

**AGENDA**

**NOTE: Members who wish to have items moved from the Consent to the Regular Agenda should contact the University Secretariat before the Senate meeting. Members may also request to have items moved when the Agenda is presented for approval.**

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**REPORT TO SENATE**  
*from the*  
**GRADUATE COUNCIL**

**For Approval**

**I. Faculty of Social Sciences (attachments)**

At its meeting on January 17<sup>th</sup>, 2022 Graduate Council approved the following:

- A change to the mode of delivery (from in person to virtual) for the Community-Engaged Research & Evaluation Diploma offered by Social Work;
- The addition of 3 new areas of specialization (Canadian Politics, Comparative Politics, and Political Theory) for the Ph.D. in Political Science.

It is now recommended,

**that Senate approve the revisions, for inclusion in the 2023-2024 *Graduate Calendar*, as recommended by the Faculty of Social Sciences and set out in the attached.**

**For Information**

**I. New Program**

At the same meeting Graduate Council approved the proposed Master of Biomedical Innovation. It was subsequently approved at the January 18<sup>th</sup> meeting of University Planning Committee.

**II. Faculty of Business**

At the same meeting Graduate Council approved the following changes:

- A change to course requirements for the Business Ph.D., removing a cancelled course in favour of a new elective
- The addition of a course to the elective options for the Blended Learning Part-Time M.B.A. program.

**III. New Award**

At the same meeting, Graduate Council approved the following new award:

**Name of Fund:** The Edna Howard Bursary

**Terms of Reference for Fund:**

Established in 2022 by the family of Edna Howard, this bursary honours the support Edna

offered graduate students through her work as a cook at The Phoenix Bar and Grill, owned and operated by the Graduate Students Association. Her food warmed the hearts of the McMaster campus community for many years until her retirement. To be granted by the School of Graduate Studies to full-time students in any program who demonstrate financial need.

[Note: A complete file for the information items listed above is available in the Graduate Council office, [cbryce@mcmaster.ca](mailto:cbryce@mcmaster.ca).]

**Recommendation for Change in Program Requirements/Procedures**

Please note the following:

- This form must be completed for all changes involving degree program requirements and procedures. Sections of this form pertaining to your requested change must be completed.
- An electronic version of this form should be emailed to the Assistant Secretary, School of Graduate Studies (cbryce@mcmaster.ca). Questions about the form can also be directed to this address.
- A representative from the department/program is required to attend the Faculty Curriculum and Policy Committee meeting during which this recommendation for change in graduate curriculum will be discussed.

Department: School of Social Work

Name of Program and Plan: Community-Engaged Research & Evaluation (ENGAGEDIP)

Degree: Graduate Diploma

**Nature of Recommendation (Please complete appropriate field(s))**

Creation of New Milestone

Change in Admission Requirements

Change in Comprehensive Examination Procedure

Change in Course Requirements

Change in the Description of a Section of the Graduate Calendar

**Please explain:** Graduate Diploma in Community-Engaged Research and Evaluation – mode of delivery to online instruction so requires Calendar wording update (see pg. 2 for details).

Other Changes

**Please explain:** Change in mode of instruction from in-person to virtual.

**Describe the existing requirement/procedure:** Mode of class instruction: In-person

**Provided a detailed description of the recommended change:** The intention is to switch the Graduate Diploma in Community Engaged Research and Evaluation to a virtual format. The mode of instruction switching from in-person to virtual will allow for students to access this course who are living outside of Hamilton, and this will make attending this program more accessible for working professionals. Offering this program virtually will support the engagement of a wide range of students from across the country who are interested in pursuing a Graduate Diploma in Community Engaged Research and Evaluation.

**Rationale for the recommended change** (How does the requirement fit into the department's program and/or tie to existing Program Learning Outcomes from the program's IQAP cyclical review?):

The rationale for the recommended change is that this program is unique to McMaster University; and it has the potential to attract students and working professionals' community-based organizations across the country who are interested in developing capacity relating to community engaged research and evaluation. By offering this program virtually, we anticipate enrolling more students because of the increased accessibility.

**Provide Implementation Date:** (Implementation date should be at the beginning of the academic year)

January 2023

**Are there any other details of the recommended change that the curriculum and policy committee should be aware of?** If yes, please explain:

Socwork 743 is also open to students enrolled in Graduate Plans in Critical Leadership in Social Services and Communities (CRTLEADMSW and CRITLEADIP)

SocSci 708 is open to students in other departments/programs for elective credit.

Socwork 744 is core course and students must be enrolled in Academic Plan in Community-Engaged Research and Evaluation (ENGAGEDIP)

**Provide a description of the recommended change to be included in the calendar** (please include a tracked-changes version of the calendar section affected):

The Graduate Diploma in Community-Engaged Research and Evaluation aims to foster critical and ethical practice in community-engaged research and evaluation. Students who complete the program will understand the historical, theoretical and ethical bases of community-based research (CBR) and be able to apply and communicate CBR principles; understand and be able to apply critical conceptual frameworks to evaluation practices in social services and communities, and identify justice-oriented alternatives or improvements; demonstrate a capacity to undertake a community-engaged research or evaluation project that reflects concepts and ethical frameworks highlighted in the program.

Candidates are enrolled on a part-time basis, and will normally complete the online program in sixteen months of study, beginning in January.

Admission

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To be eligible for admission to the Community-Engaged Research and Evaluation diploma program, applicants must have:

- A completed B.S.W. or B.A. degree with a B+ average on senior level courses;
- Experience working in social services or communities / community services.

Applications should be made to the School of Social Work prior to November 30<sup>th</sup> (international deadline: July 7<sup>th</sup>) for admission the following January.

#### Curriculum

Students complete the diploma online on a part-time basis. There is no requirement for students to be available on the McMaster campus. Students must have suitable access to internet and computing, and may be required to participate during business hours on Eastern Standard Time. To be awarded the diploma, students are required to complete the following online courses with minimum B- standing (70%).

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Two half courses:

- 
- [SOCSCI 708 / Critical Approaches to Community Based Research](#) (online)
  - [SOC WORK 743 / Critical Approaches to Evidence and Evaluation in Social Services & Communities](#) (online)

One full course (over two terms):

- 
- [SOC WORK 744 / Research Experience and Seminar](#) (online)

Program duration is normally 16 months. Except by permission of the Social Work Graduate Chair, students may take no more than one course concurrently and must complete the courses in the order listed above. Each course is offered once per calendar year.

#### Additional Information

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Students entering the Community-Engaged Research and Evaluation diploma program who have already successfully completed [SOC WORK 743](#) or [SOCSCI 708](#) may receive one of these courses as advanced credit if approved by the School of Social Work's Graduate Chair.

#### Contact Information for the recommended change:

**Name:** Ameil Joseph, Graduate Chair

**Email:** [ameilj@mcmaster.ca](mailto:ameilj@mcmaster.ca)

**Date Submitted:** November 4, 2022

**Recommendation for Change in Program Requirements/Procedures**

Please note the following:

- This form must be completed for all changes involving degree program requirements and procedures. Sections of this form pertaining to your requested change must be completed.
- An electronic version of this form should be emailed to the Assistant Secretary, School of Graduate Studies (cbryce@mcmaster.ca). Questions about the form can also be directed to this address.
- A representative from the department/program is required to attend the Faculty Curriculum and Policy Committee meeting during which this recommendation for change in graduate curriculum will be discussed.

Department: Political Science

Name of Program and Plan: GSSPH / POLSPHD

Degree: Ph.D. Political Science

**Nature of Recommendation (Please complete appropriate field(s))**

Is this change the result of an IQAP Review: Yes  No

Creation of New Milestone

Change in Admission Requirements

Change in Comprehensive Examination Procedure

Change in Course Requirements

Change in the Description of a Section of the Graduate Calendar

**Please explain:** Changes will be reflected in changes to the current calendar copy (attached)

Other Changes

**Please explain:** Addition of other areas of specialization to the PhD program in Political Science.



**Describe the existing requirement/procedure:** Even though students will graduate with a PhD in Political Science they presently have the option of selecting a specialization in either International Relations or Comparative Public Policy. Due to faculty expertise in other areas of specialization the department would also like to offer the subfields of Canadian Politics, Comparative Politics, and Political Theory. This will now bring the area of specialization from 2 to 5 areas.

**Provided a detailed description of the recommended change:** see attached revised calendar copy for 2023

**Rationale for the recommended change** (How does the requirement fit into the department's program and/or tie to existing Program Learning Outcomes from the program's IQAP cyclical review?): This will allow the department to better use the considerable supervisory expertise in the existing subfields of Canadian Politics, Comparative Politics and Political Theory. The addition of the new areas of specialization will tie into the department's existing learning outcomes.

**Provide Implementation Date:** (Implementation date should be at the beginning of the academic year)

Effective September 1, 2023

**Are there any other details of the recommended change that the curriculum and policy committee should be aware of?** If yes, please explain:

The proposed changes will be achieved on a resource neutral basis. The total number of students to be admitted to the PhD program will remain consistent with previous years. In the past five years, all the courses necessary to meet the requirements of the proposed five PhD fields have been offered each year. To mount the necessary courses, therefore, requires no additional resources. In terms of faculty workload, the changes will redistribute work to a broader range of faculty members than is currently the case. Supervisions and supervisory committee memberships will be distributed more widely. Expanding the range of major fields will make better use of existing faculty expertise and provide relief to some faculty members in the current two main fields (IR and CPP).

**Provide a description of the recommended change to be included in the calendar** (please include a tracked-changes version of the calendar section affected):

See attached

**Contact Information for the recommended change**

**Name:** Peter Nyers

**Email:** [nyersp@mcmaster.ca](mailto:nyersp@mcmaster.ca) **Ext:** 23887

**Date Submitted:** October 31, 2022

## Political Science, Ph.D.

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### Ph.D. Degree

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The Department of Political Science at McMaster University offers the Ph.D. degree in the fields of Canadian Politics, Comparative Politics, Comparative Public Policy, International Relations, and Political Theory.

Graduands can expect to be qualified to conduct research and teach at the university level in all fields.

#### A. Admission Procedures

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Admission to the Ph.D. program normally will require a M.A. degree with an average of at least an A- (A minus) from a recognized university. Applicants must complete the required online McMaster application form, arrange to have 3 academic references submitted to the Department, submit one original transcript(s) from all universities attended and evidence of English proficiency where required (i.e., TOEFL), resume/CV, and submit a statement of their research interests (maximum one page, single spaced) and reasons for choosing McMaster University for their Ph.D. degree in Political Science. **The deadline for submission of applications can be found on the [Department of Political Science website](#).**

#### B. Degree Requirements

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Normally, candidates for the Ph.D. will:

1. Complete 18 units (6 half courses) of course work beyond the M.A. level
2. Demonstrate reading and research competence in an approved language other than English
3. Complete required comprehensive examinations in Major Field 1 and one other in Major Field 2; and
4. Submit a thesis on an approved subject and defend it by oral examination.

#### Required Courses

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##### For Students in Canadian Politics

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- POLSCI 796 / Research Design and Methods
- TWO** additional courses in Canadian Politics, **one** of which shall be
- POLSCI 760 / Political Institutions of the Canadian State
- OR**
- POLSCI 761 / The Social, Cultural and Economic Foundations of Canadian politics

#### For Students in Comparative Politics

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- POLSCI 740 / Theories of Comparative Politics
  - POLSCI 796 / Research Design and Methods
- ONE** other from the following list:
- POLSCI 706 / Comparative Politics of Health Policy
  - POLSCI 716 / Comparative Authoritarianism
  - POLSCI 730 / Technology and Politics
  - POLSCI 732 / Laboratories of Democracy? Public Policy in Canada and other Federal Systems
  - POLSCI 746 / Issues in Comparative Politics
  - POLSCI 748 / Democracy and Diversity
  - POLSCI 749 / Topics in Gender and Politics
  - POLSCI 762 / Comparative Political Economy

#### For Students in Comparative Public Policy

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- POLSCI 783 / Comparative Public Policy
- POLSCI 784 / Quantitative Political and Policy Analysis
- POLSCI 796 / Research Design and Methods

#### For Students in International Politics

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- POLSCI 772 / Theories of International Politics
- POLSCI 774 / Global Political Economy
- POLSCI 796 / Research Design and Methods

#### For Students in Political Theory

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- POLSCI 796 / Research Design and Methods
- TWO** other courses from the following list:
- POLSCI 715 / Liberalism and Imperialism
  - POLSCI 734 / Marx and Marxisms
  - POLSCI 750 / Issues in Political Theory
  - POLSCI 755 / Lying in Politics
  - POLSCI 756 / Politics and Its Others
  - POLSCI 757 / Theories of Political Community
  - POLSCI 758 / Cosmopolitanism and Its Critics

#### Additional Information

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Other approved courses will be drawn from other departmental courses, and courses offered by other departments and schools. At least three of these selected units should be from Major Field 2.

All courses are half courses (three units) unless otherwise specified.

### C. Supervisors and Supervisory Committees

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Successful applicants will be assigned a temporary supervisor of studies upon admission. Not later than six months following arrival, a supervisory committee for each Ph.D. student will be appointed by the Graduate Committee, on the recommendation of the student and a willing thesis supervisor. This committee will consist of at least three members: a thesis supervisor, one other member of the Department and a third member, whose scholarly interests include the area of the student's main interest, and who may be from outside the Department.

### D. Comprehensive Examinations

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Students in the Ph.D. program will write comprehensive examinations in two fields.

#### For Students in Canadian Politics

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Students will write comprehensive examinations in two fields – Canadian Politics and a second field drawn from one of Comparative Politics, Comparative Public Policy, International Relations, or Political Theory.

#### **Major Field 1**

In the Canadian Politics field, students will write an examination covering the following subfields of Canadian Politics:

- Institutions
- Representation
- Public Policy and Governance

#### **Major Field 2**

To be selected from:

- Comparative Politics
- Comparative Public Policy
- International Relations
- Political Theory

Students are normally required to have completed at least three units beyond the M.A. level at McMaster in this area prior to writing the comprehensive examination.

#### For Students in Comparative Politics

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Students will write comprehensive examinations in two fields – Comparative Politics and a second field drawn from one of Canadian Politics, Comparative Public Policy, International Relations, or Political Theory.

**Major Field 1**

In the Comparative Politics field, students will write an examination covering the following subfields of Comparative Politics.

- Theories and Approaches of Comparative Politics
- Comparative Methods
- Contemporary Themes in Comparative Politics

**Major Field 2**

To be selected from:

- Canadian Politics
- Comparative Public Policy
- International Relations
- Political Theory

Students are normally required to have completed at least three units beyond the M.A. level at McMaster in this area prior to writing their comprehensive examination.

[For Students in Comparative Public Policy](#)

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Students will write comprehensive examinations in two fields – Comparative Public Policy and a second field drawn from one of Canadian Politics, Comparative Politics, International Relations, or Political Theory.

**Major Field 1**

- Theories and Approaches to Comparative Public Policy
- Public Administration
- International Dimensions of Public Policy

**Major Field 2**

To be selected from:

- Canadian Politics
- Comparative Politics
- International Relations
- Political Theory

Students are normally required to have completed at least three units beyond the M.A. level at McMaster in this area prior to writing their comprehensive examination.

### For Students in International Relations

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Students will write comprehensive examinations in two fields – International Relations and a second field drawn from one of Canadian Politics, Comparative Politics, Comparative Public Policy, or Political Theory.

#### Major Field 1

- International Relations Theory / State of the Field
- Global Political Economy
- Globalization, Governance and security

#### Major Field 2

To be selected from:

- Canadian Politics
- Comparative Politics
- Comparative Public Policy
- Political Theory

Students are normally required to have completed at least three units beyond the M.A. level at McMaster in this area prior to writing their comprehensive examination.

### For Students in Political Theory

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Students will write comprehensive examinations in two fields – Political Theory and a second field drawn from one of Canadian Politics, Comparative Politics, Comparative Public Policy, or International Relations.

#### Major Field 1

- History of Political Thought
- Contemporary and Critical Theory
- International Political Theory

#### Major Field 2

To be selected from:

- Canadian Politics
- Comparative Politics
- Comparative Public Policy
- International Relations

Students are normally required to have completed at least three units beyond the M.A. level at McMaster in this area prior to writing their comprehensive examination.

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### E. Other Regulations

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Applicants should consult the Graduate Calendar for a complete listing of Regulations of the Degree of Doctor of Philosophy.

**REPORT TO SENATE**  
from the  
**UNDERGRADUATE COUNCIL**

**FOR APPROVAL**

**I. Certificates and Diplomas Section of the 2023-2024 Undergraduate Calendar**

At its meeting on January 24, 2023, the Undergraduate Council approved, for recommendation to Senate, two new concurrent certificates from the Faculties of Humanities and Science, as well as revisions to nine existing certificates from the Faculties of Health Sciences, Humanities, and Science, for inclusion in the 2023-2024 Undergraduate Calendar. Further details are contained in the circulated materials.

**i. Faculty of Health Sciences**

Revisions to existing concurrent certificate programs in: Biomedical Sciences (BMS), Health Humanities and Social Sciences, Immunology, Microbiology & Virology (IMV)

**ii. Faculty of Humanities**

New concurrent certificate program: Applied Linguistics Certificate (ALC)  
Revisions to existing concurrent certificate programs: Applied Ethics and Policy (CAEP), Creative Writing and Narrative Arts (CWNA), Critical Curatorial Studies (CCCS), Language of Medicine and Health, Essential French.

**iii. Faculty of Science**

New concurrent certificate program in Science Communications  
Revisions to the existing concurrent certificate in Urban Studies and Planning

It is now recommended,

**that Senate approve two new concurrent certificate programs, and revisions to nine existing concurrent certificate programs for inclusion in the 2023-2024 Undergraduate Calendar, as set out in the attached.**

**II. New Certificate of Completion Program**

At the same meeting, the Undergraduate Council approved, for recommendation to Senate, the proposal for the McMaster STEP Certificate Program. Details of the program are contained within the circulated materials.



Approval of this item is subject to approval by the University Planning Committee on February 8, 2023.

**a. McMaster STEP Certificate Program**

It is now recommended,

**that Senate approve the McMaster STEP Certificate Program, as set out in the attached.**

**III. Curriculum Revisions for Inclusion in the 2023-2024 Undergraduate Calendar**

At its meeting on December 13, 2022, Undergraduate Council approved, for recommendation to Senate, one new program and major program revisions from the Arts & Science Program and the Faculty of Social Sciences, for inclusion in the 2023-2024 Undergraduate Calendar.

At its meeting on January 24, 2023, the Undergraduate Council also approved revisions to the Faculty of Health Sciences General Academic Regulations to introduce the Biomedical Discovery and Commercialization Exit (B.H.Sc.) as an exit degree, and revisions to the academic general regulations for Aid & Awards from the Office of the Registrar, also for inclusion in the 2023-2024 Undergraduate Calendar.

Approval of items i. through ii. are subject to approval at the University Planning Committee on February 8, 2023.

**i. Arts & Science Program**

Combined Honours Program, Arts & Science and iArts (Integrated Arts)

**ii. Faculty of Social Sciences**

Honours Bachelor of Arts (B.A.) in Economics Co-op  
 Honours Bachelor of Arts (B.A.) in Work and Labour Studies Co-op  
 Honours Bachelor of Arts (B.A.) in Political Science Co-op  
 Honours Bachelor of Arts (B.A.) in Social Psychology (Research Specialist Option)

**iii. Faculty of Health Sciences**

Biomedical Discovery and Commercialization Exit (B.H.Sc.)

**iv. Office of the Registrar**

Revisions to the Academic General Regulations for Aid & Awards

The following omnibus motion will be presented at the Senate meeting held on February 8, 2023. This motion includes approval of items i. through iv., as noted below.

It is now recommended,

**that Senate approve one new program and major program and curriculum revisions for inclusion in the 2023-2024 Undergraduate Calendar.**

**i. Arts and Science Program**

Motion:

**that Senate approve the establishment of the *Combined Honours Program, Arts & Science and iArts (Integrated Arts)* for inclusion in the 2023-2024 Undergraduate Calendar, as set out in the attached.**

**ii. Faculty of Social Sciences**

Motion:

**that Senate approve revisions to include the *Honours Bachelor of Arts (B.A.) in Economics Co-op* program, the *Honours Bachelor of Arts (B.A.) in Work and Labour Studies Co-op* program, the *Honours Bachelor of Arts (B.A.) in Political Science Co-op* program and the *Honours Bachelor of Arts (B.A.) in Social Psychology (Research Specialist Option)*, for inclusion in the 2023-2024 Undergraduate Calendar, as set out in the attached.**

**iii. Faculty of Health Sciences**

Motion:

**that Senate approve revisions to the Faculty of Health Sciences General Academic Regulations to introduce the *Biomedical Discovery and Commercialization Exit (B.H.Sc.)* as an exit degree, for inclusion in the 2023-2024 Undergraduate Calendar, as set out in the attached.**

**iv. Office of the Registrar**

Motion:

**that Senate approve revisions to the academic general regulations for *Aid & Awards* for inclusion in the 2023-2024 Undergraduate Calendar, as set out in the attached.**

**IV. Curriculum Addenda for Inclusion in the 2023-2024 Undergraduate Calendar**

At the same meeting on January 24<sup>th</sup>, 2023, the Undergraduate Council approved, for recommendation to Senate, changes to Admission Requirements, Application Requirements and General Academic Regulations for inclusion in the 2023-2024 Undergraduate Calendar from the Office of the Registrar.

**i. Office of the Registrar**

It is now recommended,

**that Senate approve changes to Admission Requirements, Application Requirements and General Academic Regulations, for inclusion in the 2023-2024 Undergraduate Calendar, as set out in the attached.**

**FOR INFORMATION**

**V. Terms of Award**

At the same meeting, the Undergraduate Council approved one new award, four award terms, five new bursaries, changes to fifteen bursary terms, and fourteen bursaries with curriculum name changes.

**a. New Awards**

The Brent Layton Memorial Academic Grant

**b. Changes to Award Terms**

The Class of 1956, 50th Anniversary Scholarship

The Beauty Counselors of Canada Scholarship

The De Villiers-Mahaffy Merit Scholarship

The Eva Elizabeth and Lloyd Edward May Science Scholarship

**c. Proposed New Bursaries**

The Robert G Burnet Bursary

The Helping Hands Bursary

The McNamara Family Bursary

The Edie M Yeomans Bursary in Fine Arts

The Department of Medicine Bursary for Indigenous Medical Students

**d. Changes to Bursary Terms**

The Jennifer and Theodore Arcand English Bursary

The Fred and Norma Bidwell Bursary

The Sylvia Bowerbank Memorial Bursary

The Norman Nathaniel Caskey Bursaries

The Beverly Coleman Memorial Bursary

The Dr. Holland and Mrs. Elvira Peterson Bursary

The Elvira and Holland Peterson Bursary

The Marie Ireland Bush Memorial Bursaries

The Lahren Lamb Memorial Bursary

The James RA Langs Bursary in the Arts

The Mary Romeo Bursary in Art History

The Spallacci Group Bursary  
The Clifford Johnson Webster Academic Grant  
The Mary Dryden Willis Academic Grant  
The Sheila Zack Memorial Bursary

**e. Bursaries with Curriculum Name Change Only**

The Norma Berti Bursary  
The Jodie Anne Bull Memorial Bursaries  
The Ben F. Desroches Bursaries  
The Bill Fuller Bursary  
The Hamilton & District Labour Council Bursary  
The Susan and Brian Hassall Bursary  
The John B. Ibister Bursary  
The Bob MacKenzie Bursary  
The Enrico Henry Mancinelli Bursaries  
The Lawrence McBrearty Bursary  
The William F. Scandlan Bursaries  
The Social Sciences Society Bursaries  
The United Steelworkers of America Bursary  
The Lynn R. Williams Bursary

**VI. Curriculum Revisions and Addenda for Inclusion in the 2023-2024 Undergraduate Calendar**

At the same meeting, the Undergraduate Council received for approval, minor academic regulations, and minor curriculum revisions from the following programs. This also included the Minor in Impact of Infectious Disease on Individuals and Society as recommended by the Faculty of Health Sciences.

- a) Faculty of Health Sciences
- b) Faculty of Science
- c) Office of the Registrar

**VII. Sessional Dates for 2023-2024**

At the same meeting, the Undergraduate Council received and approved the Sessional Dates for 2023-2024.

Documents detailing items for information are available for review on the [Secretariat's website](#).

**Senate: FOR APPROVAL/INFORMATION  
February 8, 2023**

### Changes to Concurrent Certificates

## **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

1. In order to obtain the BMS Certificate, at least 12 units (above Level 1) must be elective to the degree.
2. 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
- BIOCHEM 2L06 – Inquiry in Biomedical Techniques

***Rationale:** BIOCHEM 2L06 also provides foundational learning in biomedical research.*

## **Concurrent Certificate in Health Humanities and Social Sciences**

The Concurrent Certificate in Health Humanities & Social Sciences (HHSS Certificate) is designed to provide students from many disciplines with an interest in the health humanities and social sciences with an opportunity to develop an academic focus in this area, with the HHSS Certificate serving to recognize that they have gained core knowledge in this area through their coursework. For these purposes, HHSS is understood as the application of creative or fine arts (art, music, performing arts) and humanities and social sciences disciplines (eg. literary studies, languages, law, history, philosophy, religion, sociology, anthropology, etc.) to discuss, express, understand, or promote human health and well-being.

