to engage in a 4-12 month, self-directed, enrichment experience outside his/her chosen program of study, and who wishes to explore a project of personal significance that will amplify the recipient's University experience while engaging in experiential learning at home or abroad.

**Typically Available:** 1 x \$25,000

### THE RUNDLE FOREIGN STUDY SCHOLARSHIP

Established in 2011 by the Rundle Foreign Study Bursary at the Hamilton Community Foundation.

**Requirements:** To be awarded to a student enrolled in Level 2 or above and who, in the judgment of the Selection Committee, has attained notable academic achievement. The purpose of the scholarship is to provide financial assistance to students who are participating in one of McMaster's formal exchange programs in a country where English is not the first language and who have graduated from a publicly funded secondary school in the Hamilton-Wentworth area.

**Typically Available:** 1 x \$2,500

### THE SUSAN VAJOCZKI LEGACY TRAVEL SCHOLARSHIP

Established in 2013 by the family, friends and colleagues in memory of Susan Vajoczki, Professor of Geography and Earth Sciences, and Director of the Centre for Leadership and Learning.

**Requirements:** To be awarded to a student who has completed at least Level 2 in any program in the Faculty of Science, Faculty of Social Sciences, or the Arts and Science Program and who, in the judgment of the School of Geography & Earth Sciences, has achieved notable academic standing, and is pursuing research in the fields of pedagogy (teaching and learning) or Earth Sciences who could benefit from travel.

**Typically Available:** 1 x \$1,000

#### **THE HOWARD P. WHIDDEN SCHOLARSHIP**

Established in 1941 by the Honourable Jacob Nicol (Class of '00) of Sherbrooke, Quebec, in honour of Chancellor Howard P. Whidden, with a view to fostering relations of friendship and understanding between French-speaking and English-speaking Canadians.

**Requirements:** To be awarded to a student who has completed six units of French and who shows ability and promise in the use of the French language. The recipient will study at a Quebec university during the summer.

**Typically Available:** 1 x \$2,500

#### **THE T. RUSSELL WILKINS MEMORIAL SCHOLARSHIPS**

Established in 1963 by bequest of Mrs. T. Russell Wilkins (B.A. '18 Brandon, M.A. '32), daughter of former Chancellor Howard P. Whidden, in memory of her husband, Dr. T. Russell Wilkins (Class of '11).

**Requirements:** Two scholarships to be awarded to students in their penultimate level of an Honours program in Arts and Science, Health Sciences or Science who have demonstrated outstanding academic achievement. In addition, the students should demonstrate a lively interest in the humanities and in the human and social implications of scientific developments. The purpose of the scholarship is to enable the winners to spend the summer before the final Fall/Winter session in travel and study outside Canada.

**Typically Available:** 2 x \$4,600 each

### **Open to the Arts and Science Program**

#### **THE CLASS OF '37 TRAVEL SCHOLARSHIP IN ARTS AND SCIENCE**

Established in 1989 by the Graduating Class of 1937 in celebration of their 50th anniversary and augmented by friends of the Arts and Science Program.

**Requirements:** To be awarded to a student who is enrolled in Level 2 or above of an Honours program in the Arts and Science Program. Applicants should have demonstrated a lively interest in developing countries. The purpose of this award is to enable the winner to spend the summer, immediately following its receipt, working and/or studying in a developing country.

**Typically Available:** 1 x \$2,500

### **Open to the DeGroot School of Business**

#### **THE MARIA CHAN SCHOLARSHIPS FOR INTERNATIONAL STUDIES IN BUSINESS**

Established in 1999 by Professor Luke Chan and his family in support of students in the DeGroot School of Business who wish to pursue academic studies abroad.

**Requirements:** A variable number of scholarships to be awarded to students participating in one of McMaster's formal exchange programs who, in the judgment of the Faculty of Business, demonstrate notable academic achievement.

**Typically Available:** 19 x \$1,000 each

#### **THE SCOTIABANK COMMERCE EXCHANGE PROGRAM AWARDS**

Established in 2011 by Scotiabank in support of students in the DeGroot School of Business who wish to pursue academic studies abroad.

**Requirements:** To be awarded to students who demonstrate notable academic achievement and are participating in one of McMaster's formal exchange programs in the DeGroot School of Business in a country in which Scotiabank has operations.