Certificate Requirements

Any student in an undergraduate program at McMaster may declare the HHSS Certificate at the time of graduation provided that they satisfy the following requirements:

Note

- Transfer credits or substitutions may be considered for credit toward the HHSS Certificate by submitting a request to the Assistant Dean - BHSc (Hons) Program.

18 units  
from

- the following list; at least 9 units must be elective to the student's degree, and at least 9 units must be taken from outside the student's home faculty.

Courses in the Arts & Science Program

- ARTSSCI 4CT3 - Medical Humanities Inquiry
- ARTSSCI 4HS3 - History of Science Inquiry

Courses in the Faculty of Health Sciences

- HTHSCI 3CC3 - Theatre for Development
- HTHSCI 3EE3 - Biomedical Graphics
- HTHSCI 3HL3 - Health Law: Current and Emerging Issues
- HTHSCI 3L03 - Introduction to Bioethics
- HTHSCI 3MU3 - Music, Health, & the Community
- HTHSCI 3N03 - Written Communication in Health Sciences I
- HTHSCI 4DN3 - Dance in Health and Wellness
- HTHSCI 4MS3 - The Social Lives of Molecules
- HTHSCI 4NN3 - Written Communication in Health Sciences II
- HTHSCI 4TE3 - The Teaching Hospital

Courses in the Faculty of Humanities

- ARTHIST 2AA3 - ~~Introduction to the Practice of Art Therapy~~
- ART 2AA3 - Introduction to the Practice of Art Therapy
- CLASSICS 2MT3 - Ancient Roots of Medical Terminology
- CLASSICS 3MT3 - Advanced Ancient Roots of Medical Terminology
- ENGLISH 2S03 - ~~Spectacular Bodies~~
- ENGLISH 2NH3 - Narratives of Health
- ENGLISH 4AR3 - ~~Rhetoric, Culture, Catastrophe: AIDS and its Representations~~
- GENDRST 4A03 - ~~Stories, bodies, archives: un/Learning in Movements~~
- HISTORY 1Q03 - History of Medicine
- HISTORY 4FF3 - History of Health and Medicine
- LINGUIST 3AS3 - Language and Communication in Autism Spectrum Disorder
- LINGUIST 3DS3 - ASL & Deaf Studies
- MUSIC 2MU3 - Introduction to Music Therapy Research
- MUSIC 2MT3 - Introduction to the Practice of Music Therapy
- PEACJUST 2XX3 - Social & Structural Determinants of Health
- PEACJUST 3B03 - Peace-Building and Health Initiatives
- PEACJUST 4G03 - Peace Through Health: Praxis
- PEACJUST 4L03 - Peace, Environment and Health
- PEACEST 3B03
- PEACEST 4G03

- PEACEST 4L03
- PHILOS 2D03 - Bioethics
- PHILOS 2U03 - Philosophy of Health and Medicine
- PHILOS 3C03 - Advanced Bioethics
- PHILOS 3D03 - Philosophy of Science
- PHILOS 3GH3 - Global Health Ethics

**Rationale:**

*Remove GENDRST 4A03. Course no longer being offered as instructed by the Gender & Social Justice/Gender Studies program*

*Remove ENGLISH 2S0. Course no longer being offered as instructed by the English and Cultural Studies Program.*

*Remove ENGLISH 4AR3. Course no longer being offered as instructed by the English and Cultural Studies Program.*

*Change ARTHIST 2AA3 to ART 2AA3. Course change as instructed by the Faculty of Humanities – School of Arts.*

## **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. DeGroot Centre for Learning and Discovery, Room 3300, ext. 22815.

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**

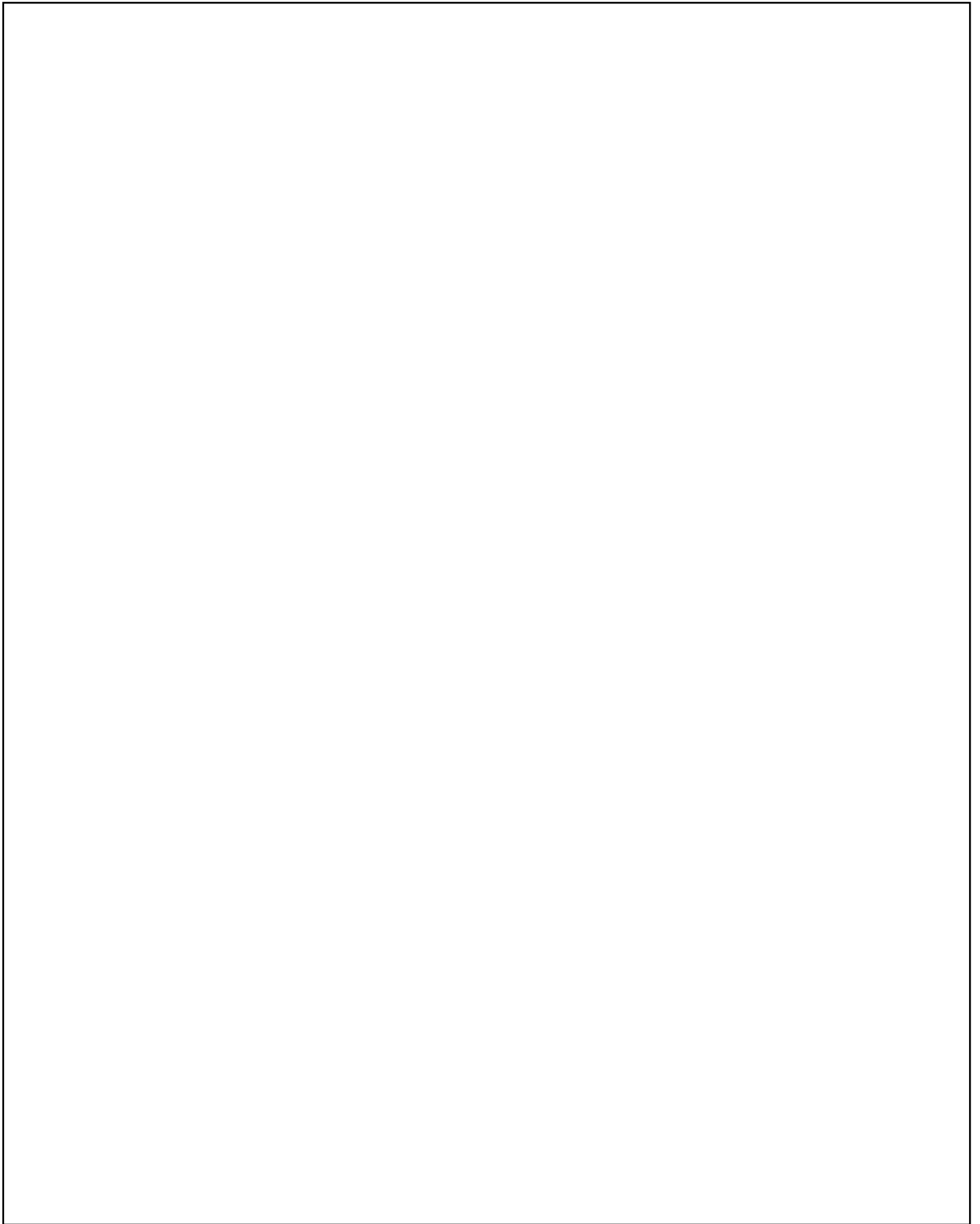
Completion of 15 units from *Course Lists A, B, and C*, with at least 3 units from *Course List A* and at least 3 units from *Course List B*.

#### **Course List A**

#### **Foundational Microbiology & Virology-Immunology**

- BIOTECH 3IV3 - Immunology and Virology
- HTHSCI 3I03 - Introductory Immunology

**Rationale:** *the previous title was a mistake.*





**REPORT TO UNDERGRADUATE COUNCIL**

**FACULTY OF HUMANITIES  
SUMMARY OF CURRICULUM CHANGES TO CERTIFICATE AND DIPLOMA PROGRAMS  
FOR THE 2023-24 CALENDAR**

**NEW PROGRAMS**

- Concurrent Certificate: Applied Linguistics Certificate (ALC)

**REVISION TO EXISTING PROGRAMS**

- Concurrent Certificate for Applied Ethics and Policy (CAEP)
- Concurrent Certificate in Creative Writing and Narrative Arts (CWNA)
- Concurrent Certificate in Critical Curatorial Studies (CCCS)
- Concurrent Certificate in the Language of Medicine and Health
- Concurrent Certificate in Essential French



For a complete review of all changes, please refer to the November 2022 Faculty of Humanities Report to Undergraduate Council for changes to the 2023-2024 Undergraduate Calendar, found at <https://www.humanities.mcmaster.ca/about-the-faculty-of-humanities/faculty-meetings/>

*As approved by the Faculty of Humanities, November 15, 2022*

## **NEW PROGRAMS:**

### **Applied Linguistics Certificate**

The Applied Linguistics Certificate (ALC) is designed to prepare undergraduate students from Linguistics and Languages, as well as other disciplines, to work on practical and applied issues that involve language related services and projects. Students who obtain the certificate will be able to contribute to teamwork identifying and solving language challenges related to educational policies, international relations, and novel communication technologies. The Certificate will recognize students for having gained skills in applied language studies and critical reasoning about linguistic issues, 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:

1. Students must be enrolled in an undergraduate program at McMaster University.
2. Students must have completed 18 units of Linguistics courses listed below, including 6 units of introductory Level I courses (LINGUIST 1A03 and 1AA3; or 1Z03 and 1ZZ3; or 1E03 and 1EE3) and 3 units of LINGUIST 3AA3 (formerly 4AA3).

### **Notes**

1. Students enrolled in Linguistics and the Cognitive Science of Language programs must take at least 6 units (2 courses) designated for the certificate beyond the requirements of their programs.
2. Students wishing to complete both should note that no more than 6 units (the required LINGUIST 1A03 and 1AA3) may be double-counted toward both the Certificate's requirements and the Minor in Linguistics.
3. Students opting for the certificate program are free to request transfer credit in lieu of any other certificate course requirement. In consultation with their Faculty Advising Office, the student may submit such a request to the undergraduate counsellor in the Linguistics and Cognitive Science of Language programs (via [lingdept@mcmaster.ca](mailto:lingdept@mcmaster.ca)) at any time.
4. It is entirely the student's responsibility to make sure that at the time of graduation, all requirements of the certificate as enumerated above have been fulfilled.

### **Requirements:**

18 units total

#### **6 units:**

- LINGUIST 1A03 and 1AA3; or
- LINGUIST 1Z03 and 1ZZ3; or
- LINGUIST 1E03 and 1EE3.

#### **3 units:**

- LINGUIST 3AA3 - Applied Linguistics

#### **9 units (at least 6 units from Level III):**

- LINGUIST 2E03 - The Nature of Texts: From Slang to Formal Discourse
- LINGUIST 2FL3 - Introduction to Forensic Linguistics
- LINGUIST 2S03 - Language and Society

- LINGUIST 3E03 - Teaching English as a Second Language (ESL)
- LINGUIST 3LA3 - Introduction to Second Language Acquisition
- LINGUIST 3PG3: Introduction to Programming for Linguists
- LINGUIST 3TT3 - Perspectives on Translation

**Rationale:** *The Department of Linguistics & Languages is introducing a new concurrent certificate in Applied Linguistics. This certificate is designed to prepare undergraduate students from Linguistics and Languages, as well as other disciplines, to work on practical and applied issues that involve language related services and projects.*

**REVISION TO EXISTING PROGRAMS:**

**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:

1. 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 one of PHILOS 2D03 or 2YY3. 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.
2. The student must complete 15 units in accordance with the following requirements.
3. Students who entered CAEP prior to Fall 2022 may continue to proceed with requirements as listed in the year of their entry into the certificate. Students are advised to consult the 2021-2022 Undergraduate Calendar for these earlier requirements.

**Notes**

1. Students accepted and enrolled in the Justice, Political Philosophy, and Law Honours BA Program are not eligible to apply for the Certificate.
2. 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.
3. Students who declare the certificate are precluded from declaring a philosophy minor.
4. 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](mailto:philadm@mcmaster.ca)) at any time.
5. 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.
6. Integrated Business and Humanities students may substitute IBH 2BD3 for PHILOS 2D03.

7. Students who had previously taken PHILOS 2S03 may substitute this course for one of: PHILOS 2D03 (if not previously completed), PHILOS 2G03, PHILOS 2N03, PHILOS 2TT3 or PHILOS 2YY3 (if not previously completed).

Requirements

15 units total

3 units

from

- PHILOS 2D03 - Bioethics
- PHILOS 2YY3 - Ethics

3 units

from

- PHILOS 2D03 - Bioethics (*if not previously completed*)
- PHILOS 2G03 - Social and Political Issues
- PHILOS 2N03 - Business Ethics
- ~~PHILOS 2S03 - History of Political Philosophy~~
- PHILOS 2TT3 - Ethical Issues in Communication
- PHILOS 2YY3 - Ethics (*if not previously completed*)

3 units

from

- PHILOS 3C03 - Advanced Bioethics
- PHILOS 3CC3 - Advanced Ethics
- PHILOS 3GH3 - Global Health Ethics

3 units

from

- PHILOS 3I03 - Philosophy and Feminism
- PHILOS 3L03 - Environmental Philosophy
- PHILOS 3N03 - Political Philosophy
- PHILOS 3Q03 - Philosophy of Law
- PHILOS 3T03 - Philosophy and Race

3 units

- PHILOS 4V03 - Multidisciplinary Workshop in Applied Ethics and Policy

**Rationale:** Updating of program requirements, to reflect change of prerequisite for PHILOS 2S03.

**Concurrent Certificate in Creative Writing and Narrative Arts (CWNA)**

**Department of English and Cultural Studies**

Chester New Hall, Room 321, ext 24491

<https://english.humanities.mcmaster.ca/>

The Concurrent Certificate in Creative Writing and Narrative Arts (CWNA) is designed for students who wish to develop their creative writing skills through workshops, groups, public-facing community work, and individual projects. Students will also enrol in other English and Cultural Studies courses to ensure they gain exposure both to the creative practice, techniques, and possibilities to be found in a variety of genres and media, and to the perspectives and learning objectives of undergraduate study in English and Cultural Studies. In their final year of study, students will participate in a series of workshops, culminating in a creative writing capstone project.

**Certificate Requirements**

Any student in an undergraduate program at McMaster may declare the certificate at the time of graduation and upon completion of each of the following requirements:

1. The student must be accepted by the Creative Writing and Narrative Arts (CWNA) Selection Committee.  
**Enrolment in this Certificate is limited and possession of the published minimum requirements does**

**not guarantee admission.** The CWNA Selection Committee will consider supplemental applications ~~soon~~ after the end of Winter term of each academic in March of each year. Applicants must be enrolled in an undergraduate program at McMaster University and have completed at least one of ENGLISH 2CW3, 3CP3, or 3CW3 and three units of any other English and Cultural Studies course. The CWNA Selection Committee's selections will be made on the basis of the student's cumulative grades and their supplemental application. (See *Note 1* below.)

2. The student must complete 18 units in accordance with the following requirements.

#### Notes

1. Students must complete a supplemental application for admission, due ~~at the time of program selection in March~~ for the next academic year. This application includes a writing portfolio of 10 double-spaced pages of original creative writing in more than one genre. Supplemental applications information will be available on the English and Cultural Studies website when the application period is open.
2. Students not accepted in the CWNA Concurrent Certificate may take open Level 2 and Level 3 Creative Writing courses as electives, as space permits; please note that enrolment in ENGLISH 3CR3 and 4CC3 are restricted to students accepted to the Certificate and enrolment in ENGLISH 4FW3 and 4SD3 is restricted to students in an English and Cultural Studies Honours or Combined Honours BA program.
3. Any student wishing to also complete the Minor in English and Cultural Studies should make note that no more than 6 units may be double-counted toward both the concurrent certificate and minor requirements.
4. Note that acceptance by the Selection Committee is distinct from the successful declaration of the Certificate, and a student's acceptance 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 have been fulfilled.

#### Requirements

*18 units total*

3 units

- ENGLISH 2CW3 - Genre in Creative Writing

6 units

from

- ENGLISH 3CP3 - Writing Practices
- ENGLISH 3CR3 - Writing Out
- ENGLISH 3CW3 - Creating Writing in/for/with Communities
- ENGLISH 4FW3 - Forms of Creative Writing
- ENGLISH 4SD3 - Sentenced to Death

3 units

- ENGLISH 4CC3 - Creative Writing Capstone

6 units

- Any Level II or III ENGLISH courses apart from the Creative Writing courses specified above

**Rationale:** *After going through the first intake for the CWNA certificate, we realized the original deadline did not give sufficient time before enrollment begins to get students registered into the certificate. An earlier deadline date of March will allow for a sufficient review period. Additional changes reference the inclusion of ENGLISH 4SD3 to the list of courses students may choose from to take 6 units of creative writing.*

#### **Concurrent Certificate in Critical Curatorial Studies (CCCS)**

##### **School of the Arts**

Togo Salmon Hall (TSH), Room 414, ext. 24275

<https://sota.humanities.mcmaster.ca/>

The Concurrent Certificate in Curatorial Studies (CCCS) aims to broaden students' understandings of and provide training and mentoring in critical approaches to contemporary curatorial studies in the arts through a partnership

with the School of the Arts, the McMaster Museum of Art, and the Art Gallery of Hamilton. The certificate will leverage the scale and strength of the Hamilton arts community to offer experiential, practical, and strategic learning initiatives. The certificate fills a critical need for students to learn about and gain professional knowledge for the pursuit of graduate studies, professional programs, and employment opportunities in the fields of in museum and gallery curating, museum education, and community and cultural arts administration. A key objective of the certificate is to help students develop skills and deeper understandings and knowledge of anti-oppressive, decoloniality, and transformative frameworks through course work including a final capstone course that includes experiential learning in the field.

Centering transformative and re-distributive justice, the certificate in curatorial studies will consider the unmaking and remaking of art institutions and critically examine the role of curators in the future of art institutions.

The certificate in Curatorial Studies is designed for students across a range of disciplines in Humanities including but not limited to: iArts, Gender Studies & Social Justice, Global Peace and Social Justice, English & Cultural Studies, History, Classics, Greek and Roman Studies, Communications Studies, Media Arts, and Philosophy.

**Note**

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*

3 units  
from

- IARTS 1PA3 - Perspectives A: Arts in Society: Social Constructions of Class, Race and Gender
- IARTS 1PB3 - Perspectives B: Arts in Society: Technology and the Environment

3 units

- IARTS 2CP3 - Introduction to Critical Curatorial Perspectives

3 units

from

- Any Level II or above course in Art, Art History, iArts or Theatre & Film, or:
- IARTS 1HA3 - Introduction to Histories of the Arts
- IARTS 1PA3 - Perspectives A: Arts in Society: Social Constructions of Class, Race and Gender (*if not previously taken*)
- IARTS 1PB3 - Perspectives B: Arts in Society: Technology and the Environment (*if not previously taken*)
- ENGLISH 2KA3 - Indigenous Futurisms and Wonderworks
- ENGLISH 2M03 - Concepts of Culture
- ENGLISH 2P03 - ~~Modernity, Postmodernity, Visuality~~
- ENGLISH 2VC3 - ~~Topics in Visual Culture~~
- ENGLISH 2Z03 - ~~Nature, Literature, Culture: Introduction to the Environmental Humanities~~ **Reading Environmental Humanities**
- ENGLISH 3GG3 - Theories of Decolonization and Resistance
- GENDRST 1A03 - Gender, Race, Culture, Power
- GENDRST 1AA3 - Gender, Feminism and Social Justice
- GENDRST 3BB3 - Gender and Visual Culture
- GENDRST 3RR3 - 'Crippling' Performance: Deaf, Mad and Disabled Performance in Canada
- HISTORY 2PP3 - Making History
- HISTORY 2V03 - Re-Making History
- MEDIAART 1A03 - Media Arts
- PHILOS 2H03 - Aesthetics

6 units

- IARTS 4CS6 A/B - Critical Curatorial Studies

**Rationale:** *Updating of program course lists, to reflect current and applicable course offerings. Additional change are housekeeping items to reflect change in program names.*

### Concurrent Certificate in the Language of Medicine and Health

#### Department of ~~Classics~~ Greek and Roman Studies

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~~
- GKROMST 2MT3 - Ancient Roots of Medical Terminology
- GKROMST 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, Speaking, Signing and Hearing~~
- ENGLISH 2NH3
- ENGLISH 3NH3 - Narratives of Health

#### Notes

1. Any student seeking a ~~Classics~~ program in Greek and Roman Studies or ~~Classics~~ 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.
2. Any student wishing to declare a Minor in ~~Classics~~ Greek and Roman Studies, Latin, or Greek may satisfy no more than 2 courses (six units) of the Minor's requirements.
3. 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.

**Rationale:** *With the Department of Classics' change of name to the Department of Greek and Roman Studies, course codes are being updated to reflect this change. Course lists are being updated to reflect current offerings.*

### 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~~

6 units

- FRENCH 2Z06 A/B - Beginner's Intensive French II

6 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, excluding:
  - FRENCH 2M06 A/B - Introduction to French Studies: Advanced Level
  - FRENCH 2Z06 A/B - Beginner's Intensive French II

#### 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.

**Rationale:** *This change is being made simply to highlight the progression of how students must complete necessary course prerequisites.*



**REPORT TO UNDERGRADUATE COUNCIL**  
**FACULTY OF SCIENCE**  
**SUMMARY OF CALENDAR CHANGES TO CERTIFICATE AND DIPLOMA PROGRAMS FOR THE**  
**2023-24 CALENDAR**

**NEW PROGRAMS**

**Concurrent Certificate in Science Communication**

**REVISION TO EXISTING PROGRAMS**

**Concurrent Certificate in Urban Studies and Planning**

For a complete review of all changes, refer to the November 17, 2022, Report of the Academic Planning and Policy Committee for changes to the 2023-2024 Undergraduate Calendar, found at:

<https://macdrive.mcmaster.ca/f/c379238830c644a39a95/>

## 1.0 NEW PROGRAMS

### 1.1 Concurrent Certificate in Science Communication School of Interdisciplinary Science

The Concurrent Certificate in Science Communication is administered by the School of Interdisciplinary Science (Faculty of Science).

Arthur Bourns Building, Room C501, ext. 21181

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

This certificate fulfills a critical need for undergraduate students in science and health disciplines to be skilled at communicating science in various formats for diverse audiences and purposes. Students who complete the certificate will have a strong grounding in the theory of science communication and many work samples that connect theory to practice.

#### Students who complete this certificate will be able to:

- Engage critically with primary research in the sciences, science communication, and sociology of science
- Critically analyze science within its societal context, in particular its communication via mass media and social media
- Blend theory and practice to create communications that reach different audiences and achieve different goals
- Centre equity, diversity and inclusion in discussions about how scientific and other forms of knowledge are created, vetted and shared
- Apply principles of inclusive science communication to engage audiences with the process, potential and pitfalls of science
- Merge creative and analytical skills to communicate complex ideas

#### Science Communication Course List:

- BIOLOGY 3HD3 - Human Disasters
- CMST 2DD3 - Media Organizations
- CMST 2LW3 - Communication Policy and Law
- CMST 3D03 - Political Communication
- CMTYENGA 2MC3 - Design and Creation of Engaged Learning for Community Youth
- CMTYENGA 2MD3 - Community-Based Learning with MCYU
- COMMERCE 2MA3 - Marketing
- COMMERCE 3MB3 - Consumer Behaviour
- HISTORY 2EE3 - Science and Technology in World History
- HISTORY 4FF3 - History of Health and Medicine
- HTHSCI 3HH3 - Deceptions in Decision Making
- HTHSCI 3HL3 - Health Law: Current and Emerging Issues
- HTHSCI 3L03 - Introduction to Bioethics
- HTHSCI 3DM3 - Demystifying Medicine
- HTHSCI 4LD3 - Global Health Governance, Law and Politics
- HTHSCI 4Y03 - Science, Culture and Identity
- HUMBEHV 4SC6 A/B - Science Communication in the Behavioural Sciences
- INDIGST 4HH3 - Indigenous Health and Interdisciplinary Approaches
- INNOVATE 3X03 - Persuasion, Pitching Skills and Marketing
- LIFESCI 3P03 - Communicating Science for Public Audiences
- LIFESCI 3Q03 - Global Human Health and Disease
- LIFESCI 3R03 - Communicating Science for Professional Audiences
- MATH 3Z03 - History of Mathematics
- MMEDIA 3Q03 - Emerging Media
- PEACEST 4L03 - Peace, Environment and Health

- PHILOS 2D03 - Bioethics
- PHILOS 3C03 - Advanced Bioethics
- PHILOS 4V03 - Multidisciplinary Workshop in Applied Ethics and Policy
- SCICOMM levels III, IV
- SCIENCE 2P03 - Impactful Initiatives in Health
- SOCIOL 2L03 – Media Institutions

**Certificate requirements:**

Any student in an undergraduate degree program at McMaster may declare the Science Communication certificate at the time of graduation providing they satisfy the following requirements.

**REQUIREMENTS**

18 units total

3 units

from

- ISCI 1A24 A/B - Integrated Science I
- LIFESCI 2AA3
- SCICOMM 2A03 - Foundations in Science Communication

3 units

from

- ISCI 2A18 A/B - Integrated Science II
- LIFESCI 3P03 - Communicating Science for Public Audiences
- LIFESCI 3R03 - Communicating Science for Professional Audiences
- SCICOMM 3P03 - Communicating Science for Public Audiences
- SCICOMM 3R03 - Communicating Science for Professional Audiences

3 units

from

- LIFESCI 4E03 - Science & Storytelling
- LIFESCI 4J03 - Science Communication in the Media
- HTHSCI 4Y03 - Science, Culture and Identity
- SCICOMM 4A03 - Independent Study in Science Communication

9 units

- Science Communication Course List

*Justification: This certificate provides a pathway for students within and outside the Faculty of Science to gain credentials in science communication through interdisciplinary coursework and experiential learning. McMaster is unique in its science communication offerings, and job opportunities in science communication are growing. This certificate curates courses from across campus in bioethics, outreach and education, marketing and persuasion, policy and advocacy, media studies and the sociology of science to provide students with a strong theoretical base and practical experience in science communication. Students will leave with a portfolio of work they can share with potential employers or research supervisors.*

**2.0 CHANGES TO EXISTING PROGRAMS**

**2.1 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**

- ENVSOCY 2UI3 - The Urban Experience

**9-12 units**

from

- ENVSOCY 3MF3 - Urban Field Camp
- ENVSOCY 3UP3 - Urban Planning
- ENVSOCY 4UD3 - Special Topics in Urban Planning
- ENVSOCY 4US3 - Sustainable Cities

**3-6 units**

from

- ENVSOCY 3UW3 - Cities of the Developing World
- ENVSOCY 3UR3 – Urban Social Geography
- ENVSOCY 4LP3 - Transport Policy
- ENVSOCY 4MS3 - Independent Study
- ENVSOCY 4MT6 A/B - Senior Thesis
- HLTHAGE 4S03 - Health and the Unfairly Structured City
- CMTYENGA 4A06 – Semester at CityLAB: Design and Dialogue Inquiry
- POLSCI 4UP3 – Urban Politics and Governance in the 21<sup>st</sup> Century: Canadian and Comparative Perspectives

*Justification: Addition of optional courses.*



HUMANITIES



### Certificate of Completion Program Proposal for Approval

Department & Program Information	
Program:	McMaster STEP Certificate Program
Course Name:	
Credential:	Certificate of Completion
Name of Representative:	Anna Moro/ Jackie Osterman in collaboration with the Faculty of Humanities
Effective Date:	July 2023
Date of Submission:	January 2023
Program Information:	
Program Overview	STEP is an intensive six-week (6.5 weeks including additional days for final testing) academic English bridging program designed for English Language Learners (ELLs) who wish to pursue their undergraduate studies at McMaster University and almost meet the university’s proficiency requirements. The program is a full-time integrated skills program focused on developing academic language skills to help students transition into first-year undergraduate courses. STEP incorporates university preparatory skills and a variety of discipline-specific genres and tasks. While paying particular attention to aural comprehension and oral production skills, the program integrates the development of reading, writing and associated skills (e.g., vocabulary development).
Learning Objectives	The STEP program aims to prepare students to function autonomously and effectively in an English-medium university environment. By engaging with the STEP program, students will: <ul style="list-style-type: none"> <li>1. strengthen critical and analytical skills through readings, inquiry-based approaches, and reflective practice;</li> <li>2. enhance skills for developing general, academic, and discipline-specific vocabulary;</li> </ul>

	<ol style="list-style-type: none"> <li>3. deepen their understanding of English structure and grammar in academic contexts;</li> <li>4. implement the conventions of various academic modes of communication, such as discussions, papers, and presentations;</li> <li>5. reinforce their information literacy skills and learn to apply principles of academic integrity when summarizing, paraphrasing, and synthesizing;</li> <li>6. heighten academic survival skills – e.g., notetaking, time management, group work, test-taking, academic interactions, and understanding assignments;</li> <li>7. convey ideas effectively in various social and academic settings.</li> </ol>
Meeting Learning Objectives	The delivery formats and teaching methods are structured to have a maximum effect on achievement of the learning objectives. The STEP program includes over 200 hours of language training across 6 weeks, containing advanced training in all four language components. A variety of approaches will be used to support learning and meet objectives.
Program Admission Requirements	<p>Prospective students must meet language proficiency thresholds to be admitted to the STEP program. These language proficiency thresholds are articulated in terms of the International English Language Testing System (IELTS).</p> <p>To receive a conditional offer to the STEP program, students must achieve a minimum overall IELTS score of 6.5 and a minimum score of 6.0 on the Reading and Writing Subtests, and must score a minimum of 5.5 on one or both of the Speaking and Listening subtests.</p>
Program Pre-requisites	To be admitted to this program, students must complete the IELTS and achieve the above-mentioned scores in each section of the IELTS outlined in the program admission requirements section.
Program Completion Requirements	Over the six weeks of the program, students will have 35 contact (i.e. classroom) hours per week, and some additional work outside of class (at least 3 hours). It is anticipated that full attendance will ensure roughly 38 hours of language learning weekly, for a total of

	over 220 hours across the program. The minimum required attendance is 90%, which ensures over 200 hours of language learning. After the six-week program, students will be tested for 2-3 days to ensure minimum thresholds in each language category are achieved.
Program Delivery Format	The program will be delivered in-person.
Student Evaluations (Grading Process)	Students will receive a Pass/Fail grade based on completed program activities and attendance.
Program Evaluation	Students will complete an evaluation to assess content, delivery, materials, method of evaluation, and instruction.
Program Instruction	Selection of program facilitators will be based on academic qualifications, previous teaching experience, demonstrated teaching excellence, and a Teachers of English as a Second Language (TESL) Ontario Certification.
<b>Course Details:</b>	
N/A	

**ARTS & SCIENCE PROGRAM**

**UNDERGRADUATE CURRICULUM REPORT TO**

**UNDERGRADUATE COUNCIL**

**FOR THE 2023-2024**

**UNDERGRADUATE CALENDAR**

**17 November 2022**



## REPORT TO SENATE

### ARTS & SCIENCE PROGRAM SUMMARY OF MAJOR CURRICULUM CHANGES FOR 2023-2024

This report highlights substantive changes being proposed. For a complete review of all changes, please refer to the November 2022 Arts & Science Program Report to Undergraduate Council for changes to the 2023-2024 Undergraduate Calendar, found at <https://artsci.mcmaster.ca/app/uploads/2022/11/2023-24-Arts-Science-Undergraduate-Curriculum-Report-FINAL-17-Nov.-2022.pdf>.

#### **NEW PROGRAMS:**

##### **COMBINED HONOURS PROGRAM, ARTS & SCIENCE AND IARTS (INTEGRATED ARTS)**

*Rationale: This new combined honours option, developed jointly with the School of the Arts (Faculty of Humanities), has been added to the list of Arts & Science combined honours programs. It aligns with the School of the Arts' roll out of the iArts (Integrated Arts) program.*

##### **Honours Arts & Science and iArts (Integrated Arts)**

###### **ADMISSION**

Completion of Arts & Science I with a grade point average of at least 6.0. Completion of IARTS 1PA3 or IARTS 1PB3 and a minimum grade of C in one course from the following list: IARTS 1HA3, IARTS 1CR3, IARTS 1T03, IARTS 1BD3, IARTS 1SS3.

###### **NOTES:**

1. Six units from the following list are required: ARTSSCI 3B03, 3BB3, one of 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. Twelve units of Upper-Level Inquiry beyond Level I are required. Of these 12 units, only 3 units can come from Level III Inquiry courses (ARTSSCI 3C03, 3CL3, 3CU3, 3EH3, 3GJ3, 3TR3); at least 9 units of Level IV Inquiry courses (ARTSSCI 4CB3, 4CD3, 4CF3, 4CI3, 4CP3, 4CT3, 4DS3, 4EP3, 4HS3, 4LI3, 4LT3, 4ST3, 4VC3) are required. Additional units of Upper-Level Inquiry may be included as an elective with the permission of the Director.
3. One of ARTSSCI 4A06 or 4C06 may be taken as an elective.

###### **COURSE LIST 1**

BIOLOGY 1A03, 1M03; CHEM 1A03, 1AA3; EARTHSC 1G03; ENVIRSC 1C03; PSYCH 1XX3

###### **COURSE LIST 2**

IARTS 2AD3, 2AS3, 2CC3, 2CD3, 2DE6, 2DP3, 2EP3, 2ER3, 2FA3, 2ME3, 2MP3, 2OP3, 2PP3, 2SP3, 2US3

###### **COURSE LIST 3**

IARTS 3AD3, 3BA3, 3CE3, 3CH3, 3CP3, 3CW3, 3DA3, 3EC3, 3FI3, 3FO3, 3GE3, 3IA3, 3ID3, 3IM3, 3IN3, 3IP3, 3LC3

###### **REQUIREMENTS**

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

24 units ARTSSCI 1A03, 1AA3, 1B03, 1BB3, 1C06, 1D06

3 units from IARTS 1PA3 or 1PB3

3 units from IARTS 1HA3, 1CR3, 1T03, 1BD3, 1SS3

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

18 units ARTSSCI 2A06, 2D06, 2E03, 2R03

6 units from ARTSSCI 3B03, 3BB3, one of 3RL3/3S03 (See Note 1)

3 units Level III or IV ARTSSCI Inquiry (see Note 2)

9 units Level IV ARTSSCI Inquiry (see Note 2)

3 units IARTS 2PC3 or 2PD3

9 units from Course List 2

3 units IARTS 3PE3

12 units from Course List 3

3 units IARTS 4PF3

6 units Level IV IARTS Investigations Courses or IARTS 4C06

12 units Electives

**PROGRAM CLOSURES:**

**Honours Arts & Science and Art History**

*Rationale: The School of the Arts is phasing out the Honours Art History degree as it implements the Honours degree in iArts. As such, Arts & Science will no longer offer the Combined Honours in Arts & Science and Art History.*

**Honours Arts & Science and Theatre & Film Studies**

*Rationale: The School of the Arts is phasing out the Honours Theatre & Film Studies degree as it implements the Honours degree in iArts. As such, Arts & Science will no longer offer the Combined Honours in Arts & Science and Theatre & Film Studies.*

**MAJOR REVISIONS:**

N/A. Minor updates and revisions to established combined honours programs will be determined with the relevant programs and posted on the Arts & Science website (<http://artsci.mcmaster.ca>).

**Faculty of Social Sciences**  
Undergraduate Curriculum Report to  
Undergraduate Council  
FOR THE 2023-2024 UNDERGRADUATE  
CALENDAR

Approved  
by  
The Faculty of Social Sciences  
Faculty Council

November 17, 2022

**REPORT TO SENATE**  
**FACULTY OF SOCIAL SCIENCES**

**SUMMARY OF MAJOR CURRICULUM CHANGES FOR 2023-2024**

Below is the summary of substantive curriculum changes being proposed by the Faculty of Social Sciences. For complete review of all of the changes, please refer to the November 2022 Faculty of Social Sciences Report to Undergraduate Council for changes to the 2023-2024 Undergraduate Calendar, found on SharePoint: [Faculty of Social Sciences Undergraduate Curriculum Report for 2023\\_2024\\_Nov2022.docx](#)

**1.0 NEW PROGRAMS: N/A**

**2.0 PROGRAM CLOSURES: N/A**

**3.0 MAJOR REVISIONS:**

- 3.1** Introduction of a new Co-op Option for the Honours Economics (B.A.) by the Department of Economics as follows:

**Honours Economics Co-op (B.A.)  
Admission**

**Enrollment in this program option is limited.** Admission is by selection 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, 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 completion of one of ECON 1ME3, MATH 1MM3, 1A03, 1LS3. For continuation in program, see the section on *Minimum Requirement for Entering and Continuing in a Program Beyond Level I*.

**Admission Notes**

1. Students who intend to apply for this program option must follow the application instructions as found on the Social Sciences Co-op web site. Students who are unable to access this web site must consult the Social Sciences Co-op team in the Office of the Associate Dean Academic prior to the application deadline.
2. All applications for admission to the Co-op program option are considered annually and must be made directly to the Social Sciences Co-op team by March 1 for the Fall/Winter term.
3. Applications that are submitted after the March 1 deadline will not be considered.

4. Offers of acceptance cannot be deferred.
5. Students who have not completed ECON 1ME3 are recommended to complete one of Grade 12 Mathematics of Data Management, STATS 1LL3, STATS 1L03, or COMMERCE 1DA3.

#### Program Notes

1. The standard duration of this program option is five (5) years. For information, see the Social Sciences Co-op website.
2. Co-op program options in the Faculty of Social Sciences follow an alternating sequence of work terms and academic terms. Students are required to enroll in at least one full-time academic term consisting of at least 9 units between any two work terms. Each student's sequence of work and academic terms must end with a final academic term. For information on permitted and recommended work term sequences compatible with scheduled course offerings in this program option, see the Social Sciences Co-op website.
3. Co-op work terms are components of the program involving full-time, paid work-integrated learning opportunities, typically secured through a job search process. Students on work term are enrolled in a zero-unit course (i.e. SOCSCI 2WT0, 3WT0, 4WT0) and are considered enrolled at the university.
4. Students may take a maximum of 3 units during a work term, with the written permission of the work term supervisor.
5. Completion of SOCSCI 2EL0 in Fall Term of Level II or in Spring/Summer Term following Level I is strongly recommended in order for students to meet the requirements of Social Sciences 2JS1 and eligibility for job search access.
6. 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.
7. Students interested in an M.A. in Economics should take ECON 3EE3 (formerly 3U03) and consider the Specialist Option.
8. MATH 1MM3 (or 1M03) is required for any student planning to transfer into Commerce and strongly recommended for any student with a Minor in Business or Finance.

#### 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 2Z03 - Intermediate Microeconomics I
- ECON 2ZZ3 - Intermediate Microeconomics II

1 course

- SOCSCI 2EL0 - Career Preparation in the Social Sciences.

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

1. ECON 4F03 - Methods of Inquiry in Economics
2. ECON 4FF3 - Research Methods in Economics

3 units

- SOCSCI 2JS1 -Co-op Job Search I
- SOCSCI 3JS1 -Co-op Job Search II
- SOCSCI 4JS1 - Co-op Job Search III

Work Terms

- SOCSCI 2WT0 - Social Sciences Co-Op Work Term

- SOCSCI 3WT0 - Social Sciences Co-Op Work Term
  - SOCSCI 4WT0 - Social Sciences Co-Op Work Term
- 39 units
- Electives. Note: The number of units of Economics courses above Level I (excluding ECON 2B03, 3E03 and 3EE3) must not exceed 60

**3.2** Introduction of a new Co-op Option for the Honours Work and Labour Studies (B.A.) by the Department of Labour Studies as follows:

**Honours Work and Labour Studies Co-op (B.A.)**

**Admission**

**Enrollment in this program option is limited.** Admission is by selection 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, 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 WORKLABR 1A03, 1D03, 1E03 (or LABRST 1D03, 1E03, 1A03 or 1C03; see *Note 2* 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**

1. Students who intend to apply for this program option must follow the application instructions as found on the Social Sciences Co-op web site. Students who are unable to access this web site must consult the Social Sciences Co-op team in the Office of the Associate Dean Academic prior to the application deadline.
2. All applications for admission to the Co-op program option are considered annually and must be made directly to the Social Sciences Co-op team by March 1 for the Fall/Winter term.
3. Applications that are submitted after the March 1 deadline will not be considered.
4. Offers of acceptance cannot be deferred.
5. Students who have who have completed only 3 units of Level I Work and Labour Studies (or Labour Studies) will be required to complete 3 more units of Level I Work and Labour Studies during their Level II year.
6. Students may not transfer to another Work and Labour Studies program except by the normal application process.

**Program Notes**

1. The standard duration of this program option is five (5) years. For information, see the Social Sciences Co-op website.

2. Co-op program options in the Faculty of Social Sciences follow an alternating sequence of work terms and academic terms. Students are required to enroll in at least one full-time academic term consisting of at least 9 units between any two work terms. Each student's sequence of work and academic terms must end with a final academic term. For information on permitted and recommended work term sequences compatible with scheduled course offerings in this program option, see the Social Sciences Co-op website.
3. Co-op work terms are components of the program involving full-time, paid work-integrated learning opportunities, typically secured through a job search process. Students on work term are enrolled in a zero-unit course (i.e. SOCSCI 3WT0, 4WT0, 5WT0) and are considered enrolled at the university.
4. Students may take a maximum of 3 units during a work term, with the written permission of the work term supervisor.
5. Completion of SOCSCI 2EL0 in Fall Term of Level II or in Spring/Summer Term following Level I is strongly recommended in order for students to meet the requirements of Social Sciences 2JS1 and eligibility for job search access.
6. Students who complete a six-unit Research Methods/Statistics course will reduce their elective component by three units.
7. Students who have completed LABRST 4D03 need not complete WORKLABR 4C03 or LABRST 4E03.
8. Students are encouraged to consult the School of Labour Studies website at: <http://www.labourstudies.mcmaster.ca>.

#### Course List 1

- COMMERCE 1BA3 - Organizational Behaviour (or 2BA3)
- COMMERCE 4BC3 - Collective Bargaining
- LABRST 2H03
- LABRST 2M03
- LABRST 3A03
- LABRST 3B03
- LABRST 3C03
- LABRST 3D03
- LABRST 3E03
- LABRST 3K03
- LABRST 3L03
- LABRST 3P03
- LABRST 3T03
- LABRST 4J03
- 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



Note: While student can use this course to fulfill Work and Labour Studies requirements, and while the content is salient to Work and Labour Studies students, this course has a social work focus.

- WOMENST 2A03
- WORKLABR 2A03 - Unions in Action
- WORKLABR 2G03 - Labour and Globalization
- WORKLABR 2H03 - Sports, Work and Labour
- WORKLABR 2J03 - Work and Racism
- WORKLABR 2M03 - Pop Culture, Media and Work
- WORKLABR 2W03 - Human Rights and Social Justice
- WORKLABR 3A03 - Economics of Labour Market Issues
- WORKLABR 3B03 - Economics of Trade Unionism and Labour
- WORKLABR 3C03 - Labour and Employment Law
- WORKLABR 3D03 - Work: Dangerous to your Health?
- WORKLABR 3E03 - Gender, Sexuality and Work
- WORKLABR 3K03 - On the Move: Workers in a Global World
- WORKLABR 3L03 - Labour Policy and Advocacy
- WORKLABR 3M03 - Theoretical Approaches to Work and Labour Studies
- WORKLABR 3P03 - Workers' Resistance - Past and Present
- WORKLABR 3Q03 - Community Engaged Research
- WORKLABR 4J03 - Independent Study

#### 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
- SOCIOLOGICAL 2E06 A/B
- SOCIOLOGICAL 2I03
- SOCIOLOGICAL 2Q06 A/B
- SOCIOLOGICAL 2R03 - Perspectives on Social Inequality
- SOCIOLOGICAL 2RR3 - Case Studies of Social Inequality
- SOCIOLOGICAL 2V06 A/B

#### Social and Political Context of Social Work Course List

- SOCWORK 3B03
- 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\*
- SOCWORK 4SB3\*
- 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.)

1 course

- SOCSCI 2EL0 - Career Preparation in the Social Sciences.

9 units  
from

- LABRST 2A03
- LABRST 2G03
- LABRST 2J03
- LABRST 3M03
- LABRST 3Q03
- WORKLABR 2A03 - Unions in Action
- WORKLABR 2G03 - Labour and Globalization
- WORKLABR 2J03 - Work and Racism
- WORKLABR 3M03 - Theoretical Approaches to Work and Labour Studies
- WORKLABR 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.)

3 units

- SOCSCI 2JS1 -Co-op Job Search I
- SOCSCI 3JS1 -Co-op Job Search II
- SOCSCI 4JS1 - Co-op Job Search III

Work Terms

- SOCSCI 2WT0 - Social Sciences Co-Op Work Term
- SOCSCI 3WT0 - Social Sciences Co-Op Work Term
- SOCSCI 4WT0 - Social Sciences Co-Op Work Term

9 units  
from

- ENVSOCTY 4LE3 - Geographies of the North American Political Economy
- LABRST 4C03
- LABRST 4F03
- LABRST 4G03
- LABRST 4H03
- WORKLABR 4C03 - Public Sector Collective Bargaining
- WORKLABR 4F03 - Work and the Environment
- WORKLABR 4G03 - Advanced Topics in Work and Labour Studies
- WORKLABR 4H03 - Working Precariously: Labour Strategies, Labour  
Renewal  
(See *Note 5* above.)

0-3 units  
from

- LABRST 1C03
- LABRST 1D03
- LABRST 1E03
- WORKLABR 1A03 - An Introduction to Work and Labour in Canada
- WORKLABR 1D03 - Technology and the Future of Work
- WORKLABR 1E03 - Navigating the World of Work  
(See *Notes 2 & 6* above.)

39-42 units

- Electives, of which at least six units must be taken from outside of Work and Labour Studies

- 3.3** Introduction of a new Co-op Option for the Honours Political Science (B.A.) by the Department of Political Science as follows:

**Honours Political Science Co-Op (B.A.)**

**Admission**

Enrollment in this program option is limited. Admission is by selection 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, completion of 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). Students are strongly encouraged to complete POLSCI 1AB3 in Level I (See Admission Note 5 below). For continuation in the program, see Minimum Requirements for Entering and Continuing in a Program Beyond Level I.

Information about this program and about co-op policies and procedures can be obtained from the Social Sciences Co-op team in the Office of the Associate Dean Academic.

**Admission Notes**

1. Students who intend to apply for this program option must follow the application instructions as found on the Social Sciences Co-op web site. Students who are unable to access this web site must consult the Social Sciences Co-op team in the Office of the Associate Dean Academic prior to the application deadline.
2. All applications for admission to the Co-op program option are considered annually and must be made directly to the Social Sciences Co-op team by March 1 for the Fall/Winter term.
  3. Applications that are submitted after the March 1 deadline will not be considered.
  4. Offers of acceptance cannot be deferred.
  5. Completion of POLSCI 1AB3 by the end of Level I is strongly recommended in order for students to meet the prerequisite for POLSCI 2NN3.

**Program Notes**

1. The standard duration of this program option is five (5) years. For information, see the Social Sciences Co-op website.
2. Co-op program options in the Faculty of Social Sciences follow an alternating sequence of work terms and academic terms. Students are required to enroll in at least one full-time academic term consisting of at least 9 units between any two work terms. Each student's sequence of work and academic terms must end with a final academic term. For information on permitted and recommended work term sequences compatible with scheduled course offerings in this program option, see the Social Sciences Co-op website.

3. Co-op work terms are components of the program involving full-time, paid work-integrated learning opportunities, typically secured through a job search process. Students on work term are enrolled in a zero-unit course (i.e. SOCSCI 3WT0, 4WT0, 5WT0) and are considered enrolled at the university.
4. Students may take a maximum of 3 units during a work term, with the written permission of the work term supervisor.
5. Completion of SOCSCI 2EL0 in Fall Term of Level II or in Spring/Summer Term following Level I is strongly recommended in order for students to meet the requirements of Social Sciences 2JS1 and eligibility for job search access.
6. 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.
7. POLSCI 2NN3, 3NN3 and POLSCI 2O06 A/B are required for students enrolled in Honours Political Science programs, including the Co-op option, and they are recommended for students in the B.A. program.
8. 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.

#### 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.)

1 course

- Social Sciences 2EL0: Career Preparation in the Social Sciences.

6 units

- POLSCI 2O06 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 Program Note 8 above.)

6 units

- POLSCI 2NN3 - Politics by Design and
- POLSCI 3NN3 - Statistical Analysis of Primary Data

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 Admission Note 5)

3 units

- Social Sciences 2JS1: Co-op Job Search I
- Social Sciences 3JS1: Co-op Job Search II
- Social Sciences 4JS1: Co-op Job Search III

**Work Terms**

- Social Sciences 3WT0: Social Sciences Co-Op Work Term
- Social Sciences 4WT0: Social Sciences Co-Op Work Term
- Social Sciences 5WT0: Social Sciences Co-Op Work Term

**36-39 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)

**Justification for 3.1-3.3:** *Co-op programs are highly effective at assisting a student's transition to the workforce and enhancing overall career success. Co-op program options are identified as a priority in the Faculty of Social Sciences Strategic Plan, will contribute to the President's Institutional Priorities and Strategic Framework, and meet the institution's SMA3 metrics. A co-op program option will help students develop a greater understanding of their career options, enable them to articulate their skills and experiences to potential employers, and give them experience in the workplace that will ultimately enhance job placement rates for our graduates. Further, co-op program options will positively impact the quality of applicants to the Faculty of Social Sciences (e.g., higher entrance average) and further enhance the quality and reputation of our degree programs. At university recruitment events, representatives of the FSS are regularly asked if we have a co-op option for our programs, so both prospective students and their parents recognize the value of co-op programs in undergraduate education. The co-op program options also complement investments the Faculty of Social Sciences is making in career services for our students.*

*Our co-op offerings will start with three departments/schools in the FSS (Economics, Political Science, and Labour Studies) that have indicated interest in a co-op program option. This will enable us to develop core program infrastructure and processes with a manageable set of departments and establish the resources needed for a program before scaling it up to include other departments/programs in the Faculty.*

*The course requirements for these new Honours B.A. Co-op program options remain the same as the Honours B.A. versions of the programs. Additional courses (SOCSCI 2EL0, 2JS1, 3JS1, 4JS1) have been added to each co-op option to support co-op students in preparing for the workforce and managing the co-op job search process during an academic term.*

- 3.4** Introduction of a new Specialist Option for the Honours Social Psychology (B.A.) by the Honours Social Psychology Program as follows:

### **Honours Social Psychology (Research Specialist Option) (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 SOCIOL 1Z03. Completion of SOCIOL 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

1. Honours Social Psychology (Research Specialist Option) is intended for students who are considering research-based graduate programs.
2. Students in the Research Specialist Option B.A. will have priority enrolment in SOCPSY 3L03.
3. Students must have completed both an introductory Psychology course (either PSYCH 1F03 or PSYCH 1X03) and an introductory Sociology course (SOCIOL 1Z03) by the end of the first term in Level II.
4. Students interested in the Research Specialist Option may wish to take SOCSCI 1RM3 prior to entry.
5. Students are responsible for ensuring that they meet the prerequisites for any course they wish to take from the course lists.
6. 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.
7. Students may take a maximum of 12 units of Level IV courses.
8. 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.
9. 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.
10. 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.