**Typically Available:** 9 x \$2,500

### **Open to the Faculty of Engineering**

#### **THE RONALD WILLIAM MERKEL TRAVEL SCHOLARSHIP IN ENGINEERING**

Established in 2008 by Brad Merkel, B.Eng.Mgt. (Class of '85).

**Requirements:** To be awarded to a student in the Faculty of Engineering who, in the judgment of a selection committee, demonstrates high academic achievement and is pursuing either a study, work or co-op placement outside of North America or an international relief or development project in an underdeveloped, disadvantaged area outside of North America. Preference to be given to a student involved with Engineers without Borders.

**Typically Available:** 3 x \$2,500

### **Open to the Faculty of Health Sciences**

#### **THE CIM INTERNATIONAL OUTREACH TRAVEL AWARD**

Established in 2006 by Michael P. Smith and CIM Limited.

**Requirements:** To be awarded to a student in the Bachelor of Health Sciences (Honours) program who will be taking Health Sciences courses in the following Spring/Summer or in the following Fall/Winter terms which include travelling and volunteering in underdeveloped, disadvantaged areas outside of Canada. The student must demonstrate contributions to the betterment of life through special initiatives.

A 500-word essay on the value of the experience in meeting the stated personal learning goals established by the student is required. Students should build into their learning goals a presentation to an external group after the travel is completed.

**Typically Available:** 1 x \$1,000

#### **THE CLARA I. ELMAN TRAVEL SCHOLARSHIPS**

Established in 2006 by Clara I. (Graham) Elman (Class of '46), Faculty member in the School of Nursing from 1949 to 1953.

**Requirements:** To be awarded to students who are enrolled in Level 3 of a B.Sc.N. program and who will be completing a Level 4 clinical course in a Canadian outpost placement.

**Typically Available:** 1 x \$1,000

#### **THE LINDY WEE WONG INTERNATIONAL OUTREACH AWARD**

Established in 2010 by Hong Eie Wong, B.Eng. (Class of '82) in honour of his wife.

**Requirements:** To be awarded to a student in the Bachelor of Health Sciences (Honours) program who will be travelling and volunteering in underdeveloped, disadvantaged areas outside of Canada and who, in the judgment of the Program, demonstrates contribution to the betterment of life through special initiatives.

**Typically Available:** 4 x \$1,000

### **Open to the Faculty of Humanities**

#### **THE A.G. ALEXANDER SCHOLARSHIPS**

Established in 1938 and augmented in 1946 by Sir Douglas Alexander, and members of his family, in memory of Archibald Grieg Alexander.

**Requirements:** A variable number of scholarships to be awarded to students enrolled in Level 2 or above on the basis of excellence in an Honours program in the Faculty of Humanities. The purpose of the scholarships is to enable the recipients to study outside Canada during the twelve months prior to the final Fall/Winter terms.

**Typically Available:** 3 x \$5,500 each

#### **THE DISCOVERY OF LANGUAGES STUDY ABROAD SCHOLARSHIP**

Established in 2011 by Linda White B.A. (Class of '80), M.A. (Class of '83).

**Requirements:** To be awarded to a student enrolled in Level 2 or above in a program in the Department of Linguistics & Languages or the Department of French, and who has attained notable academic standing. The purpose of the scholarship is to assist students with travel and study for academic credit during the Fall/Winter terms in a country where English is not the

first language. Preference given to those who are participating in one of McMaster's formal exchange programs.

Typically Available: 3 x \$2,500

#### **THE JOAN JACKSON DUNBAR TRAVEL SCHOLARSHIP**

Established in 1960 by Mayor Lloyd D. Jackson (Class of '09), LL.D (Class of '55) and Mrs. Jackson of Hamilton in memory of their daughter, Joan (Class of '40).

**Requirements:** To be awarded to a woman student enrolled in Level 3 or above of an Honours program in English for excellence in the work of the program (with emphasis on English). The winner must have secured all her secondary school education in Canada. The award is to be used for study and travel in the United Kingdom and Continental Europe during the vacation before the final Fall/Winter terms.