## 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

- SOCIOL 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  
from

- SOCPSY 2E03 - Psychology of Intergroup Relations
- SOCPSY 2F03 - Psychology of Close Relationships

3 units

- SOCPSY 3Y03 - Social Psychology in Action

6-9 units  
from

- 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 3M03 - Counselling & Psychotherapy
- SOCPSY 3RR3 - Imprisonment
- SOCPSY 3ZZ3 - Small Worlds: Children and Childhood

3 units

- SOCPSY 3L03 - Advanced Research Methods

3 units



- SOCPSY 3K03 - Research Experience
  - SOCPSY 4A03 – Advanced Research Experience
- 6 units
- SOCPSY 4ZZ6 A/B - Social Psychology Research Project
- 3 units  
from
- SOCPSY 4B03 - Special Topics in Social Psychology
  - SOCPSY 4E03 - Special Topics in Social Psychology
  - SOCPSY 4F03 - Social Psychology of Crime and the Media
  - SOCPSY 4D03 - Contemporary Social Issues
  - SOCPSY 4G03 - Child Clinical Psychology
  - 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
- 30 units
- Electives

**Justification:** We are introducing the Honours Social Psychology (Research Specialist Option) B.A. to draw attention to existing research-focused courses to prepare students interested in research-based graduate programs in the social sciences. Students who wish to pursue more applied or professional graduate programs will be encouraged to take the “regular” Honours B.A. in Social Psychology. There will only be 6 units that differentiate the Research Specialist Option B.A. from the “regular” B.A. (i.e., the requirement that Research Specialists take SOCPSY 3L03 and 3K03 or 4A03), accompanied by a 3-unit decrease in Level 3 social psychology requirements and a 3-unit decrease in electives. Enrolment in the Research Specialist Option will be capped at 7 given the small number of faculty who are able to provide research supervision for SOCPSY 3K03 and 4A03. No additional resources will be required to support the Research Specialist Option.

**FACULTY OF HEALTH SCIENCES**

**UNDERGRADUATE CURRICULUM REPORT**

**TO UNDERGRADUATE COUNCIL  
CURRICULUM AND ADMISSIONS COMMITTEE**

**FOR THE 2023-2024 CALENDAR**

**Friday, December 16, 2022  
(Resent: January 6, 2023)**

**HSEC approved December 14, 2022**

**Faculty Executive Council approved January 17, 2023**

## REPORT TO SENATE

### FACULTY OF HEALTH SCIENCES SUMMARY OF CURRICULUM CHANGES FOR 2023-2024

This report highlights substantive changes being proposed. For a complete review of all changes, please refer to the Faculty of Health Sciences Curriculum Report for changes to the 2023-2024 Undergraduate Calendar, found at: [https://mcmasteru365-my.sharepoint.com/:b:/g/personal/mcarthj\\_mcmaster\\_ca/Ecr4OVgq5g1Gqb8NQOlos7kBwfVGgLXhK3gUT4jRy28zwmw?e=ky1JS1](https://mcmasteru365-my.sharepoint.com/:b:/g/personal/mcarthj_mcmaster_ca/Ecr4OVgq5g1Gqb8NQOlos7kBwfVGgLXhK3gUT4jRy28zwmw?e=ky1JS1)

#### NEW PROGRAMS:

NONE

#### PROGRAM CLOSURES

NONE

#### MAJOR REVISIONS

##### **Biomedical Discovery and Commercialization Exit (B.H.Sc.)**

##### **Requirements**

90 units total (Levels I to III), of which no more than 42 units may be Level I

##### Program Notes

1. Students who have taken BIOCHEM 2B03 and BIOCHEM 2BB3 prior to admission may substitute completion of both courses for BIOCHEM 3G03

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

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

3 units

- COMMERCE 1BA3 - Organizational Behaviour

3 units from

- COMMERCE 2AB3 -
- COMMERCE 4AK3 - Accounting Information for Decision Making

3 units

- BIOCHEM 3G03 - Proteins and Nucleic Acids (See *Program Note 1* above.)

3 units

- CHEM 2OA3 - Organic Chemistry I

48 units

- Elective(s)

***RATIONALE:*** Provides a 3-year exit option for students to graduate from Biomedical Discovery and Commercialization with a non-honours degree.

MEMORANDUM

To: Undergraduate Council Awards Committee

From: Liz Way  
Senior Associate Registrar  
Office of the Registrar, Aid & Awards

Date: January 10, 2023

Re: Revisions for 2023/24 Undergraduate Calendar

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The Office of the Registrar, Aid & Awards submits the following revisions for the 2023/24 Undergraduate Calendar for your consideration and approval:

1. An update to indicate where to locate the Policy referenced.
2. Regulation updates including:
  - Clearer language to advise students they may be eligible for more than one bursary throughout the academic year, depending on their level of need
  - Indicating where the Physician Assistant and M.D. student can access In-Course Bursaries
  - Rephrasing references to the Student Access Guarantee to reflect the changes to this program by the Ministry of Colleges and Universities
  - Inclusion of requirement to complete a general application for awards by nomination
  - Inclusion of In-Course award course load and cumulative unit exceptions for nursing students
  - Inclusion of grocery gift cards in Emergency Bursary Regulations

The draft copies of the relevant 2023/24 Undergraduate Calendar sections are attached for your review.

## Aid & Awards

### OFFICE OF THE REGISTRAR, AID & AWARDS

Gilmour Hall, Room 120  
McMaster University  
Hamilton, Ontario, L8S 4L8  
<https://registrar.mcmaster.ca/aid-awards/>

### SENIOR ASSOCIATE REGISTRAR AID & AWARDS

**Elizabeth Way**/B.A., M.T.S.

### ASSISTANT REGISTRAR GOVERNMENT AID PROGRAMS

**Rita Mukherjee**/B.Sc., M.B.A.

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. Our academic grant, award, bursary and work programs encourage and support diversity and inclusivity in the recruitment, retention, and recognition of students, including those from equity-seeking groups. Aid & Awards administers government student aid, such as the Ontario Student Assistance Program (OSAP) and the US Direct Loans Program, on behalf of various federal and provincial governments. For more information about our programs and services, visit [registrar.mcmaster.ca/aid-awards/](https://registrar.mcmaster.ca/aid-awards/).

## Regulations for Aid and Awards

The University supports the financial wellbeing of students in the delivery of aid and award programs, ensuring equity, consistency and transparency in administration. The University operates within the Senate approved University Aid and Awards Policy. 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. [The University Aid and Awards Policy is publicly viewable through the University Secretariat website.](#) Financial Awards support students in a manner consistent with the goals of the University, but do not necessarily meet all 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):

## 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 academic merit (e.g. the McMaster Award of Excellence); and
- b. One Entrance Award, including those supporting Black, Racialized, Indigenous and International students, 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 solely on 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 or more bursaries based on the student's financial situation ~~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 government 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.

## In-Course and Renewal Bursary Regulations

1. 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.
2. 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., and Nursing Program (at the Mohawk site). Physician Assistant and M.D. can access In-Course Bursaries through the relevant program office. A limited number of bursaries are also available to true part-time students enrolled in diploma and certificate programs offered through McMaster Continuing Education, who have completed at least 50% of that course work on a part-time basis.
3. 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.
4. Second degree students are eligible for In-Course Bursaries
5. In-Course Bursaries are available to students who are Canadian Citizens, Permanent Residents, Convention Refugees and Protected Persons of Canada.
6. 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 to be considered for a limited number of In-Course Bursaries for International students.
7. 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.
8. 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).
9. 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.
10. In-Course Bursary funds are limited.
11. Students may receive more than one In-Course or Renewal Bursary ~~as part of to cover their~~ Student Access Guarantee ~~allocation~~ or up to the total bursary amount for which they are eligible.
12. 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.
13. The greater demonstrated financial need is used to break any tie.
14. In-Course Bursaries may consider one or more McMaster University calculated averages (e.g. Cumulative Grade Point Average).
15. In-Course Bursaries may specify a minimum average requirement.
16. In-Course Bursaries may also consider other forms of earned merit. To evaluate earned merit, students may need to complete one or more additional requirements including, but not limited to, submission of an application.
17. To be considered for an In-Course Bursary by application, students must submit a completed application by the specified deadline date.



18. In-Course Bursary applications which meet eligibility criteria are forwarded to a selection committee for review and ranking.
19. 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.
20. Students must meet the renewal requirements specified in the terms of their Entrance or In-Course Bursary to receive a renewal payment.
21. 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.
22. 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).
23. Forfeiture of a renewable Entrance or In-Course Bursary also cancels all future instalments of the bursary.
24. 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 deferrals are not normally granted for more than one academic year.
25. 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.
26. 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.
27. 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.
28. 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.
29. 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.

## **Emergency Bursaries**

### **Emergency Bursary Regulations**

1. An Emergency Bursary, **grocery store gift cards** and meal cards are non-repayable grants that may be 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 from 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. Other referral networks exist on campus to support students in crisis, such as Security Services, Indigenous Student Services and Student Support and Case Management.

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.

## 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 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 AwardSpring, students with degrees conferred at Fall Convocation are only able to apply for Graduating Student Awards by application the following spring using pdf 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. To evaluate earned merit, students may need to complete one or more additional requirements including, but not limited to, submitting an application.
11. To be considered for a Graduating Student Award by application or by nomination, 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, including, but not limited to, submitting an application, participating in an interview, performing an audition or developing a portfolio.

## 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 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. 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. For nursing specific In-Course awards, due to the structure of the program, they are open to full-time and part-time course loads with a minimum of 24 Cumulative Units.
12. Available averages, units upon which averages are calculated, program level, and enrolled units, may be used to break any ties in an award competition.
13. To be considered for an In-Course Award by application or by nomination, students must submit a complete application by the specified deadline date.
14. In-Course Award applications which meet award eligibility criteria are forwarded to a selection committee for review and ranking.
15. Some In-Course Awards are renewable.
16. 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.

17. 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.
18. In-Course Awards are typically disbursed no later than the end of September.
19. 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.
20. In-Course Award recipients will have their awards noted on their University transcripts. Entrance and In-Course renewals are not noted on transcripts.
21. 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.
22. 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.
23. Students withdrawing from courses without failure by default will forfeit their In-Course Award or Entrance or In-Course Award renewal.
24. 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.
25. Forfeiture of a renewable Entrance or In-Course Award also cancels all future instalments of the award.
26. 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 deferments are not normally granted for more than one academic year.
27. 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.
28. 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.
29. 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).
30. In-Course Awards supported by donor funds may have additional eligibility and renewal requirements.

## Part-Time In-Course Awards

### 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 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. 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. To be considered for an In-Course Award by application or by nomination, 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-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 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. 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. To be considered for an In-Course Award by application or by nomination, 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.
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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.
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29. In-Course Awards supported by donor funds may have additional eligibility and renewal requirements.

**Report to Senate and Undergraduate Council:  
Revisions to Undergraduate Calendar for 2023 – 2024**

**Office of the Registrar**

**December 2022**



# Revisions to the Undergraduate Calendar 2023-2024

## Summary and Revision Justifications Office of the Registrar, December 2022

### [Admission Requirements \(see attached page 2\)](#)

#### **Housekeeping:**

- Updating dates/deadlines to reflect the new admissions cycle
- Re-wording and editing content for clarity and tone
- Updates to URLs

#### **Midwifery – Section 1, A**

Addition of Casper assessment as supplemental application as well as mandatory Identity and Admission Survey. Mandatory Identity and Admission survey is not new but was not previously mentioned in this section of the calendar.

#### **Supplementary Application Forms and Extenuating Circumstances, Section 1, A**

Added information about the Request for Special Consideration form process.

#### **American High School Curriculum – Section E**

Removed mention of the pandemic around the SAT/ACT scores and clarified that those tests are optional, and students may submit them if they feel they strengthen their application.

Added clarifying language about AP College Board exam results for required courses. This was added so as not to deter strong applicants from applying and to keep competitive with other institutions.

### [Application Procedures \(See attached, page 15\)](#)

#### **Housekeeping:**

- Updating dates/deadlines to reflect the new admissions cycle
- Re-wording and editing content for clarity and tone
- Updates to URLs

#### **Documents, Required Documents, Section 2, A**

Removed reference to application requirements being mailed out to applicants in letters since everything is now communicated to applicants via their McMaster Applicant portal.

#### **Fall and Winter Terms, Section 3**

- Updated URLs
- Updated application and supplemental application deadlines
- Updated language to clarify deadlines for all other applications for non by select and upper level programs.

## 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, an applicant must satisfy the general requirements of the university and the specific subject requirements for the program to which they 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 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 is calculated using the best six Grade 12 U and/or M grades, including all required subjects. **McMaster calculates averages to two decimal points and does not round up averages. Please Note: Grade 12 Co-op courses are not eligible to be used to calculate admissibility and/or the admission averages.** 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> under *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. ~~s~~ Six appropriate midterm/interim Grade 12 U and/or M grades, OR
2. ~~a~~ 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.

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

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

1. The minimum final average required was not met; OR
2. The OSSD was not awarded ~~achieved~~; OR
3. Six Grade 12 U and/or M courses including all required subjects were not completed; OR
4. The applicant did not successfully accept the offer of admission at the Ontario Universities' Application Centre (OUAC) by the response deadline indicated on the offer letter; OR
5. Conditions stipulated on the conditional offer of admission were not met; OR
6. A post-secondary institution was attended prior to beginning your studies at McMaster; OR
7. The 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

Secondary school applicants who receive a conditional offer of admission, are required to achieve an overall average (calculated to two decimal points) on six (6) final grades including all programs specific required courses. This information is indicated on conditional offers of admission.

If an ~~final~~ applicant's ~~final~~ average falls below this level (or its equivalent), the offer of admission will be rescinded/revoked and registration will be cancelled.

**The required minimum final average varies from year to year and by program. This average is clearly stated on the offer letter.**

##### Supplementary Application Forms and Extenuating Circumstances

Certain Level I programs including Arts & Science, Automation Engineering Technology 1 (co-op), Automotive & Vehicle Engineering Technology 1 (co-op), Bachelor of Health Sciences (Honours), Biotechnology 1 (co-op), Computer Science 1 (regular and co-op), Engineering 1 (regular and co-op), Integrated Biomedical Engineering & Health Sciences (iBioMed) (regular and co-op), Integrated Business and Humanities (IBH), Honours Integrated Science, Midwifery, and Nursing have **mandatory online supplementary application forms or online assessments** which must be completed by specific deadline dates. See *Application and Documentation*

*Deadlines*, for specific deadline dates. Applicants to Business 1 may elect to complete an optional supplemental form prior to February 1.

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 provide information to the Office of the Registrar, **Admissions** explaining the nature of their extenuating circumstances.

The Request for Special Consideration form can be found at <https://future.mcmaster.ca/apply/pre-application/ouac-101/> under 'How do I report extenuating circumstances?'. The form is open from November 1 to April 1. 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 completed their OSSD and have final grades in six Grade 12 U and/or M courses. Applicants who fulfill these requirements by the end of February, may be granted a ~~non-offer of final admission offer~~.

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

1. Failure to accept an offer of admission at the Ontario Universities' Application Centre (OUAC) by the response deadline indicated on the offer letter; OR
2. Attendance at a post-secondary institution prior to beginning studies at McMaster.
3. An 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 are to be submitted 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. For additional information, please refer to: <https://registrar.mcmaster.ca/events/admission-deferrals/>

## 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 Arts 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, and Social Sciences I.

### ARTS & SCIENCE I

Applicants must complete a **mandatory supplementary application** which must be submitted at (<https://arts.mcmaster.ca/prospective-students/supplementary-application/>) by the deadline as specified each year. See *Application and Documentation Deadlines*, for specific deadline dates. 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.)

Admission to Automation Engineering Technology I, Automotive and Vehicle Engineering Technology I, and Biotechnology I is by selection. A minimum average range in the low 80s is required for application consideration. Applicants must complete a **mandatory on-line assessment** by the 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

### 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

Applicants to *Business I* may elect to complete an optional supplemental form prior to February 1 to provide the program with ~~more~~ information more about themselves.

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

COMPUTER SCIENCE I, COMPUTER SCIENCE I CO-OP

Admission to Computer Science I (regular and co-op) is by selection. A minimum average range in the low 90s is required for application consideration. Applicants must complete a **mandatory on-line assessment** by the 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. 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

ECONOMICS I

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

1. English U
2. Two of Advanced Functions U, Calculus and Vectors U, or 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.

ECONOMICS I (Beginning September 2023 Entry)

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

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** by the 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

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

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

Applicants will be selected based on both their academic qualifications and their scores on the **mandatory on-line Supplementary Application (due mid-early February); details at <https://bhsc.mcmaster.ca>. <https://bhsc.mcmaster.ca/future-students/how-to-apply>**. A minimum overall average of 90% or higher is required for consideration. The 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~~ non-math; non-science; non-technology (**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 five additional U or M courses to total six courses

The Faculty of Humanities strongly recommends 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 the Cognitive Science of Language program.

#### INTEGRATED ARTS I (iArts)

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 iArts 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 creative submission** to the School of the Arts.

<https://sota.humanities.mcmaster.ca/undergraduate-programs/iarts/apply-now/>

For questions, please contact [sota@mcmaster.ca](mailto:sota@mcmaster.ca).

#### HONOURS INTEGRATED SCIENCE (Level I)

Candidates are required to complete a mandatory **Supplementary Application Form** which must be submitted electronically at <http://www.science.mcmaster.ca/isci/prospective-students>. <https://science.mcmaster.ca/sis/undergraduate/isci/isci-admission-requirements.html#admission-review-process>. The information provided in the supplementary application **enters into** is considered during 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

#### 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** 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 (© 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~~ four additional U and M courses 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.

#### LIFE 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. 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 January 12 February 4.** 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

~~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. AND a minimum overall average of 75% on grade 12 U or M courses including the required courses.~~

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%.

Applicants to Midwifery must complete a mandatory Casper (computer-based assessment for sampling personal characteristics) assessment on the dates specified each year and distribute results to Midwifery by February 1. Additionally, all applicants to Midwifery must complete a mandatory Identity and Admission Survey as part of the application to the Midwifery Education Program. The survey must be completed and submitted along with the other requirements and documents by the February 1 deadline

#### 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 past 100 years
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/music/>

Auditions take place between February and April. Audition arrangements are to be made ~~arrangements~~ with the School of the Arts at [sota@mcmaster.ca](mailto:sota@mcmaster.ca).

#### NURSING I

#### NURSING CONSORTIUM (CONESTOGA)

#### NURSING CONSORTIUM (MOHAWK)

**Note: Effective September 2021, all applicants for the three sites apply to the OUAC (Ontario Universities' Application Centre), selecting McMaster University BScN and the specific site(s) of interest.**

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 educational model. For more information about the Mohawk and Conestoga College sites refer to the B.Sc.N. (A) Stream in the School of Nursing, *Faculty of Health Sciences* portion of the Calendar. For full application instructions see the *School of Nursing and Application Procedures* sections as well as <https://nursing.mcmaster.ca/programs/undergraduate>.

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 specified each year (October-February).

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. Completion of two additional U or M courses to total six courses

**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 is required. 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).

#### SOCIAL SCIENCES I

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

Advanced Functions U and Calculus and Vectors U are 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.

## **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 is also required. Please refer to <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.

#### **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 **upload 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 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 final transcripts confirming graduation directly to the Admissions Office.**

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: <https://future.mcmaster.ca/>.

#### **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 six acceptable Grade 12 academic courses (or equivalent), including **one** of English Studies 12, English 12, or English 12 First Peoples.

#### **Manitoba**

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

#### **New Brunswick**

Grade 12 high school diploma with five acceptable Grade 12 academic courses numbered 120, 121, or 122, including **one** of English 121, English 122, or English as a Second Language 22411.

#### **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 or advanced courses, including English 12.

#### **Prince Edward Island**

Grade 12 high school diploma with five acceptable Grade 12 academic courses numbered 611 or 621, including English 611 or 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 <https://future.mcmaster.ca/>.

## **D. Advanced Placement (AP) 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 upon request, after acceptance of the offer and receipt of official results. 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/> <https://future.mcmaster.ca/>.

## E. Other International Secondary School Qualifications

Admission requirements for applicants from the more common international educational systems are noted below. For all other education systems, please visit our website country-specific requirements. Required subjects are the same as required for Ontario and other Canadian students: <https://future.mcmaster.ca/admission/> <https://future.mcmaster.ca/>.

**Applicants must upload high school transcripts as part of the application process.** 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. Applicants are considered for admission on an individual basis and you will not be allowed to attend the University until all conditions specified in the admission offer ~~attached to the Offer of Admission~~ have been fulfilled.

McMaster University may require students presenting admission documents from schools outside of North America, to have those documents authenticated via WES Canada <https://www.wes.org/ca/>. This requirement, if applicable, will be specified in the 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 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/> <https://future.mcmaster.ca/>.

### General Requirements

High school D 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/english-proficiency/> 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.

Results of an equivalent **AP challenge examination** will be accepted in lieu of ONE of the science/math prerequisites. ~~if your school does not offer the subject.~~ A minimum score of 4 or 5 is required for AP challenge exams.

~~Students presenting AP courses that are prerequisites 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 is required to meet admission conditions.~~ Upon request, students presenting AP courses to fulfill program requirements (or requisites) may be required to present official AP Examinations results with minimum results of '3' via the College Board to finalize their admission.

~~**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 course 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.

~~In response to the pandemic, McMaster University made the submission of SAT/ACT optional for the Fall 2022 admission cycle.~~ For Fall 2023, SAT/ACT results (if submitted), will be considered if they benefit the student and strengthen their application. Students who do not submit a score will not be penalized. The institutional code for SAT/AP is 0936. The institutional code for ACT is 5326.

For SAT/ACT admission requirements for Fall 2023 2024, please visit <https://future.mcmaster.ca/admission/> <https://future.mcmaster.ca/> for updated information as it becomes available: .

- Detailed school profile including grading scale ~~may be requested~~
- 2nd quartile results can be used for consideration for a conditional offer of admission provided at least 2 of the 5 required courses have been completed ~~and~~ with grades presented.
- Grade 9, 10, 11 and Grade 12 2nd quartile results are required for an admission review
- SAT and SAT II Subject Test results ~~must be sent directly from the College Board. directly and cannot be accepted electronically.~~
- SAT minimum ~~overall score of 1200 or greater (Reading/Math sections only) with a minimum score of 600 in each section (Institutional Code for SAT/AP — 0936)~~

OR

- ACT ~~minimum composite score of 27 or greater (Institutional Code — 5326)~~



## 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** three of which must be at the Advanced A2 Level with the balance of the subjects at the IGCE/GSCE (Ordinary Level). Advanced Level subjects must be appropriate to your chosen program.

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

## Other Countries or Educational Systems

For admission requirements from other education systems, please visit <https://future.mcmaster.ca/admission/> <https://future.mcmaster.ca/> 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 and required admission average 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.
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.

Having attended a post-secondary institution after high school graduation disqualifies applicants from being 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

McMaster programs have enrollment limits and admission is by selection. ~~Possession~~ Achievement of the minimum admission requirements does not guarantee admission. Admission will be considered on a case by case basis and is not guaranteed. Transfer applicants will normally receive credit for courses in which a grade of at least a C- ~~standing~~ (as per the McMaster grading scale) has been achieved. Assessment of courses for transfer credit is subject to the guidelines of the individual Faculties.

Transfer students 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~~ The Admissions Committee may request 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

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

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

### 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, and Social Psychology 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 for admission 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. To be eligible to take courses as a Continuing Student applicants will need to be completing or have completed undergraduate university degree with a minimum GPA of ~~and at least~~ a C average, with no failures in the final year of study ~~, 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~~ Graduates of a McMaster undergraduate degree program and who 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 Students with a non-McMaster degree, ~~you~~ must apply ~~formally~~ for admission ~~through OUAC~~. In subsequent academic terms, ~~you~~ students 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~~ Those who 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 five 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 [indigsc@mcmaster.ca](mailto:indigsc@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

Applicants 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 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/>.

## B. Mature Students (Admission)

Applicants ~~for admission consideration~~, who do not qualify for admission under one of the above categories, ~~will~~ may be assessed for eligibility as a mature student, provided ~~both of the following criteria is presented~~ ~~conditions are satisfied~~:

1. The applicant has not attended secondary school or college on a full-time basis for at least two years.
2. The applicant has 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 satisfactory completion of Grade 12 Calculus and Vectors U (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 Grade 12 U Advanced Functions U and Calculus and Vectors U (or equivalent) 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~~ Presenting 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, Automation Engineering Technology I (B.Tech.), 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, and Nursing I.**

~~Those admitted as a mature~~ Mature students 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 per term (three courses). Within the first 18 units, mature students will be limited to taking three units (one course) per in each term of the Spring/Summer session.

Upon completion of 18 units, academic performance is 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)

Students currently attending another university, may apply to take McMaster courses for credit at their own/home institution. Please note, not all courses are available for credit outside McMaster and all are subject to enrollment limits. ~~It is important applicants~~ Applicants must adhere to McMaster application deadlines.

Applications are made through the Ontario Universities' Application Centre (OUAC). The **Letter of Permission and an official transcript are required.** Transcripts are reviewed to ensure prerequisites courses have been completed. **Approval of a Visiting Student application does not guarantee your enrollment in a course.**

Subsequent requests to take courses on a Letter of Permission do not require another application; however an updated Letter of Permission and a ~~current~~ updated official transcript must be sent to the Office of the Associate Dean of the Faculty offering the course at McMaster. If interested in registering in courses offered by more than one Faculty, approval from each Office of the Associate Dean must be obtained.

## D. Graduates of McMaster Certificate/Diploma Programs

Applicants who have completed certificate or diploma programs from McMaster may be granted advanced credit up to maximum specified by Undergraduate Council. Faculties review the subject matter of both the certificate and degree programs. Credit granted will normally be applied against elective courses. For more information regarding advanced credit, please refer to the *Certificate and Diploma Programs* section of this Calendar.

## E. Post-Degree Students

University graduates or a persons with professional qualifications who wishes to take one or more graduate courses but not proceed to an advanced degree, may apply to McMaster as a post-degree student. To enroll as a post-degree student, apply to the appropriate department(s) 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 uncertain about taking degree courses, registering as a listener in a degree course may be of interest. Listeners attend all classes, but do not complete any of the essays, tests or other formal requirements and do not receive a grade or credit. 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 <https://registrar.mcmaster.ca/fees/> 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

Outstanding Grade 12 students who wish to enroll in a university-level course while completing Grade 12 U and M courses in their final year of study, may apply for the Enrichment Program. For more information contact the Office of the Registrar <https://future.mcmaster.ca/contact-us/>.

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

Former McMaster students 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 wish to return to studies, must apply for Readmission. Students from the School of Nursing or the Physician Assistants program must apply for Readmission regardless of time elapsed following voluntary withdrawal.

~~If you were~~ Those enrolled (have a record of course enrolment) within the last five years and ~~you~~ who left the university in good academic standing (and have not attended another university or completed a college diploma elsewhere), ~~do not require an application for readmission. then it is not necessary for you to apply for Readmission.~~ Normally, ~~you~~ Students will be permitted to enrol in their ~~your~~ previous program or another program for which ~~you~~ they qualify. ~~You~~ Students must contact the Office of the Registrar directly to request registration access ~~have your status reactivated~~ prior to enrollment.

## 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, well-qualified graduates of a three-year program where the college work is appropriate to the chosen university program, may receive up to 30 units of transfer credit. Graduates of two-year programs will be reviewed for transfer credit 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 the academic record warrants special consideration.

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

1. 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. The applicant's secondary school record.

Each case will be considered ~~individually~~ on its own merits for the program desired. Further information is available at <https://registrar.mcmaster.ca/build-degree/college-transfer/>. Requirements may be subject to change.

## C. Advanced Credit

Subject to the discretion of the Faculty, advanced credit may be granted for a completed: 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.) the minimum requirements prescribed have been achieved. Advanced credit may shorten degree program length at McMaster.

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

Applicants 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/~~below 50%~~. 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

Applicants asked to meet the English Language Proficiency requirement, 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 are specified on our web site

<https://future.mcmaster.ca/english-proficiency/>. It is the applicant's ~~your~~ responsibility to make all arrangements regarding the writing of the English Language Proficiency tests and to have the official score report submitted to the Office of the Registrar, Admissions in a timely manner.

At the discretion of the university, ~~you~~ applicants may be exempted from this requirement if ~~you~~ meeting one of the following requirements:

- i. Attended, 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 immediately prior to your anticipated start date at McMaster, **OR**
- ii. Attended, full-time academic studies (non-ESL), at an accredited English medium Secondary School (High School) or Post-Secondary College for at least four years,\* immediately prior to the anticipated start date at McMaster **OR**
- iii. Attended full-time academic studies (non-ESL), at an accredited English medium University for at least one year, immediately prior to the anticipated start date at McMaster **OR**
- iv. Resided in an English-speaking country for at least four years immediately prior to anticipated start date at 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: <https://mdprogram.mcmaster.ca/>.

#### 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 regarding about the collection and use of this information ~~may be directed to 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: <https://meld.humanities.mcmaster.ca/diploma/>

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 the student 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 <https://meld.humanities.mcmaster.ca/diploma/> for more information or email [meld@mcmaster.ca](mailto:meld@mcmaster.ca).

### Fall Term

(September - December)

- LINGUIST 1E03 - Introduction to English Linguistics I (degree credit course)
- MELD 1M00 - Mentorship Lab 1
- MELD 1Q03 - Critical and Analytic Reading
- MELD 1QQ3 - Grammar, Structure and University Writing
- MELD 1R03 - Aural Communication and Academic Culture
- MELD 1RR3 - Oral Communication for Academic and Social Interactions

### Winter Term

(January - April)

- LINGUIST 1EE3 - Introduction to English Linguistics II (degree credit course)
- MELD 1MM0 - Mentorship Lab 2
- MELD 1S03 - Critical Reading, Research and Academic Vocabulary
- MELD 1SS3 - Academic Writing, Reporting and Research

- MELD 1T03 - Cross-Cultural Perspectives on Language and Language Learning
- MELD 1TT3 - Oral Communication for Academic Discourse

## 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 six-week summer certificate program for current or prospective graduate students from any institution who are looking to improve their English-language skills. The MERGE program offers over 200 hours of language training; 35 hours per week. 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.

The MERGE program goes beyond essential training in speaking, listening, reading, and writing. It has been designed to support the integration of these skills as applied to real world contexts students will encounter during graduate school and beyond. 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

Each of the program's six weeks will be divided into modules that will focus on a different set of skills. These modules will approach the development of these skills from the point of view of both cultural understanding and practical implementation, with an emphasis on teaching and practising the language skills needed to be successful in each domain. The six modules are:

- **Module 1 - General social interactions:** conventions and strategies for everyday social encounters students face
- **Module 2 - Academic feedback and critique:** the role of critique in academia along with tools for both giving and receiving feedback or peer review
- **Module 3 - Academic reasoning:** identifying, understanding, and summarizing arguments and evaluating supporting evidence in both reading and listening
- **Module 4 - Academic interactions:** navigating relationships with supervisors, teams, and other faculty in person, through email, at conferences, and in seminars
- **Module 5 - Career preparation:** best practices for CVs/resumes, job interviews, elevator pitches, and online brand building
- **Module 6 - Teaching:** principles of effective teaching including developing lessons, interacting with students, and grading

# 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 an application has been received, McMaster's Office of the Registrar, Admissions will provide an acknowledgment of receipt of application plus further instructions/details about tracking the application.

## 1. Categories of Admission

### A. Current Ontario High School Students

The 101 application should be used if ALL of the following requirements apply:

- 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 any 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 institution (college/university/career college)**
- 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/) <https://www.ouac.on.ca/ouac-101/>. Please consult with your secondary school guidance office regarding this application process.

### B. All Other Canadian High School Students

For applicants currently attending secondary school outside of Ontario or have recently completed a secondary school diploma in any Canadian province or territory

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

### C. High School Students with International Qualifications

Applicants currently attending or have recently completed a secondary school program outside of Canada

- Use the OUAC 105 on-line application at [www.ouac.on.ca/105/](http://www.ouac.on.ca/105/) <https://www.ouac.on.ca/ouac-105/>
- D. University/College Transfer/Continuing Students

If currently registered in or have completed an undergraduate degree program at another university and wish to attend McMaster **OR** If 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/) <https://www.ouac.on.ca/ouac-105/>

### E. Nursing Consortium Programs

Applying to McMaster's Nursing (B.Sc.N). programs at the Mohawk College or Conestoga College sites

- Current Ontario high school applicants - use the OUAC 101 on-line application at [www.ouac.on.ca/101/](http://www.ouac.on.ca/101/) <https://www.ouac.on.ca/ouac-101/>
- All other applicant groups use the OUAC 105 on-line application at [www.ouac.on.ca/105/](http://www.ouac.on.ca/105/) <https://www.ouac.on.ca/ouac-105/>

- 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 or Physician Assistant student, you must apply for readmission regardless of the amount of time that has elapsed. Apply on-line at: <https://registrar.mcmaster.ca/build-degree/continuing-studentssecond-degree/> <https://registrar.mcmaster.ca/build-degree/continuing-students-second-degree/#tab-20>
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 <https://registrar.mcmaster.ca/build-degree/continuingstudents-second-degree/> <https://registrar.mcmaster.ca/build-degree/continuing-students-second-degree/#tab-10>
3. **Reinstatement:** If you are a former McMaster student who was required to withdraw from studies at McMaster.
  - Complete the *Reinstatement Request Form* found online here: <https://registrar.mcmaster.ca/build-degree/reinstatement/> . Submit a Service Request in Mosaic and attach the completed form.
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. You will submit a Continuing Student Status Update form as a Service Request in you Mosaic Student Centre. Once this is approved you will be activated for the requested term and be able to enrol. You will be subject to any course prerequisites and seat availability. Access the necessary form online at: [Contact the Office of the Registrar, Services, for assistance https://registrar.mcmaster.ca/events/connect-with-us-online/](https://registrar.mcmaster.ca/events/connect-with-us-online/) <https://registrar.mcmaster.ca/build-degree/continuing-students-second-degree/#tab-00>.

## 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/) <https://www.ouac.on.ca/ouac-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/) <https://www.ouac.on.ca/ouac-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. The Admission Office may request clarification and/or additional supporting documentation when applicable. Application requirements will be available for the applicant to view in their McMaster Applicant Portal. Upon applying, all applicants receive communication with instructions on how to access the McMaster Applicant Portal. ~~in letters from the appropriate Faculty and/or in letters from Office of the Registrar, Admissions.~~

Transcripts of marks and/or certificates from all secondary and post-secondary institutions attended must be provided. When requested to provide an **official** transcript, an official signed and sealed transcript record of all academic achievement must be **issued and sent by an academic institution directly to McMaster University, Office of the Registrar, Admissions.**

If currently attending secondary school, contact a guidance counselor to request your current Grade Report showing all Grade 12 courses. If you previously attended secondary school in another province, you may need to request 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, transcripts in the original language as well as notarized English translations are required.

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 an application for admission **becomes the property of the University and will not be returned**. Documentation for those not accepted or for those who fail to enroll following acceptance, will be destroyed at the end of the admissions cycle. If an applicant reapplies, they must resubmit any required documentation.

## 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 and you are advised to review admission requirements carefully before applying**, to determine your academic eligibility for admission consideration. Please see the *Admission Requirements* section of



this calendar for general information. University transfer applicants should review Programs (by Degree) and Minors requirements section before applying.

McMaster University has a number of highly competitive by-selection programs requiring a mandatory supplementary application/assessment, and 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 applicants for consideration to these specified programs. Submission of an application and/or amendments should be made well in advance of the deadlines listed below.

## Fall and Winter Terms

The dates and deadlines listed below are for applications submitted for the ~~2022-2023~~ 2023-2024 academic year. Please refer to <http://future.mcmaster.ca> for the date and deadline information for new applications.

PROGRAM	APPLICATIONS	MANDATORY SUPPLEMENTARY APPLICATIONS
Arts & Science	January 4 <del>3</del> 12	February 1, 11:59pm (ET) Details at: <a href="https://arts.mcmaster.ca/future-students/supplementary-application/">https://arts.mcmaster.ca/future-students/supplementary-application/</a>
Actuarial & Financial Mathematics (Above Level 1) Regular and Co-op Programs	April 1	<del>April 30</del> May 9 For information see: <a href="https://www.math.mcmaster.ca/undergraduate/undergraduate-programs/41-undergraduate-studies/1758-afm-supplementary-application.html">https://www.math.mcmaster.ca/undergraduate/undergraduate-programs/41-undergraduate-studies/1758-afm-supplementary-application.html</a>
Automation Engineering Technology I Co-op (B.Tech.), Automotive and Vehicle Engineering Technology I Co-op (B.Tech.), Biotechnology I Co-op (B.Tech.)	January 4 <del>3</del> 12	<del>End of January</del> January 27, 12:00 noon (ET)  Online Kira® Assessment Details at: <a href="https://www.eng.mcmaster.ca/future-students/supplementary-application">https://www.eng.mcmaster.ca/future-students/supplementary-application</a>
Bachelor of Technology Degree Completion (Above Level 1)	March 1 (May intake) July 1 (September intake) November 1 (January intake)	Must be completed by the application deadline. Details at: <a href="https://www.eng.mcmaster.ca/forms/bachelor-technologydegree-completion-program-supplementary-application-form">https://www.eng.mcmaster.ca/forms/bachelor-technologydegree-completion-program-supplementary-application-form</a>
Biomedical Discovery & Commercialization (Level 3 entry; Health Sciences (Above Level 2))	February 1	February 1 Supplementary application deadline - details at <a href="https://bdcprogram.mcmaster.ca/apply/">https://bdcprogram.mcmaster.ca/apply/</a>
Computer Science I (Regular and Co-op)	January 4 <del>3</del> 12	January <del>28-27</del> , 12:00 noon (ET) Online Kira® Assessment Details at: <a href="https://www.eng.mcmaster.ca/future-students/supplementary-application">https://www.eng.mcmaster.ca/future-students/supplementary-application</a>
Computer Science (Above Level 1) (Regular and Coop)	April 1	<del>Mid-</del> April 17 Online Kira® Assessment Details at: <a href="https://www.eng.mcmaster.ca/futurestudents/supplementary-application">https://www.eng.mcmaster.ca/futurestudents/supplementary-application</a>
Engineering 1 (Regular and Co-op)	January 4 <del>3</del> 12	January <del>28-27</del> , 12:00 noon (ET) Online Kira® Assessment Details at: <a href="https://www.eng.mcmaster.ca/future-students/supplementary-application">https://www.eng.mcmaster.ca/future-students/supplementary-application</a>
Engineering (Above Level 1) (Regular and Co-op) Engineering & Management (Above Level 1) (Regular and Coop) Engineering & Society (Above Level 1) (Regular and Co-op)	April 1	<del>Mid-</del> April 17 Online Kira® Assessment Details at: <a href="https://www.eng.mcmaster.ca/futurestudents/supplementary-application">https://www.eng.mcmaster.ca/futurestudents/supplementary-application</a>
Health Sciences I (Honours)	January 4 <del>3</del> 12	Early February Details at: <a href="https://bhsc.mcmaster.ca">https://bhsc.mcmaster.ca</a>
Health Sciences (Honours) (Above Level 1)	April 1	Early May Details at: <a href="https://bhsc.mcmaster.ca">https://bhsc.mcmaster.ca</a>

PROGRAM	APPLICATIONS	MANDATORY SUPPLEMENTARY APPLICATIONS
<b>Health Sciences (Above Level II) Biomedical Discovery &amp; Commercialization Program</b>	February 1	February 1 <a href="https://bdcprogram.mcmaster.ca/apply/bhsc-admission-requirements/">https://bdcprogram.mcmaster.ca/apply/bhsc-admission-requirements/</a>
<b>Honours Biology and Pharmacology Co-op (Above Level-4 II)</b>	February 1	February 1 Mandatory Letter of Intent specifying reasons for applying and applicant suitability for the program. Email biophrm@mcmaster.ca by February 1.
<b>Honours Integrated Science I</b>	January 4 <del>3</del> 12	February 1 Details at: <a href="https://science.mcmaster.ca/sis/undergraduate/isci/isci-admission-requirements.html">https://science.mcmaster.ca/sis/undergraduate/isci/isci-admission-requirements.html</a>
<b>Integrated Biomedical Engineering &amp; Health Sciences 1 (Regular and Co-op)</b>	January 4 <del>3</del> 12	January 28-27, 12:00 noon ET Online Kira® Assessment Details at: <a href="https://www.eng.mcmaster.ca/future-students/supplementary-application">https://www.eng.mcmaster.ca/future-students/supplementary-application</a>
<b>Integrated Business &amp; Humanities</b>	January 4 <del>3</del> 12	February 1 Online Kira® Assessment. For more information see: <a href="https://ug.degroote.mcmaster.ca/academic-programs/integrated-business-humanities/">https://ug.degroote.mcmaster.ca/academic-programs/integrated-business-humanities/</a>
<b>Justice, Political Philosophy &amp; Law</b>	April 1	April 1 For more information see: <a href="https://philos.humanities.mcmaster.ca/undergraduate-programs/justice-political-philosophy-and-law-program/">https://philos.humanities.mcmaster.ca/undergraduate-programs/justice-political-philosophy-and-law-program/</a>
<b>Midwifery</b> (including submission of all transcripts)	February 1 January 12	Note: You must complete all prerequisite subjects by the application deadline date.  High school applicants: The corresponding Grade 11 subjects for prerequisite subjects must be included in the Grade 12 transcript to be submitted to the University by February 1, if you are completing the corresponding Grade 12 subject in the second semester.  You must complete Casper on one of the dates listed on <a href="https://takealtus.com/welcome-to-takealtus/">https://takealtus.com/welcome-to-takealtus/</a> .  You must complete the Identity and Admissions Survey found here <a href="https://surveys.mcmaster.ca/limesurvey/index.php/675272?lang=en">https://surveys.mcmaster.ca/limesurvey/index.php/675272?lang=en</a> by February 1.
<b>Nursing I: Secondary School Applicants</b>	February 1 January 12	Mandatory Supplementary application information is available on the You must complete Casper on one of the dates listed on the CASPer™ website, <a href="https://takealtus.com/welcome-to-takealtus/">https://takealtus.com/welcome-to-takealtus/</a> .
<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 You must complete Casper on one of the dates listed on the CASPer™ website, <a href="https://takealtus.com/welcome-to-takealtus/">https://takealtus.com/welcome-to-takealtus/</a> .
<b>Nursing: Transfer from another Nursing program to the McMaster site.</b>		Students from other university Nursing programs should contact the McMaster Nursing program office at 905-525-9140, 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.  In addition, you must have completed or already registered for any prerequisite subjects by February 1, 2023.

PROGRAM	APPLICATIONS	MANDATORY SUPPLEMENTARY APPLICATIONS
<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 You must complete Casper on one of the dates listed on the CASPer™ website, <a href="https://takealtus.com/welcome_to_takealtus/">https://takealtus.com/welcome_to_takealtus/</a> .  In addition, you must have completed or already registered for any prerequisite subjects by February 1, 2023.
<b>Nursing Post-Diploma RPN Stream (Mohawk) (Conestoga)</b>	February 1	Mandatory Supplementary application information is available on the You must complete Casper on one of the dates listed on the CASPer™ website, <a href="https://takealtus.com/welcome_to_takealtus/">https://takealtus.com/welcome_to_takealtus/</a> .  In addition, you must have completed or already registered for any prerequisite subjects by February 1, 2023.
<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.	<del>February 1</del> January 12	End of February  The supplementary application will be released by February 24 and must be completed by noon (ET) on March 2, 2023. <a href="https://physicianassistant.mcmaster.ca/">https://physicianassistant.mcmaster.ca/</a>
<b>Social Work</b>	<del>February 1</del> January 12	February 1 You must complete a supplementary application. <a href="https://surveys.mcmaster.ca/limesurvey/index.php/978738?lang=en">https://surveys.mcmaster.ca/limesurvey/index.php/978738?lang=en</a>

## 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. Applications from applicants with no postsecondary experience will be reviewed for admission pending space availability in the program. All supporting official documentation must be received by February 15, 2023. All applications received after February 1, 2023, or without all paperwork submitted by February 15, 2023, 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 13	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 -</b>		
<b>January Entry</b>	November 1	November 15
<b>May Entry</b>	March 1	March 15
<b>September Entry</b>	July 1	July 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>	September entry - June 30 May entry – April 1 June entry – May 15  Humanities September entry - July 15	September entry - June 30 May entry – April 1 June entry – May 15  Humanities September entry - July 15
<b>Re-admission Deadline</b>	July 15	July 15
<b>Nursing Deadline</b>	February 1-February 15	February 1
<b>Physician Assistant</b>	February 1	N/A

### Academic Advising for Admitted Students

Applicants offered admission to a program at McMaster, will be asked to confirm acceptance of the offer. Admission offers will include information regarding acceptance procedures, a response deadline and registration procedures. Admission acceptance deadlines specified in the Offer of Admission letter are strictly enforced. Accepting the offer of admission well before the specified deadline date is recommended.

If admitted to Level 1, the Faculty Office may arrange a meeting with an Academic Advisor. Although summer advising and registration sessions are not compulsory, it is recommended to participate.

If offered admission above Level 1, academic advising with the Office of the Associate Dean of the Faculty offering the program, or the Office of the Director of the program may be arranged.

## 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:

- a. An applicant to the University believes 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 they think the decision should be reviewed.
- b. 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.

### Enquiries: Application Procedures

For information about applying to McMaster, visit: ~~<https://future.mcmaster.ca/how-to-apply/>~~ <https://future.mcmaster.ca/apply/> or direct your enquiries to our online chat: <https://future.mcmaster.ca/contact-us/>

**REPORT TO SENATE  
FROM THE  
EXECUTIVE COMMITTEE**

**Open Session (Regular Agenda)**

**Information**

**i. Collegial Governance**

At its January 25, 2023 meeting, the Executive Committee discussed a session on Collegial Governance for Senators.

**ii. Persona Non Grata Declarations Policy**

At its January 25, 2023 meeting, the Executive Committee discussed the Persona Non Grata Declarations Policy.

**Approval**

**iii. January 2024 Senate Meeting**

At its January 25, 2023 meeting, the Executive Committee discussed and approved moving the January 2024 Senate meeting date to provide individuals more time to prepare and submit materials for the meeting and to allow the Secretariat a more reasonable timeframe for posting the meeting materials.

Senate Executive Committee now recommends,

**that Senate, on the recommendation of the Executive Committee, approve an exception to the Senate By-Laws to permit the January 2024 Senate meeting date be moved to Wednesday, January 17, 2024.**

**SENATE: FOR APPROVAL/INFORMATION  
February 8, 2023**

January 18, 2023

**TO:** David Farrar  
Chair of Senate

**AND TO:** Senate Executive Committee

**FROM:** Andrea Thyret-Kidd  
University Secretary

**SUBJECT: Senate Enquiry - Persona Non Grata Declarations Policy**

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The following information is provided in response to an enquiry raised at the Senate meeting on December 14, 2022. The enquiry was a series of questions related to the origins and approval of the Persona Non Grata (PNG) Policy, posted on the Human Resources website.

### **Background**

As an operational policy focused on protecting the health and safety of the campus community, the PNG Policy was approved by the PVP (President and Vice-Presidents) group on June 4, 2019. As noted in the policy, the responsible executive is the Vice-President (Administration) (now renamed the Vice-President, Operations and Finance).

Previous to June 2019, there was a long-standing (decades) PNG working process operated by a number of operational units within the University. The introduction of the formal policy in 2019 was an initiative led by the former Vice-President (Administration) and was intended to formalize these working practices, promote transparency and improve consistency. It also included additional measures to ensure procedural fairness, such as incorporating the right for individuals who are subject to a PNG declaration to seek a review of the decision. Once approved, the PNG policy was made publicly available on the Human Resources website making the processes more visible and accessible than the earlier working procedures.

The policy was drafted with the input of many areas, including Environmental and Occupational Health and Support Services, Security Services, Office of Legal Services, Human Resources Services, Students Affairs, Housing & Conference Services, etc.

### **PNG Declarations**

The authority to enact PNGs derives from the responsibility of the Board of Governors to maintain the health, safety and security of the University's property, employees and students. The Board of Governors oversees the management and control of the University's operations, including the University's property, revenues and business affairs, with the day-to-day responsibility being delegated to the President. The Board has a dedicated committee – the Audit and Risk Committee – which assists the Board in fulfilling its oversight responsibilities on a range of issues, including risk management, internal controls, and legal compliance. The President and Vice-Presidents report to and are accountable to the Audit and Risk Committee for these matters, and for ensuring compliance with the broader legal and regulatory framework that the University is subject to.