Typically Available: 1 x \$3,675

#### **THE GABRIELE ERASMI TRAVEL SCHOLARSHIP TO ITALY**

Established in 2003 by the Dante Alighieri Society of Hamilton, the Department of Linguistics and Languages, the Julian-Dalmatians of Hamilton, and friends, in honour of Dr. Gabriele Erasmi, distinguished Faculty member of the Department of Linguistics and Languages.

**Requirements:** To be awarded to an outstanding student who has completed Level 2 of a Humanities program. The purpose of the scholarship is to assist with the expenses of travel and study in Italy for academic credit at McMaster University. The applicant must submit a plan of study for approval.

Typically Available: 3 x \$1,000

#### **THE LIBURDI FAMILY FOUNDATION INTERNATIONAL EXCHANGE SCHOLARSHIP TRAVEL & EXCHANGE**

Established in 2019 by Joseph Liburdi in loving memory of his parents, Carlo and Domenica.

**Requirements:** To be awarded to students enrolled in the Faculty of Engineering who attain high averages and are participating in one of McMaster's formal exchange programs.

Typically Available: 1 x \$10,000

#### **THE LINGUISTICS AND LANGUAGES TRAVEL SCHOLARSHIP**

Established in 1991 by the Department of Modern Languages and Linguistics.

**Requirements:** To be awarded to students enrolled in Level 2 or above in a program in Cognitive Science of Language or Linguistics and who, in the judgment of the Department of Linguistics and Languages, attain high averages. The purpose of the scholarship is to assist with travel expenses to study and travel abroad.

Typically Available: 3 x \$1,000

#### **THE E.T. SALMON SCHOLARSHIP**

Established in 1991 by Mrs. Edward Togo Salmon in memory of her husband, world-renowned Roman historian and member of the Faculty for 43 years.

**Requirements:** To be awarded to the student enrolled in Level 3 of any Honours Classics or Honours History program, including at least 12 units of Ancient History and Archaeology, and who, in the judgment of the selection committee shows outstanding achievement and promise. The purpose of the scholarship is to enable the winner to travel and study abroad during the vacation before the final Fall/Winter term, and/or to fund the final year of study at McMaster; candidates should submit to the committee a statement of their aims and plans for study.

Typically Available: 2 x \$2,000

#### **THE ALBERT SHALOM TRAVEL SCHOLARSHIP**

Established in 1994 by family, friends and colleagues in memory of Albert Shalom, Professor of Philosophy at McMaster University from 1966 to 1991.

**Requirements:** To be awarded to a student who is enrolled in a program in Philosophy, and has, in the judgment of the Department of Philosophy, attained notable standing. Preference will be given to a student travelling and studying abroad during the summer before the final Fall/Winter term, but the scholarship could also be used to fund the final year of study at McMaster.

Typically Available: 1 x \$725

#### **THE VIOLA E. WEBSTER FOREIGN STUDY AWARD**

Established in 2012 in memory of Viola E. Webster B.A. (Class of '43) by her nephew, Ion Webster.

**Requirements:** To be granted to a student in the Faculty of Humanities who is participating in an international exchange program and who demonstrates financial need. Preference to be given to students who have taken courses in French and German.

Only current OSAP recipients are eligible.

Typically Available: 2 x \$2,500

### **Open to the Faculty of Science**

#### **THE D.M. DAVIES PRIZE**

Established in 1984 by friends, colleagues and former students in recognition of Professor Douglas Davies for his outstanding contribution to the Department of Biology during 34 years of service.

**Requirements:** To be awarded to a student who has completed Level 1 and at least an additional 30 units of an Honours program in Biology and who, in the judgment of the Department of Biology, attains a grade of at least A- in BIOLOGY 2F03 - Fundamental and Applied Ecology and who registers in BIOLOGY 3R03 - Field Biology I or BIOLOGY 4J03 - Field Biology II in the following summer session.

Typically Available: 1 x \$575

#### **THE JENNIFER J. DUNN SCHOLARSHIP IN GEOLOGY**

Established in 2012 by Jennifer J. Dunn (Class of '93).

**Requirements:** To be awarded to a student who has completed at least Level II in an Honours B.Sc. program in the School of Geography and Earth Sciences and who is pursuing experiential learning in geology through volunteerism, internship, and/or travel and study. Student must demonstrate a strong potential in geology.

Typically Available: 3 x \$2,500