The PNG policy is an operational policy that works in concert with other Senate and Board approved policies and governs the administrative requirements for how and when a PNG declaration is made, communicated, and reviewed. In this way, it is similar to other health and safety policies such as the Workplace & Environmental Health and Safety Policy, the Storm Emergency Policy or risk management programs that are posted to the Human Resources Services website.

PNGs can also be issued through certain policies approved by both the Senate and the Board, such as the Discrimination & Harassment Policy, Sexual Violence Policy, Workplace Violence Policy, and Code of Student Rights & Responsibilities.

### **Health and Safety and PNG Policies**

PNG policies are standard operational practice for most complex organizations that are responsible for the health and safety of individuals and premises, particularly those with significant physical space and property.

Universities, like other organizations with employees, are subject to the Ontario Occupational Health and Safety Act (OHSA). The Act makes employers responsible for providing a safe working and learning environment, taking all reasonable precautions to protect employees from illness and injury and maintaining a working environment free from harassment, sexual harassment and workplace violence.

### **The PNG Policy at McMaster**

McMaster has more than 50,000 students, faculty and staff. While the University campus is seen as a community, it is not separate from the rest of the Hamilton

community and is not immune from the hazards and situations that are found throughout society. The PNG policy applies to all visitors to McMaster's campus so is not limited to particular campus groups.

From time to time McMaster must manage potentially dangerous and also illegal activities, including threatening behaviour by and against faculty, students and staff, and violent incidents including the use of weapons. The University must be prepared to manage a wide-range of incidents that can occur at any time. The PNG Policy is one of the tools that assists with maintaining the health and safety of campus.

In practice, there is a measured/minimal approach to using PNG declarations. In some cases, they are used for a short length of time or for a specific location such as a class or residence building. If the situation has a greater potential to compromise the health and safety of campus, a PNG declaration of a longer duration, or in some cases a permanent PNG, may be required. Please see below for statistics on the 2022 PNG declarations.

#### **Additional Question Raised at Senate**

The enquiry raised at the Senate also raised questions about the circulation of a poster that includes the name and picture of an individual subject to a PNG designation. This is called an Occupational Health and Safety Act (OHSA) notice or bulletin. The issuing of such a bulletin is conducted through the OHSA and not through the PNG Policy, although the two are often closely related.

As mentioned above, Universities are subject to legislation such as the OHSA. The Act requires employers to provide information to workers related to a person who could pose a risk of violence within the workplace.

The legislation reads:

##### **s.32.0.5 Information**

(2) An employer shall provide a worker with,

(a) information and instruction that is appropriate for the worker on the contents of the policy and program with respect to workplace violence; and

(b) any other prescribed information or instruction. 2009, c. 23, s. 3.

##### **Provision of information**

(3) An employer's duty to provide information to a worker under clause 25 (2) (a) and a supervisor's duty to advise a worker under clause 27 (2) (a) include the duty to provide information, including personal information, related to a risk of workplace violence from a person with a history of violent behaviour if,

(a) the worker can be expected to encounter that person in the course of his or her work; and

(b) the risk of workplace violence is likely to expose the worker to physical injury. 2009, c. 23, s. 3.



**Limit on disclosure**

(4) No employer or supervisor shall disclose more personal information in the circumstances described in subsection (3) than is reasonably necessary to protect the worker from physical injury. 2009, c. 23, s. 3.

McMaster uses a Violence Risk Triage (VRT) process when the University becomes aware that an individual poses, or may pose, a violence risk to members of the McMaster University community. The VRT is an objective, evidence-based tool used to determine whether there are reasonable grounds to be concerned for future risk of violence. The outcome of the VRT informs recommended management strategies to safeguard the university community. These strategies may include the issuing of a PNG declaration or the issuing of a health and safety notice (bulletin) in accordance with the employer's duty to protect and inform. Bulletins are issued less often than PNGs and there is a requirement to only provide the bulletin to those persons who may reasonably be expected to encounter the relevant individual in their workplace.

This information was gathered after discussions with Brent Davis (University Counsel), Maggie Pooran (Executive Director, Health, Safety, Well-Being and Labour Relations) and Wanda McKenna (Assistant Vice-President & Chief Human Resources Officer). They and Saher Fazilat (Vice-President Operations & Finance) will be available at the Senate Executive meeting to answer any further questions.

Cc S. Tighe, Vice-Chair of Senate

A total of 25 persons were PNG'd in calendar year 2022.

Of the 25 persons declared PNG, the analysis demonstrates the following:

2022	Persons				
Total PNG 25	25				
Status	Student	Staff	Non Affiliated		
	7	3	15		
Issued By (Dept)	Security	SSCMO	ELR	Housing	
	16	5	3	1	
Duration	1 Yr	5 Yr	Term	Courts	Until Further
	13	3	3	1	5
Removed from	Campus	Residence			
	23	2			

Court: PNG while the person is before the courts on judicial conditional release  
 Until Further: Until further notice  
 SSCMO: Student Support and Case Management Office  
 ELR: Employee Labour Relations



UNIVERSITY SECRETARIAT  
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January 18, 2023

**TO:** David Farrar  
Chair, Senate

**AND TO:** Senate Executive Committee

**FROM:** Andrea Thyret-Kidd  
University Secretary

**SUBJECT: January 2024 Senate Meeting**

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Meetings of the Senate are traditionally held on the second Wednesday of every month and the Secretariat is expected to post meeting materials one week in advance of the meeting. In January of 2024, the second Wednesday is January 10 and meeting materials would need to be posted on Wednesday, January 3.

The proposed Sessional Dates for 2023-24 are currently being reviewed by Undergraduate Council and classes are proposed to start on Monday January 8, 2024. The University holiday closure dates are not known at this time.

I would like to propose the January 2024 Senate meeting date be moved to Wednesday, January 17. This will give individuals more time to prepare and submit materials for the meeting, a more reasonable timeframe for the Secretariat to post the meeting materials, and moves the meeting into the second week of classes for Senators.

Please see below for a January 2024 calendar. I look forward to discussing this proposal with Senate Executive committee members.



# January 2024

Canada

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 New Year's Day	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Cc S. Tighe, Vice-Chair, Senate

**REPORT TO SENATE**  
**FROM THE**  
**UNIVERSITY PLANNING COMMITTEE**

**Open Session (Regular Agenda)**

At its meeting on January 18, 2023, the University Planning Committee approved the following recommendations and now recommends them to Senate for approval:

**Approval**

**i. Report from Graduate Council**

**a. Master of Biomedical Innovation Program**

The Master of Biomedical Innovation (MBI) program will be a multidisciplinary, project-oriented graduate program focused on bridging the gap between device and health system technology development and its transfer into local, national, and international biomedical markets. The MBI will be a one-year program requiring three terms to complete.

The University Planning Committee now recommends,

**that Senate approve the establishment of the Master of Biomedical Innovation (MBI).**

**ii. Closure of the Institute for Multi-Hazard Systemic Risk Studies (INTERFACE)**

INTERFACE was established as a McMaster Senate approved Research Institute in March of 2015 reporting to the Office of the Vice-President, Research. In Spring of 2021, as per the policy Guidelines for the Governance and Review of Research Institute, Centres and Groups, INTERFACE underwent a five-year external review. In Spring of 2022 following up on the implementation of the ERB recommendations, the INTERFACE Governing Board assessed that the Institute had not achieved any increase in faculty engagement, nor demonstrated the ability to build towards operation without significant and continuing university funding support. The Director was informed in June 2022 that the Governing Board would be recommending that INTERFACE transition to a Research Group with effect from December 31st, 2022 (providing a six month ramping down period).

The University Planning Committee now recommends,

**that Senate approve, for recommendation to the Board of Governors, the closure of the Institute for Multi-Hazard System Risk Studies.**

**SENATE: FOR APPROVAL**  
**February 8, 2023**



**NEW PROGRAM PROPOSAL FOR:  
Master of Biomedical Innovation (MBI)**

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# 1. Program

## 1.1 Program Description

The Master of Biomedical Innovation (MBI) program will be a multidisciplinary, project-oriented graduate program focused on bridging the gap between device and health system technology development and its transfer into local, national, and international biomedical markets. By linking the theory and practice of the biomedical innovation process, it will deliver a systematic but responsive approach to the critical, emerging discipline of entrepreneurship. Graduates with the MBI degree will have the knowledge and skills needed to seamlessly foster innovative biomedical approaches to current and future health challenges from the earliest stages (identification of real-life healthcare problems/needs, prototype development and testing) into practical, market-ready ventures. This integrated program will leverage existing partnerships and agreements between the Faculty of Health Sciences, the Hamilton hospital networks, local innovation hubs, and industry partners. MBI graduates will contribute to the growing biomedical and health technology sector, thereby attracting and retaining entrepreneurial talent that leads to the creation of not only improved health care but new jobs, economic growth, and community benefits.

The MBI will be a one-year program requiring three terms to complete. Administratively, the MBI will be housed in the Department of Surgery and will be the cornerstone of the new Marnix E. Heersink School of Biomedical Innovation and Entrepreneurship. The project and course-based curriculum will be anchored by opportunities for immersive experiences and a series of intensive bootcamps that will guide learners through the biomedical innovation and entrepreneurship process.

Learners will apply the theories and entrepreneurship competencies acquired throughout the curriculum to a program-long, venture-oriented project course. The MBI will provide opportunities to identify a biomedical problem to work on and support for those who already have a project in mind. Working in either a clinical or non-clinical environment, depending on the nature of the project, learners will complete a series of milestones that guide the creation of a novel biomedical solution and the formation of an early-stage biomedical venture. At the end of the program, new ventures will be presented at a Final Pitch Bootcamp, where teams will seek support and funding from investors, incubators, and accelerators.

Team projects may include innovations in:

- Medical devices (e.g., implants, surgical tools, diagnostics)
- Therapeutics and diagnostics (e.g., proteomics, nanotechnology)
- Digital technologies (e.g., wearable devices, artificial intelligence, mobile applications)
- Drug delivery platforms (e.g., nanoparticles, hydrogels, biomimetics)
- Health systems and processes (e.g., healthcare software, apps, bioinformatics, quality improvement)

The structure and delivery of the program will allow for maximum flexibility, and will include in-person events (e.g., intensive bootcamps) with virtual and online components; as such it will enable learners to balance their various commitments. Housed within the new Heersink School and with a partnership to The Clinic @ Mac (<https://healthinnovation.mcmaster.ca/visit-the-clinic>), a campus-linked health sciences incubator located in the Health Sciences Library, MBI students will have access to collaborations and learning space to drive their innovations forward. Learners will also have access to entrepreneurs, coaches, and mentors, as well as an on-demand resource portal to support ventures at all development stages.

The central goal of the program is to produce graduates equipped with the theory, experience, and skillset to create innovative biomedical solutions, bridging the gap between academia and biomedical

entrepreneurship and innovation. By the end of the program, graduates will have gone through the full life cycle of creating a business and product. With the personalized support of coaches and mentors, they will have learned the skills, and acquired the network and expertise in the healthcare space with our clinicians to be a successful innovator and disruptor in the healthcare arena. Overall, the delivery and experiences outlined for the proposed MBI will be unique within health sciences education and would constitute the first graduate program of its kind in Canada. This document presents a proposal for this program with the goal of an initial offering of the MBI in September 2023.

## **1.2 Proposal Preparation and Consultation Process**

When the demand for a graduate level program in health and biomedical innovation became evident, we began an investigation into the current landscape of existing programs in North America. A competitor analysis and in-depth literature review were conducted to identify the current landscape of health and biomedical innovation education across North America. Surveys and interviews of prospective students, health professionals, faculty, entrepreneurs, and researchers were conducted to gauge interest in biomedical innovation programming, and to identify gaps in the current health entrepreneurship landscape.

Health Sciences and Engineering faculty members involved in the Integrated Biomedical Engineering and Health Sciences undergraduate program (IBEHS), the Michael G. DeGroot Health Innovation, Commercialization and Entrepreneurship (MGD Health ICE) Initiative and the Department of Surgery have collaborated internally on this effort across a three-year period.

The individuals who have contributed to the preparation of this proposal are:

- Mohit Bhandari, Professor and Chair, Department of Surgery
- Katrina Cordovado, MBDC graduate, Program Administrator, The Clinic @ Mac
- John Kelton, Professor, Department of Medicine and Pathology and Molecular Medicine, and Executive Director, Michael G. DeGroot Initiative for Innovation in Healthcare
- Anna Korol, Assistant Professor, Department of Medicine
- Liane Ladouceur, Research Associate, School of Biomedical Engineering
- Sarrah Lal, Assistant Professor, Department of Medicine
- Frances Lasowski, Adjunct Assistant Professor, W Booth School of Engineering Practice and Technology
- Michelle MacDonald, Associate Professor, Department of Biochemistry and Biomedical Sciences, and Co-Director, Integrated Biomedical Engineering and Health Sciences program
- Alan Neville, Professor Emeritus, Department of Oncology
- Gregory Wohl, Associate Professor, Mechanical Engineering, and Co-Director, Integrated Biomedical Engineering and Health Sciences program
- Julian Yabut, former PhD student in the Medical Sciences Graduate Program, and currently a medical student at the University of Toronto

Consultations included:

- Dina Brooks, Professor, Vice-Dean, Faculty of Health Sciences and Executive Director, School of Rehabilitation Sciences
- Sandra Carroll, Vice-Dean, Faculty of Health Sciences and Executive Director, School of Nursing
- Nancy Carter, Associate Professor, Assistant Dean, Graduate Nursing Programs
- Andrew Cheung, Assistant Professor, Medicine
- Michael Hartmann, Professor, DeGroot School of Business, and Executive Director, Executive MBA in Digital Transformation

- Dave Mammoliti, Director, Directors College, EMBA, Executive Education, DeGroot School of Business
- Kenneth Owen, Assistant Professor, Department of Medicine
- Sean Park, Assistant Professor, Department of Medicine
- Heather Sheardown, Professor, Department of Chemical Engineering, and Dean, Faculty of Engineering
- Jonathan Stokes, Assistant Professor, Department of Biochemistry and Biomedical Sciences, and Co-Founder, Phare Bio
- Bill Wang, Assistant Professor, Neurosurgery, and Interventional Neuroradiology, and Founder and Chief Scientific Officer, iMIRGE Medical Inc.
- Leigh Wilson, Business Development Manager, McMaster Industry Liaison Office
- Survey and focus groups of 10 students registered in the Integrated Biomedical Engineering and Health Sciences program's Health, Engineering Science and Entrepreneurship Specialization
- Survey of 28 faculty members from the Faculty of Health Sciences, the Faculty of Engineering and the Faculty of Science who have entrepreneurial enterprises in the biomedical arena
- Members of the Department of Surgery who attended a consultation session on March 31<sup>st</sup>, 2022

### 1.3 Consistency with McMaster's Mission and Academic Plan

#### *McMaster's Strategic Mandate Agreement*

In the Times Higher Education Impact Rankings of 2022, McMaster University ranked first in Canada and sixth globally for impact on health and well-being, due in part to the Faculty of Health Sciences being positioned at the leading edge of medical education and research in Canada. Some of the Faculty's education offerings include, but are not limited to: Medicine, Nursing, Rehabilitation Sciences, Midwifery, Physician Assistant, a multidisciplinary Biomedical Discovery and Commercialization (BDC) program, and most recently the Integrated Biomedical Engineering and Health Sciences (IBEHS) program with a specialization in Health, Engineering Science and Entrepreneurship (HESE). The Faculty of Health Sciences utilizes a unique interdisciplinary and problem-based approach to the study of health, wellness, and disease. Inquiry-based learning approaches emphasize transferable skills in the biomedical sciences, including oral and written communication, problem-solving, critical thinking, and the acquisition of practical laboratory and research skills. With a strong infrastructure and faculty experience in place for interdisciplinary learning, the MBI program and its graduates will advance the overall McMaster University agenda in the Health Sciences area of growth and will be able to bolster the efforts of the University's most recent initiative: Canada's Global Nexus for Pandemics and Biological Threats (<https://globalnexus.mcmaster.ca/>).

The 2020-2025 Strategic Mandate Agreement (SMA) (<https://www.ontario.ca/page/2020-2025-strategic-mandate-agreement-mcmaster-university>) indicates several priority areas for the Ontario government that we are confident the MBI program would fulfill. As a unique program that aims to attract and develop future health-focused innovators and entrepreneurs, this program will provide students with key skills to not only be skilled graduates, but also new employers that create new jobs and enhance Hamilton-McMaster economic growth. Further, we anticipate our graduates will create exciting new inventions that will attract multiple sources of internal (i.e., institutional) and external funding (i.e., federal, private sector) to provide the necessary capital to scale their inventions and impact communities in Ontario. It is also our intention to maintain complete transparency of salary and ensure accountability of the faculty and staff associated with the new program. Outlined in Section 7 of this proposal, the program will track key performance indicators that measure its priority areas.

#### *McMaster's Current Priorities*

The Faculty of Health Sciences has a history of innovation, excellence, and equity through their existing educational and research programs. For example, it has created two unique and successful undergraduate innovation programs: the Integrated Biomedical Engineering and Health Sciences (IBEHS) program (jointly created and offered by the Faculty of Engineering and the Faculty of Health Sciences) and the Biomedical Discovery and Commercialization (BDC) program (housed in the Department of Biochemistry and Biomedical Sciences). We plan to build upon this spirit of innovation with the MBI program by investing in students that have the potential to be the next generation of biomedical entrepreneurs and innovators. This will be accomplished within the institution-wide objectives to promote equity, diversity, and inclusion (EDI) following the Action Plan currently being enacted at McMaster University (<https://equity.mcmaster.ca/strategy/towards-inclusive-excellence/edi-action-plan/>). Specifically, the MBI program will align with these values by cultivating a community of students that (1) uphold EDI commitments in relation to admissions, curricula, and program delivery, (2) innovate in their academic activities, (3) engage with community partners, and (4) respect diversity on and off campus. This overall vision for the program will align with all five of the Priority Areas of the Institutional Priorities and Strategic Framework 2021-2024 ([https://president.mcmaster.ca/app/uploads/2021/05/Institutional-Priorities-and-Strategic-Framework\\_FINAL\\_5May21.pdf](https://president.mcmaster.ca/app/uploads/2021/05/Institutional-Priorities-and-Strategic-Framework_FINAL_5May21.pdf)) and its Vision Statement: “Impact, Ambition and Transformation through Excellence, Inclusion and Community: Advancing Human and Societal Health and Well-being”. The connection of the MBI Program to these Priority Areas is explained briefly below:

- 1) **Inclusive Excellence:** The MBI Program will facilitate inclusivity and interdisciplinarity in its curriculum and student experience by admitting students from a wide variety of educational and health professional backgrounds who will be given the opportunity to work in teams on biomedical innovation projects. The curriculum will reinforce universal design, and importance of consideration of accessibility, diversity and equity of end-users.
- 2) **Teaching and Learning:** In addition to workshops and bootcamp-style course offerings, the MBI program will incorporate experiential learning, allowing students to access biomedical and/or healthcare settings. The objective of the program is to initiate and advance ideas, products, or systems with the greatest potential to get to market. Through placements and interdisciplinary learning, students will develop insights into new ideas within the program and for the years and decades that follow. MGD Health ICE educational programming and The Clinic @ Mac networking opportunities, for example, will be available even after graduation, ensuring continuity of support and services to enable success.
- 3) **Research and Scholarship:** The MBI program aims to develop future innovators who can develop novel avenues of research and care and contribute to McMaster’s commitment to high quality research. MBI courses will focus on challenge-based, self-directed learning and engagement with a cross-disciplinary group of faculty, clinicians, researchers, and fellow peers who have demonstrated academic success and strong roots in both industry and the community.
- 4) **Engaging Local, National, Indigenous and Global Communities:** The MBI program will contribute to the growing culture of innovation, commercialization, and entrepreneurship in the Hamilton innovation ecosystem. MBI students and graduates will build and strengthen their partnerships with clinical practices, businesses, start-ups, and industry in Hamilton. The MBI program is the seed needed for (1) value creation and implementation, (2) economic development of Hamilton including creation of new jobs and industries, and (3) building companies with regional and global socioeconomic benefits. The MBI program will liaise between student and community partners to aid in the commercialization process and ultimately, attract and retain talent needed for Hamilton economic development.
- 5) **Operational Excellence:** The recruitment of a diverse community of mentors for the MBI Program from industry with experience in the entrepreneurship sector can support leadership training and opportunities for inclusive learning and growth and, over time, support the attraction of high calibre faculty, staff and students.

## 1.4 Program Learning Outcomes

The Master of Biomedical Innovation program emphasizes innovation, translational design and research, experiential learning, and multi-disciplinary entrepreneurship teamwork. Graduates will be equipped to bridge the gap between academia and biomedical entrepreneurship and innovation.

Graduates of the program will be able to:

- Become a founder of a health-focused startup company
- Spin out a new health technology from their academic research or clinical area
- Advance the innovation agenda of an existing health-focused company or organization
- Work for an emerging health or medical technology company
- Leverage the entrepreneurial knowledge and skills acquired in the MBI that are required to transition into a leadership position in various industries

To this end, the overarching learning outcome that will be used to achieve this central goal is:

**Graduates of the program will have the skillset and entrepreneurship competencies to bring innovative biomedical solutions to solve healthcare challenges from research and design stages into practical, market-ready use.**

The MGD Health ICE group has developed a series of core and enabling competencies that reflect the skills required for a successful entrepreneur (See full list, Appendix A1). These form the basis of the program learning outcomes. Upon completion of the graduate program, all graduates of the MBI program will be able to:

- A1: Identify opportunities for new value creation in biomedical and life sciences sectors
- A2: Describe a current and future market landscape
- A3: Design a solution and articulate a value proposition
- A4: Identify and protect intellectual property
- A5: Address regulatory requirements
- A6: Create a team and network
- A7: Acquire necessary resources and funding
- A8: Develop and adapt a business strategy
- A9: Develop and sell key messages for various audiences

## 1.5 Consistency with Graduate Degree Level Expectations

The learning outcomes and competencies identified for this program were specifically developed to align with the guidelines set out by the Ontario Universities Council on Quality Assurance (the Quality Council) for the Graduate Degree Level Expectations (GDLE). Table 1 maps each of the Program Learning Outcomes to the appropriate Quality Council expectation.

Table 1: Program Learning Outcomes and Associated Graduate Degree Level Expectation

Program Learning Outcome	Associated Degree Level Expectation
A1	1,3,4a,4b,5,6

A2	1,2,3,4a,4d
A3	1,2,3,4a,4d,6
A4	1,2,3,4c,5
A5	1,2,3,4b,4c,4d,6
A6	4a,4b,4c,5
A7	1,2,4a,5,
A8	1,2,3,4a,4d,5
A9	3,4a,5

Program learning outcomes outlined in Section 1.4 meet expectations outlined in McMaster's GDLE found here: <https://cill.mcmaster.ca/COU/degree/graduate.html>. If all program outcomes are fulfilled, it is expected the student will receive the MBI degree at the end of the program during November convocation.

## 1.6 Demand for Program

### *i. Evidence of Societal/Labour Market Need*

The Canadian healthcare system is often regarded as an unreceptive and challenging arena for innovation. There is therefore a strong need to be agile and nimble in identifying unmet needs within the healthcare system that will benefit the overall health of Canadians from the perspective of the patients and the healthcare providers. These challenges require innovators that will understand all aspects of the healthcare system and its stakeholders, who will be able to innovate, communicate and implement novel healthcare solutions.

Based on findings from an in-depth literature review and competitor analysis (briefly explained in Appendix A2), the past 10-15 years have seen a rapid increase in the number of programs that teach innovation within academia. The Stanford Biodesign program was one of the first to offer a graduate-level course in biomedical technology innovation in 2003. A recent paper from this group ([Denend et al. 2021](#)) found a significant increase in commitment to careers in biomedical technology and innovation after completing the course, with 82% involved in innovation roles. In a [Frontier Economics report](#) (2014), the Impact of investment in science and innovation in higher education was measured and demonstrated a 37% rate of social returns, which includes an increase in profit for the private and public sector who can make use of the innovations, as well as greater societal gains to health, well-being, security, and efficiency.

Considering the future of education is moving towards a heavy focus on [problem solving, system change, innovation and entrepreneurship](#), it is not surprising that the United States currently boasts programs and courses devoted to innovation in fields such as digital, healthcare, biomedical, design and engineering. Although smaller in comparison, a similar trend is emerging within Canada; as of 2020, there were 13 graduate programs devoted to innovation and/or entrepreneurship. This surge suggests a shift in the approach to business models and the desire for pedagogical support to advance both entrepreneurship and intrapreneurship. Importantly, this lack of accessibility to biomedically-focused innovation programming pushes students to enroll in general business programs that lack the required health-focused expertise or resources needed to become biomedical entrepreneurs. As a result, based on the competitor scan, **none of the existing graduate-level innovation and/or entrepreneurship programs in Canada are devoted to biomedical innovation, nor do any of the programs involve health-focused experiential learning like that which will be provided by the MBI program.**



The recent growth of Canada's biomedical field reported by [The Globe and Mail](#) in November 2019 (e.g., the revenue estimate by IBIS World of \$5 billion in revenues for the medical device industry) captures the growth of Canadian opportunities in this industry. Paired with the [notable growth of Toronto's tech sector](#) (outpacing San Francisco and New York in creating jobs), and the recent launch of the Southern Ontario Pharmaceutical and Health Innovation Ecosystem (SOPHIE) program out of the Innovation Factory located at Innovation Park in Hamilton, McMaster University is set as a prime candidate to provide education in biomedical education. By bringing innovative minds and entrepreneurs from clinical and health sciences backgrounds (national and international) to grow the Hamilton-McMaster innovation landscape, the MBI program would also address the need to increase economic development in Ontario and meet current and future societal and labour needs, as set out in the 2020-2025 SMA. Similarly, the Ministry of Labour, Training and Skills Development currently projects a growing job market in the financial, communications and business services (National Occupational Classification, NOC 0013) for the GTA from 2020 onwards.

In 2007, the Centres of Excellence for Commercialization and Research (CECR) program was launched by the Canadian government to support the innovation to commercialization continuum, with many of their centres in the health sector. Their most recent program evaluation from September 2017 reports that Canada's strengths in academic research have not fully transferred to the realm of innovation and commercialization, noting that innovators continue to face substantial challenges in accessing funding/investment for earlier, riskier stages of commercialization. The MBI program is designed to equip graduates with the skills necessary to meet and overcome such challenges. With its legacy of innovation and interdisciplinary collaboration, McMaster is uniquely positioned to become a leading (if not the leading) actor in the healthcare innovation space.

#### *ii. Evidence of Demand for the MBI*

Evidence for interest in graduate education in health innovation and commercialization is provided by two programs currently operating at McMaster as well as feedback from Researchers, Engineers, and Clinicians (a summary of data collected is included in Appendices A3 and A4):

##### 1. Biomedical Discovery and Commercialization (BDC)

This limited-enrollment four-year undergraduate program, housed in the Department of Biochemistry and Biomedical Sciences at McMaster, is also associated with a 1-year Master's degree in Biomedical Discovery and Commercialization (MBDC) that is focussed on development and commercialization of pharmaceuticals and therapeutics. Approximately 60% of the undergraduate BDC students stay on to pursue the MBDC. The MBDC program has also seen an overall increase in applications in recent years due to an increase in the number of external applicants.

We anticipate that a similar proportion of undergraduate IBEHS Health, Engineering Science and Entrepreneurship Specialization students (described below) will be interested in pursuing the MBI which will focus more broadly on innovation and entrepreneurship in medical technology, health information technology and medical devices.

##### 2. Integrated Biomedical Engineering and Health Sciences (IBEHS)

McMaster's interdisciplinary (Engineering and Health Sciences) undergraduate IBEHS program is expected to be a key target market for the graduate-level MBI program. Currently, the IBEHS program enrolls approximately 140-180 new students each year who complete an interdisciplinary degree in biomedical engineering and health sciences. To date students have produced multiple innovative and noteworthy projects and commercial devices. One example is [Guided Hands™ from ImaginAble](#)

[Solutions](#), an assistive device that enables people with limited fine motor skills to write, draw, and use a tablet. This device was first conceived in an IBEHS course and supported through Health ICE coaching and mentorship leading to multiple national and international awards, including the National Canadian winner of the 2021 James Dyson Award. Despite success stories such as these, IBEHS student feedback and collected data found that, due to time and accreditation constraints, students reported only little opportunity for entrepreneurship and product/company creation. The MBI would fill this gap and support the structured and guided creation and validation of health technology with a focus on accelerating its development and commercial viability. There was strong interest and agreement from this cohort of students that we surveyed to pursue a Master's degree, one year in length with emphasis on the attributes being proposed in the MBI (see Appendix A3).

### 3. Basic Science Researchers in FHS and Faculty of Engineering

Draft copies of the MBI proposal and a survey were sent to 28 basic science PhD researchers and health professionals. There was unanimous agreement that more education about entrepreneurship and the challenges of commercialization of basic science research was needed within FHS and the MBI should be an option for interested graduate level researchers. Consultations with the Faculty of Engineering have also demonstrated that there is interest from Biomedical Engineering as well as Engineering graduates in a graduate degree in Biomedical Innovation (see Appendix A4).

### 4. Health Professionals

Consultations with health professionals from several clinical departments, the School of Rehabilitation Science, and the School of Nursing have shown considerable interest in the development of the MBI. Practicing health professionals from hospitals and private industry were suggested to be good candidates to recruit to this graduate program.

#### *iii. Justifiable Duplication*

A comprehensive competitor analysis and in-depth literature review was conducted at the outset of this program proposal to scan all graduate level programs in health and biomedical innovation, entrepreneurship, commercialization and/or design with findings summarized in the appendix (Appendix A5). Based on this scan, we can state with confidence that the MBI program does not duplicate any graduate programs in Ontario and will be the first to offer clinical immersion as an option within the program. Of the 13 current programs in Canada, only 1 of the programs is focused on health innovation—University of Toronto's Master of System Leadership, and Innovation—however, this program differs in its focus on health systems science, health policy and organizational behaviour, and is designed only for emerging physician leaders. None of the other 12 programs are devoted to biomedical innovation, nor do any of the programs involve health-focused experiential learning akin to the proposed MBI program.

The MBI program addresses three key opportunities that make it unique and unlike similar, existing programs:

- A biomedical innovation-specific graduate program in Canada
- The only graduate program in Canada to offer a clinical immersion opportunity
- An entrepreneurship program uniquely rooted in the Faculty of Health Sciences. Comparative innovation and entrepreneurship programs are predominantly housed within the School of Business or Faculty of Engineering. These programs provide broad, overarching education for entrepreneurship across all fields, but do not have the distinct expertise needed to navigate the complexities of biomedical technology and health-focused innovation.



Informal feedback collected from graduates of McMaster’s MBDC program reported a lack of knowledge in medical technology regulation and reimbursement. With this insight in mind, a primary goal of this program will be to overcome healthcare system resistance by creating biomedical innovators who are deeply familiar with the nuances of the medical regulatory and reimbursement environment in Canada and the U.S. and thus prepared to navigate them.

An important goal of the MBI program is to foster health innovation within the Hamilton community surrounding McMaster University. The Faculty of Health Sciences has existing collaborations with community partners to foster innovation, including connections with The Forge, Innovation Factory, the Michael G. DeGroot Initiative for Innovation and McMaster Industry Liaison Office. The MBI program will draw on these connections and their resources as we cultivate world-class talent.

### 1.7 Degree Nomenclature

A study in *Design Management Review* from 2017 highlights the importance of consistency of program names between academic institutions. It compared the recognizability and stature that is afforded to MBA programs to the more recent development of programs in Design Management. With the variety of names and lack of consistent curricula, challenges are presented in defining value for potential employers. We believe that the *Master of Biomedical Innovation (MBI)* clearly delineates the focus and training that will be provided to students.

## 2. Admission & Enrolment

### 2.1 Admission Requirements

The minimum admission criteria are as follows:

- Completion of an undergraduate honours degree
- A minimum B+ average in the last two years of study of an honours degree
- Introductory level innovation and entrepreneurship education or demonstrated involvement in innovation and entrepreneurship projects. This experience can be through education or self-directed means (e.g., invention, product or service design, start-up company creation)

The following application material is required from all applicants:

- Statement of Intent
- CV/Resume
- Undergraduate and graduate (if applicable) transcripts
- One-way video essay
- Interview of finalists

Based on the number of applications, selected candidates that meet all the above criteria will be invited for rounds of virtual and/or in-person interviews. We plan to admit 20 new net students for the first cohort of this program, increasing enrolment across 5 years as indicated by the table below. Many programs in the Faculty of Health Sciences have separate admission streams for Indigenous applicants and Black applicants. There are currently discussions within the Faculty and across the University to extend these admission streams to other programs.

Academic Year	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028
Full-time	20	25	30	35	40
<b>Total Enrolment</b>	20	25	30	35	40

The MBI program aims to attract high-calibre students that have the motivation to innovate in the health and biomedical fields. With a rapidly growing innovation sector and infrastructure (e.g., Health ICE, The Forge, Synapse Consortium) in the McMaster-Hamilton space, we anticipate MBI graduates to add to this growing culture of innovation. By attracting and retaining talent into the overall Ontario innovation ecosystem, this program strives to create new jobs that result in future economic and community impact, thereby contributing to Ontario's 2020-2025 SMA mandates.

## 2.2 Alternative Requirements

N/A

## 3. Structure

### 3.1 Administrative, Governance and Communication

The MBI program will be administered by the Faculty of Health Sciences with an administrative home in the Department of Surgery. Key elements include:

- A **Program Director** will coordinate the program, oversee curriculum development, implementation and quality improvement. This individual will liaise and coordinate with faculty members, as well as external experts, both of whom will teach within the curriculum and serve as mentors on multidisciplinary group projects. The Program Director will sit on the Faculty of Health Sciences Graduate Policy and Curriculum Council and will report to the Vice-Dean Graduate Studies and the Chair of the Department of Surgery. The Vice-Dean Graduate Studies sits on Graduate Council and reports to the Vice-Provost and Dean, Graduate Studies. A new Program Director will be selected every 5 years. All communications related to the program will originate from the Program Coordinator or Program Director.
- A **Program Coordinator** will be hired to support the administration of the program, serve as the primary contact for student inquiries, admissions, calendar changes, and degree audits, and support teaching faculty as needed (i.e., assisting faculty members with oversight and coordination of coaches and mentors).
- The **Program Operating Committee** will be chaired by the Program Director. Members of the Operating Committee will include four MBI-affiliated faculty members and two students registered in the Program. The function of the Operating Committee will be to review and develop curriculum and policy recommendations for the MBI program. When required, proposed changes to the program and curriculum will be presented for approval to the Graduate Curriculum and Policy Committee of the Faculty of Health Sciences with subsequent approval from Faculty Executive.
- An **Advisory Committee** will be assembled for the program which will consist of representatives from each of the major areas of study for this degree, including Health Sciences, Engineering and Business. Representation from academia, healthcare and industry will be included in this group. The function of the Advisory Committee will be to provide feedback on the MBI program's objectives and activities as they relate to the current needs of the biomedical field; provide updates on technological advances as well as economic, societal, and cultural shifts; and secure connections to the engineering and health professions, industry, and government.

## 3.2 Structure and Regulation

### *Ensuring Achievement of Program Learning Outcomes*

As described above, the Program Director will be primarily responsible for overseeing all academic components of the MBI program. This individual will work closely in collaboration with the Vice Dean, Graduate Education (Faculty of Health Sciences), who chairs the Faculty of Health Sciences Graduate Curriculum and Policy Committee to assess programs, courses, and enrollment. The Program Director, with assistance from the Program Coordinator, will be responsible for collecting data, surveys, and feedback for the preparation of the documentation required for the cyclic IQAP reviews.

To ensure students can meet the specified Program Learning Outcomes, student progress will be reviewed at the end of each term by the Program Director. Instructors of 700 level courses will inform the Program Director of students who are at risk during the duration of the course. This will enable the Program Director to take action to ensure students who are at risk get the help and support needed to successfully finish the degree on-time (i.e., a meeting to talk about struggles and to decide on next steps). If a student fails to achieve a mark higher than a B- in any of the required courses, the student will be subject to remediation in a similar manner that is done in the DeGroot School of Medicine if students fail to meet expectations. Remediation may include repeating an assignment with coaching and guidance provided by a faculty member assigned from the MBI program (not the course instructor). If the student fails to remediate, the student will fail the course and will be required to repeat it the following year. In this case, the student will be able to continue with other courses. Attendance and participation at the bootcamps is mandatory.

The course instructor for the Project Courses (MBI 701, 702 and 703, described below) plays an important integrative role in the program. The instructor for the Project Courses will ensure that students/teams have been matched with an appropriate coach and project, and will also collect reflections from students at the end of each term to track progress. The instructor will check in regularly with coaches to monitor progress (at least monthly), or sooner if issues arise, to ensure that individuals and teams are healthy, functioning and progressing well with their project. The instructor will also be responsible for organising and coordinating Bootcamps and the parallel embedded curriculum for Personalized Coaching and Leadership.

The progress of all students in the program is reviewed each term by the Program Director with support from the Program Coordinator. Students who must be absent for a required bootcamp or assessment under extenuating circumstances must contact the Program Coordinator and Course Instructor right away for accommodation. Students who request a leave of absence from the program due to extenuating circumstances will receive credit for courses that were completed and graded. These students may need to repeat MBI 701, 702 and 703 upon return to the program due to the changing nature of the teams and projects.

## 3.3 Program Length

The MBI will require a one-year commitment. The one year of study in the proposed MBI provides students the opportunity to take a solution from observed need through solution iteration, and for some solutions, to implementation and market-readiness. We have seen success with the one-year Master's program at McMaster with the MBDC (Master of Biomedical Discovery and Commercialization). The one-year timeframe remains competitive with other course-based Master level programs and comparable programs in biomedical innovation (i.e., the Master of Entrepreneurship and Innovation (MEI) at Queen's University, Master of Management of Innovation (MMI) at the University of Toronto, and Master of

Science in Bioengineering Innovation and Design at Johns Hopkins University) and was also the preferred duration indicated by our student surveys.

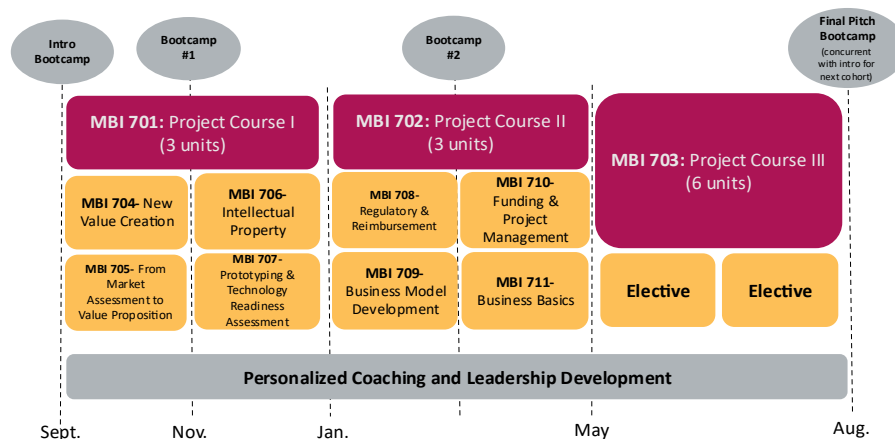
## 4. Curriculum and Teaching

### 4.1 Program Content

A key aspect of biomedical innovation and entrepreneurship education is the integration of experiential and immersive educational models that simulate the complexities of technology development and transfer. Individuals or teams of learners will work on a biomedical innovation project in partnership with a clinical department, research lab or relevant stakeholder group. Learners will identify and/or validate a biomedical need by engaging with their partner (e.g., clinicians, researchers, administrators, end users) and gain an understanding of the system-level barriers unique to biomedical technology implementation in their project-focus area. Importantly, the partnerships developed within the MBI will form the foundation for innovation and, concurrently, provide the infrastructure and personnel required for technology testing and pilot studies, and potential for future funding and support. All learners, whether working on a clinical or lab-based innovation, will be linked to mentors with up-to-date experience in healthcare technology entrepreneurship. Regular meetings between teams and their coaches and entrepreneurship mentors will ensure that students feel supported and innovation projects are monitored and adjusted as necessary.

#### Overview of the Program

Students enrolled in the MBI program will focus on the theory and application of biomedical innovation and entrepreneurship, integrating content from the fields of Health Sciences, Business, and Engineering. The following is a list of the proposed courses and bootcamps for students with a schematic overview of curriculum implementation and timeline (Figure 1).



**Figure 1:** A proposed phase timeline and proposed MBI courses and bootcamps. Depicted are 1.5-unit courses (gold), project courses (maroon), and mandatory bootcamps (grey) in the degree timeline.

The MBI program will accommodate learners who enter the program with or without an existing idea for an innovation project. For all learners, the experiential, project-based courses (MBI 701, 702, 703) will give students the opportunity to apply concepts from courses and bootcamps to their innovation project, over the 12-month program. Within these project courses, students will be evaluated on the completion of a set of milestones that focus on establishing the desirability, feasibility and viability of their innovation. All learners will have access to personalized coaching, mentorship and leadership development throughout the entirety of the project to ensure milestone completion and project progress, and to facilitate project scope modifications where necessary to meet these requirements. The required milestones will demonstrate the application of MBI program learning objectives and entrepreneurship competencies, and will be required as follows:

- Milestone 1: Identify and validate the biomedical need
- Milestone 2: Assess the existing and emerging market landscape
- Milestone 3: Develop and test prototype
- Milestone 4: Outline IP and regulatory strategy of proposed solution
- Milestone 5: Determine necessary resources and funding strategy
- Milestone 6: Develop a business model for your proposed solution/company
- Milestone 7: Pitch your final innovation

In the MBI 701 Project Course, there will be the following options for learners to define the health or biomedical problem that they will be focusing on developing an innovative solution to for the duration of the program. All students in the program will experience the same academic rigour and entrepreneurship mentorship and support, and these options provide maximum flexibility:

1. Select your own problem through clinical immersion experience: students can participate in a clinical immersion experience to identify and validate a biomedical problem to work on during the remainder of the project courses, following a structured needs finding method first developed by [Stanford Biodesign](#).
2. Those without an existing project will have the option to select and validate a problem from a provided database consisting of problems identified by healthcare providers, with opportunities provided to validate the problem through conversations with HCPs or visits to a clinical environment.
3. Validate your own idea (defined before starting the program through lab-based research, previous educational projects, or other means)

All learners will be required to participate in one-day clinical immersion experiences in each bootcamp (defined below), which will provide experiential value to them as well as opportunity to gain greater insights into how their own projects may fit into the clinical environment.

*Project Courses and Bootcamps:*

*701, 702, 703: Project Course I, II, III, Delivered Sept-August (3, 3, 6 units)*

Students will be encouraged but not mandated to undertake the Project Course as members of a team, which will each be assigned a coach who will meet regularly with the team to assess both project progress and how concepts delivered in the online courses are being applied to the project. Students will also have the option to individually progress through these courses with their own identified project innovation. Progress in the projects will also be assessed at the Bootcamps throughout the year. Teams will present updates on their projects as part of the Bootcamp activities. During the third semester Project Course

(703) there will be no other core courses scheduled to allow teams to complete their business and commercialization plans and take two elective courses.

*Bootcamps:*

Each of the 4 Bootcamps will be 3-5 days in duration and attendance is mandatory. The first is introductory, for program orientation, team formation, networking, planning for clinical immersions (if applicable to a learner) and project discussions. There will also be short talks to introduce students to the course work of the curriculum block that follows. At the subsequent Bootcamps, curricular material from the previous curriculum block will be reviewed along with introductions to the next block of courses, project updates given, opportunities for networking provided and guest speakers invited. There will also be exercises where learners will be expected to apply knowledge from the courses through case studies, group discussions, or other assignments. Each bootcamp will include a one-day clinical immersion experience, where learners will be spread across various clinical areas within local hospitals, followed by a discussion period the next day where they will share experiences with others who were immersed in a different clinical environment. This element of the bootcamps will provide value to all learners by providing an understanding of the clinical environment and a new perspective that they can then apply to their team/individual projects. The final Bootcamp will take the form of a “Pitch” competition, where each team will present the progress of their innovation project. Starting in the 2024 academic year, the introductory bootcamp will overlap with the final pitch bootcamp for the graduating cohort, so incoming students will be exposed to this element at the start of the program.

*Online Core Courses:*

These 1.5-unit core courses will be delivered as online modules, but there will be bi-weekly check-ins with instructors and with coaches, either in-person or virtually to assess progress both in the project and the core course.

*MBI 704. New Value Creation (1.5 units)*

This initial course is designed to allow learners to identify unmet needs, identify potential root causes of observed problem(s), and validate them. Students will also learn how the healthcare system functions so that they can identify important stakeholders in the healthcare space. They will develop decision matrices for prioritizing observed needs.

*MBI 705. From Market Assessment to Value Proposition (1.5 units)*

In this course, students will learn to assess whether there are available alternatives already on the market that solve the identified problem and estimate market size, including dollar size and number of users. They will identify potential barriers to market entry and strategies to overcome them. They will validate the product-market fit for the proposed problem solution (innovation), identify risks and risk mitigation strategies in alignment with industry standards, and learn how to articulate a competitive advantage for their proposed solution.

*MBI 706. Intellectual Property (1.5 units)*

This course will cover how to conduct patent searches and how IP can be protected in a variety of innovation domains e.g., device, pharma, digital or diagnostic. Students will learn how to maintain confidentiality in external-facing communications e.g., NDA's and collaborate with entities such as MILO to execute an IP strategy.

*MBI 707. Prototyping and Technology Readiness Assessment (1.5 units)*

Starting at the point where basic research activities have been conducted and/or published, this course will take students through topics such as design thinking, proof of concept, and pilot scale prototypes in both simulated and operational environments to the stage of full-scale prototypes and final configuration, successfully tested in a real-world environment.

*MBI 708. Regulatory and Reimbursement (1.5 units)*

Processes for technology testing and market approval are controlled by regulatory standards that are specific to the type of innovation e.g., drug, device, diagnostic or digital domain. This course provides an overview of the requirements and industry standards across the different innovation domains in relation to regulatory guidelines for ventures as well as the opportunities and challenges for reimbursement. Elective courses will be available to take a deeper dive into regulatory requirements for specific venture domains.

*MBI 709. Business Model Development (1.5 units)*

In this course students will learn how to evaluate and determine the most appropriate business model for viability and revenue generation within the healthcare space, how to create a go-to-market strategy and determine the costs and benefits of potential exit options.

*MBI 710. Funding and Project Management (1.5 units)*

This course reviews various innovation ecosystems within the healthcare sector, emphasizing the importance of building relationships and coalitions to acquire necessary resources. Students will learn how to use project management platforms to manage resources.

*MBI 711. Business Basics (1.5 units)*

This course provides students with an overview of concepts related to financial accounting, incorporation, partnerships, HR, payroll, etc., that are essential to the management of a successful business.

*Electives:*

Students will take two 1.5-unit electives in the spring/summer term. One will be chosen from the regulation and reimbursement selection based on project focus and one will be chosen from the list of electives below.

- Regulation and Reimbursement (choose one from the following)
  - o Therapeutics
  - o Devices
  - o Diagnostics
  - o Digital Health
- Special Topics in Biomedical Innovation
- Complexity Science and Adaptive Systems

*Personalized Coaching and Leadership Development:*

Personalized coaching and leadership development will be incorporated longitudinally into the project courses (MBI 701, MBI 702, and MBI 703) and bootcamps. Coaches will come from the partnership with



The Clinic @ Mac and their extensive network of faculty members with experience in business development and commercialization. These experts will meet with teams and individuals at regular check points throughout the program to ensure that the project and teamwork are progressing well while considering areas of strength and weakness. They may also identify a need for intervention or remediation for an individual or a team. Coaches will work under the supervision of the course instructor for MBI 701, 702 and 703, with regular progress reports. The course instructor will respond to areas of need identified by the coaches, as appropriate, to support the learner or group. Each bootcamp will also provide professional development programming by faculty members, which may include expert guest speakers.

*Mentors:*

The Clinic @ Mac also has an extensive network of members from industry who will be brought in to serve as mentors throughout the program, so that students can engage in informal coffee chats, or more formal panel discussions. The instructor for the project courses (MBI 701, MBI 702, and MBI 703) will coordinate and liaise with mentors to schedule these sessions throughout the year. Mentors will not be responsible for grading students. Only McMaster faculty members will be permitted to assess students.

The curriculum described above aims to introduce students to the fundamentals needed to innovate in healthcare and biomedical fields. These fields will be explored within MBI courses, providing students with new perspectives to innovation in Canada and the rest of the world. These insights will assist students in developing their own business and marketing plans for funding and reimbursing their solutions and building profitable, sustainable ventures.

## **4.2 Program Innovation**

Unique aspects of the MBI program include the following:

- An immersion experience will be a unique opportunity provided to students in this program, taking an experiential learning approach that diverges from the traditional theory-based programming found in many course-based master's degrees. Through their immersion, students will be expected to validate existing unmet needs in the healthcare or biomedical spaces and to propose an evidence-based solution.
- Aspects of the Biodesign Fellowship program at Stanford University have been adopted to provide MBI students with a unique and effective program. In the MBI program, students will be paired with a faculty coach as well as one or more mentors.
- The program will be anchored by a total of four 3–5-day intensive bootcamps. During these mandatory bootcamps, learners will come together for guest lectures, case-based interactive workshops and design sessions that introduce the next phase of the biomedical innovation process and create an innovation community and network. In-person events or bootcamps will be planned to allow for learners to balance with their other commitments. Bootcamps will be hosted at The Clinic @ Mac facility.
- At the end of the program (i.e., at the final bootcamp), students will present their innovation in a pitch competition to a diverse audience consisting of industry, faculty, members of the McMaster Innovation ecosystem, investors, and incubators/accelerators. This event will provide students with valuable experience in an environment closely resembling venture capital pitches. The final pitch bootcamp will also help to demonstrate achievement of the program learning objectives (as



outlined in Section 1.4) and provide an opportunity for overlap between the outgoing and incoming cohort.

The program will use a blended and flexible learning approach (e.g., virtual, in-person, immersion experiences), so that students living in the Greater Toronto and Hamilton area and beyond can be fully immersed in the MBI curriculum. Any student requiring accommodations will be supported by the Program Director. In addition, Student Accessibility Services (SAS) will be contacted to brainstorm solutions to foreseeable barriers and develop appropriate accommodation plans.

Ultimately, it is our goal to prepare graduates for successful careers. By providing a multidisciplinary program that challenges students to push the boundaries of their own education and, in turn, the boundaries within healthcare, we hope to stimulate creativity, inventiveness and progress. The MBI program will enable students to develop a combination of intrapreneurial and entrepreneurial skills that will permit a range of career directions upon graduation.

### 4.3 Mode(s) of Delivery

The outline below highlights the proposed modes of delivery:

- 12-month experiential program
- 12-month innovation project course (team or individual based)
  - Project support through MBI faculty and The Clinic @ Mac coaches and mentors
- In-person and distance learning:
  - In-person:
    - Immersion experiences
    - Four 3-5-day bootcamps
  - Learning at a distance
    - Online courses

By combining in-person immersion and bootcamps with online formats for courses, the blended model will provide the flexibility and autonomy needed to complete the program learning outcomes. For all lectures delivered in this course, closed captioning will be available. Courseware will primarily comprise of peer-reviewed papers that are available using McMaster's Library access to archives (e.g., Google Scholar, PubMed etc.). Courses will be hosted primarily through McMaster University's learning management system, *Avenue to Learn*. Synchronous sessions with online video conferences will be scheduled using various available platforms such as Microsoft Teams or Zoom at the discretion of the instructors. These precautions will be taken to ensure that students have access to all materials at any time to accommodate schedule and life conflicts.

### 4.4 Experiential Learning

Experiential learning will be an integral part of the MBI program. For those choosing a clinical immersion experience connections have been established with innovative health care practitioners in Hamilton Health Sciences, St. Joseph's Healthcare Hamilton, and Joseph Brant hospitals. The MBI will leverage this network to provide opportunities for MBI students to shadow clinicians or their healthcare teams to conduct needs-finding investigations. The experiential learning components and personalized coaching will be overseen by the instructor for the Project Courses (MBI 701, 702 and 703).

Additional opportunities for experiential learning will be provided through mini-projects and other activities during bootcamps. Bootcamps will be the main touch point for in-person learning throughout this program

and will include team activities that will allow students to iterate and fail quickly. Failure is an important part of venture creation, and it is our goal to allow students to fail first in a safe space that will maximize learning opportunities.

#### **4.5 Accessibility**

The Faculty of Health Sciences strives to meet the needs of its students, staff, and faculty in terms of accessibility. Every effort will be made to ensure that the program meets the expectations of the university in terms of accessibility. The program will be prepared to provide equitable learning opportunities for all students and will be prepared to accommodate individuals with disabilities to allow clinical immersion for all students.

Courses will be designed and delivered with a diversity of learning styles and Universal Design in mind to create an inclusive and accessible classroom environment. For each course, a course syllabus including a statement regarding the duty to accommodate students with disabilities, and a complete course reading list will be provided prior to the beginning of the term. As the program will be delivered primarily through online resources, all lecture material as well as other course content (e.g., assignments, supplementary materials, etc.) will be made available electronically, and appropriate practices will be followed to ensure accessibility (please refer to <http://accessibility.mcmaster.ca>). To ensure principles of Universal Design are followed, alternative formats to online content will be provided as needed.

The Faculty of Health Sciences recognizes that individuals may require some adjustments to support their performance throughout the bootcamps. The Master of Biomedical Innovation program will work with the individual seeking accommodation to ensure the university's goal of accommodation is maintained, understanding that the nature of the accommodation is specific to the individual and will be determined on a case-by-case basis. A Faith and Spirituality Day Calendar will be consulted to ensure the proposed dates of bootcamps will not conflict with observance days that could affect participation.

#### **4.6 Research Requirements**

As a course-based Master's degree, the MBI program will not include any mandatory research components and therefore, no research requirements.

### **5. Assessment of Learning**

#### **5.1 Methods of Assessing Students**

Students will be assessed using methods that will accurately assess program learning objectives. We envision students working in small teams throughout the 12-month program that will leverage their skills and project development experiences to develop new solutions to current health and/or biomedical issues under the supervision of a coach. Courses may use but are not limited to:

- Coach evaluations
- Oral presentations/seminars
- Written evidence-based opinion/position papers
- Written self-reflections on skills development and skill acquisition
- Final Pitch Bootcamp presentation

Through these main assessment types, we can assess MBI student knowledge, communication, problem-solving, critical thinking, solution identification, and personal reflection skills. Further, the

assessments are also used in other course-based Master's programs at McMaster (MBDC, MSc Global Health, MEEI/MTEI) and externally (Queen's University MMIE). These assessments will address and assess all the program learning outcomes listed in Section 1 of this proposal. Students will receive a final grade for each course. Students will be assessed for group work, but the majority of the assessment will be based on individual work. No more than 50% of the grade in a course will be based on group work.

Students will apply knowledge learned in the classroom and bootcamps in their 12-month project course, where the application of the program learning outcomes will be assessed. Assessments will have added flexibility to be done or handed in through virtual or in-person formats to accommodate any challenges that may arise and prevent students from completing important assessments to satisfy program learning outcomes. If additional barriers do arise, MBI faculty will take these into account on a case-by-case basis but will always prioritize student learning and educational integrity with respect to alternative accommodations.

In addition to the measures outlined in section 7.1 to monitor program quality on a course-by-course basis for the first five years of the program, the Program Director will conduct a random sample of Final Bootcamp Pitch presentations bi-annually and will analyze the presentations to determine how well all of the program learning outcomes and competencies are being achieved by students in a way akin to the way that Graduate Attributes are measured for engineering programs accredited by the Canadian Engineering Accreditation Board. This assessment coupled with alumni surveys will be used to make improvements and enhancements to the program to ensure the quality of the student learning experience. The Program Director will also provide a sample of the Final Bootcamp Pitch presentations and a qualitative and quantitative (based on grades) summary report of learning outcome indicators to the Advisory Committee for feedback. This assessment plan and outcomes will be reviewed during the cyclical program review every 7 years.

## **5.2 Curriculum Map**

Below is a curriculum map created for MBI students that indicates the teaching activities and learning opportunities, and how the MBI program intends to assess for evidence of program learning outcome completion.

Program Learning Outcome	Master's Degree Level Expectations (DLEs)	Course Alignment	Teaching Activities & Learning Opportunities	Assessments and Evidence
<b>Identify</b> opportunities for new value creation	1,3,4a,4b,5,6	MBI 701 MBI 704	Teaching: PC, OP, WR, OC Learn Opp: PC	Coach evaluations on application of DLE's to individual or team Project, from both oral presentation and written reports. Oral presentation of project development at Bootcamps
<b>Describe</b> a current and future market landscape	1,2,3,4a,4d	MBI 701 MBI 705	Teaching: WR, OC Learn Opp: PC	Coach evaluation of the application of the DLE's to the Project in both written reports and oral presentation
<b>Design</b> a solution and articulate a value proposition	1,2,3,4a,4d,6	MBI 701 MBI 705 MBI 707	Teaching: OP, OC Learn Opp: PC, BC	Oral presentation to Coaches at the first bootcamp, with a written report on the application of the DLE's of MBI 704 and 705 to the project
<b>Identify</b> and protect intellectual property	1,2,3,4c,5	MBI 701 MBI 706	Teaching: OP, WR, OC Learn Opp: PC, BC	Provide a written report on the application of the relevant Intellectual Property issues to the project
<b>Address</b> regulatory requirements	1,2,3,4b,4c,4d,6	MBI 702 MBI 708	Teaching: OP, WR, OC Learn Opp: BC	Oral presentation or seminar to Coaches and fellow students at the second bootcamp describing regulatory issues applicable both to the project and to written cases
<b>Create</b> a team and network	4a,4b,4c,5	MBI 702 MBI 709	Teaching: OP, WR Learn Opp: BC, PC	Assessment of team creation by coaches and written self-reflections by students on team skills development
<b>Acquire</b> necessary resources and funding	1,2,4a,5	MBI 702 MBI 703 MBI 710	Teaching: SR, OC Learn Opp: BC, PC	Oral presentation to Coaches on funding strategies and the use of project management platforms to manage resources
<b>Develop</b> and adapt a business strategy	1,2,3,4a,4d,5	MBI 702 MBI 703 MBI 709 MBI 710 MBI 711	Teaching: SR, OC Learn Opp: PC	Written report describing the business strategy for commercializing the project, go-to-market plan and provide an exit strategy
<b>Develop</b> and sell key messages for various audiences	3,4a, 5	MBI 702 MBI 703 MBI 709 MBI 711	Teaching: SR Learn Opp: PC, BC	Oral presentation to peers and Coaches at the Final Pitch Bootcamp

Curriculum Map of the MBI program outlining the Program Learning Outcomes (PLOs), how they align with Degree Level Expectations (DLEs) and map onto the MBI courses. For each PLO, the teaching activities and learning opportunities students will be exposed to are noted, as well the assessments and evidence that will be collected to determine that students have achieved the PLO before they graduate. Abbreviations: Project course (PC), Oral presentations (OP), Written evidence-based reports (WR), Online/virtual courses (OC), Bootcamps (BC), Self-reflection (SR).

### **5.3 Demonstrating Student Achievement**

In the MBI program, success will be defined as graduates who are prepared to tackle the unstructured problems within the healthcare system. This preparedness will take on many forms and will be a challenging metric to quantify. The primary identifier of student success will be in the successful completion of the year-long project course. It will be here that students will demonstrate their understanding of many key concepts, out of necessity for their application to new solutions.

## **6. Resources**

### **6.2 Graduate Programs**

The Faculty of Health Sciences' Department of Surgery has a history of health innovation and a commitment to entrepreneurship. With this culture, the Department will serve as an appropriate administrative home for the MBI program. In collaboration with McMaster MGD Health ICE, the Department will ensure the MBI program launches with success and has access to faculty, networks, resources, and experienced support needed to enable the program's vision. This will be facilitated by the assistance of the Faculty of Health Sciences and FHS Graduate Studies Office. In tandem with new hires and staff, the resources forecasted will directly support the needs at program inception and future program expansion. This permanent home for the program and the necessary expertise in the Department of Surgery is an important opportunity for the MBI program.

#### **6.2.1 Administrative, Physical and Financial Resources**

##### *Administrative Resources*

A Program Director (0.4 FTE) in the Faculty of Health Sciences will preside over the program, ensuring the overall vision is enacted. The program will leverage the focused time of one other faculty member (0.5 FTE) to guide curriculum development and course delivery. Other McMaster faculty will be recruited to deliver the bootcamps, facilitate course curriculum and provide coaching, with involvement of external, experienced biomedical entrepreneurs to serve as mentors in the program. The program will be supported by a Program Coordinator (1.0 FTE) who will work collaboratively with the existing MGD Health ICE team to ensure deliverables are achieved and both faculty and learners are well-supported.

##### *Physical Resources*

The MBI program will have access to state-of-the-art working and meeting space within the recently established Marnix E. Heersink School of Biomedical Innovation and Entrepreneurship within MDCL. Learners will also be able to access The Clinic @ Mac, providing resources and co-working space in the Health Sciences Library. Classrooms can also be booked via FHS for rooms in HSC and MDCL. The MDCL space will have both teaching and administrative office space that will be used to accommodate future hires for launch and growth of the program.

##### *Financial Resources*

The Department of Surgery is research intensive with a strong track-record of funding from senior faculty members. Specifically, the department is home to three Canada Research Chairs: Dr. Mohit Bhandari in Musculoskeletal Trauma and Surgical Outcomes, Dr. Sheila Singh in Human

Cancer Stem Cell Biology and, most recently, Dr. Richard Whitlock in Cardiovascular Surgery. In recent years, this department has been increasing their research focus, increasing total research grant money from \$7.2 million for 2016-2017 to \$15.8 million for 2017-2018. Additionally, the department received a record-setting grant of more than \$14 million as part of the launch of a fracture management program. Publications are also increasing over time, moving from 286 to 315 between 2016-2017 to 2017-2018 and increasing to 371 in 2020.

Curriculum development and start up costs for the new program will be funded by Michael G. DeGroote Initiative for Innovation in Healthcare and the newly established Marnix E. Heersink School of Biomedical Innovation and Entrepreneurship.

## 6.2.2 Library, Technology and Laboratory Resources

### *Library Resources*

MBI students will have complete access to the library resources across Campus. This includes the Health Sciences Library, which contains an extensive collection of books and journals. Students will also have access to online journals and the library's online collection using their MacID on and off campus. Further, a physical space within the Health Sciences Library is the home base for The Clinic @ Mac and a hub for content on health innovation, entrepreneurship and commercialization which will also be accessible to MBI students. Other libraries such as the H.G. Thode Building and Innis Library are other options for resources that focus on the natural sciences and business, respectively. Online collections of these libraries will also be available to MBI students. (See Exhibit A6 for letters of support.)

### *Technology and Laboratory Resources*

MBI students will have access to Technology resources used for communication and remote accessibility. Students will have on-demand access to UTS services for any troubleshooting needs for communication. Programs that use virtual settings to access lectures (Zoom, Microsoft Teams, Webex), courseware (*Avenue to Learn*) and asynchronous video (MacVideo, Avenue to Learn) will also be made freely accessible to students. On Campus, students will have a MacID that can be used to access free internet campus-wide and at other McMaster campuses. The Centre for Simulation-Based Learning (CSBL) is also an available state-of-the-art facility that can be used by MBI students due to the clinical focus, especially students with disabilities that cannot go into active clinical environments. There is no laboratory setting in this program.

## 6.2.3 Faculty

Considering prior success with the Integrated Biomedical Engineering and Health Sciences program, MGD Health Innovation, Commercialization and Entrepreneurship initiative, the Health Leadership Academy and several other education programs, we have demonstrated the ability to draw on the large complement of existing faculty members within the Faculty of Health Sciences from across all departments to mount high quality educational programming. This includes research faculty and clinical faculty who are themselves entrepreneurs or consultants, many of whom also have a background in business or engineering.

Faculty Member	Credentials	Rank	Home Unit	Available for Coaching?
M. Anvari	MD, PhD	Full	Surgery	Y
M. Bhandari	MD, PhD	Full	Surgery	Y
V. Chaudhary	MD	Full	Surgery	Y

S. Galloway	BA, CPA, CMA	Staff	FHS Finance	Y
W. Hanna	MD	Full	Surgery	Y
J. Kelton	MD	Full	Medicine	Y
Y. Khan	MD, Executive Master in Digital Transformation and Innovation Leadership	Full	Surgery	Y
A. Korol	PhD (Biomedical Engineering), MSc (Medical Sciences)	Assistant	Medicine	Y
S. Lal	MBA, MEng, LLM	Assistant	Medicine	Y
F. Lasowski	PhD (Chemical Engineering)	Assistant	Booth School of Engineering Practice and Technology	Y
M. MacDonald	PhD (Medical Sciences)	Associate	Biochemistry	Y
J. McKillop	PhD	Full	Psychiatry	Y
A. Neville	MD	Emeritus	Oncology	Y
K. Owen	PhD (Information Systems)	Assistant	Medicine	Y
S. Park	PhD (Education)	Assistant	Medicine	Y
J. Stokes	PhD (Biochemistry)	Assistant	Biochemistry	Y

The Faculty of Health Sciences has an extensive complement of faculty members from ten clinical departments and two non-clinical departments that range from part-time and full-time clinical faculty to full-time PhD research faculty and full-time teaching professors. Education programs in the Faculty of Health Sciences traditionally draw from this pool of faculty members to deliver educational programming as faculty members are required to teach a minimum number of hours per year.

As the home department for the MBI program, the Department of Surgery has 100 full-time faculty members (clinical and non-clinical) among 11 divisions: cardiac surgery, general surgery, neurosurgery, ophthalmology, orthopaedic surgery, otolaryngology, pediatric surgery, plastic surgery, thoracic surgery, urology, and vascular surgery. Several faculty members from these divisions are also involved in our *Innovators in Scrubs* undergraduate course. (See Exhibit A6 for letters of support.)

The MBI program will also draw faculty members from The Clinic @ Mac where a network of coaches and mentors has been developed over the last two years. This network of faculty members from the Faculties of Engineering, Science and Health Sciences are entrepreneurs themselves who will be able to provide guidance to students in the MBI program. (See Exhibit A6 for letters of support.)

We also have commitments from industrial partners to contribute to the educational mission of the program by teaching courses, acting as coaches or acting as mentors. While we have a wide network through The Clinic @ Mac, we already have commitments in writing from some of these partners indicated in the table below.

Name	Credentials	Company	Position	Available for Coaching?
M. Antonakos	MBA	Allarta Life Sciences	Founder and COO	Y
A. Giovinzio	MBA	Red Granite Capital	Chairman and CEO	Y
H. Stover	PhD	Allarta Life Sciences	Founder and CEO	Y

### 6.2.4 Student Financial Support

As a course-based Master's degree, the primary source of financial support for students in the MBI program will be internal program-funded merit-based scholarships available to graduate students who qualify, as included in the program budget.

### 6.2.5 Faculty Research Funding

As a course-based Master's degree, the MBI program will not include any mandatory research components. Individuals will not be funded for research within their role as an MBI student.

### 6.2.6 Supervision

As the MBI program does not contain any mandatory research components, there is also no requirement for official faculty supervision. Faculty members teaching within the MBI program and faculty members/members from industry from The Clinic @ Mac will be engaged for coaching of the year-long project course in capacities that are relevant to student projects.

## 7. Quality and Other Indicators

### 7.1 Academic Quality of the Program

Measuring quality in the MBI program will be primarily driven by tracking program and student-specific key performance indicators (KPIs) annually over the first 5 years after program inception. In the short-term, we will focus on key performance indicators that track the growth of the program and the success of MBI alumni. Over time, we will begin to track our primary long-term indicator of the success of the MBI program: the number of biomedical innovations and inventions produced within the year-long project course. The Program Director will oversee measurement and monitoring of the key performance indicators with the Program Coordinator for each term. The data will be reviewed with the Operating Committee and Advisory Committee annually for feedback, planning and implementation of new measures as required.

The key performance indicators that we will track over the first 5 years will focus on the growth of the program and measures of student success after graduation:

Program-facing KPIs:

- Exit surveys completed by students upon completion or departure from the program
- Number of new affiliations made (Hamilton Health Sciences and St. Joseph's Healthcare hospital networks, etc.)
- Number of companies launched by students and alumni
- Number of patients impacted because of products of alumni
- Number of biomedical innovations created by MBI alumni



- Amount of IP generated for innovations
- Funding secured from external sources by MBI alumni (grants, venture, angel, etc.)

Student-facing KPIs:

- Student assessments
- Student reflections conducted at the end of each term
- Number of students who successfully create a start-up
- Number of students who are employed after the program
- Number of fellows and clinicians
- Number of students that enter The Clinic @ Mac health sciences incubator
- Success rate of acceptance into start-up education, accelerator, or incubator

Tracking these KPIs are pragmatic and realistic success measures that will demonstrate the quality of the MBI program. Specifically, these KPIs will demonstrate the program's impact on the Hamilton-McMaster Healthcare Innovation Landscape, a continuously growing sector that we intend MBI graduates to help accelerate. KPIs can also be used to increase new stakeholder buy-in (i.e., new faculty involvement, external and internal funding opportunities, new demographic of incoming MBI students). Lastly, these KPIs will provide vital information for the next 5 years of the program, identifying strengths and weaknesses to amplify and address, respectively, in the subsequent 5 years.

Students will also be encouraged to engage in McMaster and community events throughout their degree. Existing events such as Hacking Health, Delta Hacks, and Hack for Change will be promoted to these students, with the administration also working to cultivate more of these events which will focus specifically on biomedical innovation. Additionally, events held by the McMaster MGD Health ICE group and the Health Leadership Academy will be advantageous learning and networking opportunities for these students. The level of student engagement will be assessed using surveys such as the National Survey of Student Engagement (NSSE) or Classroom Survey of Student Engagement (CLASSE).

The Program Director and Program Coordinator will have an open-door policy when it comes to hearing student feedback and concerns. Programs will also often have a student society with a representative that will liaise with the Program Director to address areas of weakness/concern (or strength) of the program. Seeking anonymous formative feedback from students early on in each semester allows for change to be prompt, if appropriate. In the case where change is not an appropriate response to the feedback received, then a discussion will ensue to provide a rationale and explanation to students. Alternatively, or in addition, student focus groups or town halls with the program leadership has proven to be effective in ensuring a strong and positive student experience. Lastly, McMaster's MacPherson Institute for Leadership, Innovation and Excellence in Teaching provides a Course Refinement service where members from the MacPherson Institute visit a classroom in the absence of a faculty member to engage students in discussion about areas of strength and concern about a course or program which is then communicated in summary to the Program Director. A formal Course Refinement will be conducted within one month of the start of each term.

In response to the collected data, KPIs and feedback from all sources, an annual education retreat for all faculty members and coaches will ensure continuous quality improvement with respect to teaching and learning, and program delivery. Additionally, holding three or four monthly 'calibration meetings' during the summer months with all faculty members or course leads will ensure that courses within the program have been well integrated, that there are no gaps in the curricula, and that there are smooth transitions throughout the 12-month program.

## 7.2 Intellectual Quality of the Student Experience

The program will have mandatory touchpoints between students and faculty coaches to ensure students are keeping up with content and succeeding in the program. A 1:1 coaching structure will be put in place for students/teams as part of their year-long project course, providing student-faculty interactions through this course. Faculty members will be among the coaches that students will have access to for support on this project, which will allow for engagement and ongoing communication. These points of contact will be important to ensure student success. Acknowledging that students come from varying backgrounds, this just-in-time model could mean that students move through content at different times throughout the year. For this reason, faculty will stay in tune with the progress of each of the student groups.

The faculty that will be involved in the delivery of course content for the MBI program will inherently bring diversity and a breadth of knowledge to the program, as most will come from the Faculty of Health Sciences and have expertise directly pertinent to its program offerings. For example, all faculty involved in HESE's *Innovator's in Scrubs* course, MGD Health ICE, The Clinic @ Mac, and surgeons/clinicians from the Department of Surgery have the expertise required to execute a reimagined student experience in biomedical innovation. We predict the synergy that will be created by combining faculty from different disciplines will ensure the intellectual quality of the MBI program.

Beyond access to faculty mentorship, students will also be paired with mentors from industry through The Clinic @ Mac. These mentors will not only provide guidance to students for projects and coursework throughout the program but will allow for connections to the biomedical industry after graduation. This will be one of multiple ways that the program aims to ensure the success of graduates from the MBI program.

## Appendix

### Exhibit A1

*List of major and enabling competencies that reflect the skills required for a successful entrepreneur, developed by the MGD Health ICE group*

*Identify opportunities for new value creation:*

- Develop a decision matrix to help with prioritization of unmet needs
- Identify unmet needs and articulate as need statement
- Identify the potential root cause(s) of the observed problem(s)
- Identify and prioritize stakeholders in the healthcare space
- Map out the current workflow/infrastructure
- Validate the problem (through publications, hospitals, stakeholder interviews, etc.)
- Conduct background research into your area of interest

*Assess the market landscape:*

- Identify and research currently available alternatives to solve the identified problem
- Explain industry and trends to clarify current and future possibilities
- Present measurable market size including dollar values and expected number of users
- Segment the market using demographic, behavioural and psychographic characteristics
- Size the market based on TAM, SOM, TM and quantify using bottom-up or top-down approaches
- Compare and contrast competition including product features
- Identify potential market barriers and strategies to overcome them (ex. SWOT analysis)

*Design a solution and articulate a value proposition:*

- Create and implement an innovation development plan (concept, prototype, MVP) that progressively tests and de-risks your solution
- Validate the product-market fit for your proposed solution
- Develop elements of differentiation to offer sustainable competitive advantage
- Quantify impact on various processes (economics, outcomes, efficiencies, etc.) in the environment or market of interest
- Identify foreseeable risks and risk mitigation strategies in alignment with industry standards or best practices as applicable
- Develop a decision matrix to determine the best solution
- Understand and articulate solution's benefits and competitive advantage by outlining specific differentiating features

*Identify and protect intellectual property:*

- Conduct patent searches
- Evaluate IP protection mechanism and identify relevant requirements (novelty usefulness, non-obviousness)
- Determine confidential aspects of the novel solution and mechanisms for maintaining confidentiality in externally facing communications (ex. NDAs)
- Collaborate with relevant parties (e.g., legal support, MILO) to develop and execute an IP strategy

*Address regulatory requirements:*

- Determine solution's classification (ex. medical device, drug, biologic, wellness products, etc.)
- Identify specific requirements and industry standards, and develop a strategy based on FDA and Health Canada guidelines for venture (ex. clinical plan, QMS, safety tests, submissions, etc.)

*Create a team and network:*

- Develop a network that aligns with overall strategy
- Demonstrate entrepreneurial leadership, team building, and collaboration, utilizing project management and communication tools
- Articulate team skills and identify areas of gaps, strategize to fill gaps

*Acquire necessary resources and funding:*

- Describe innovation ecosystems
- Describe the healthcare sector to build strategic relationships and coalitions
- Use project management platforms (e.g., Jira, Trello, Asana) to manage resources
- Develop a funding strategy including relevant funding sources connected to development plan

*Develop and adapt a business strategy:*

- Evaluate and determine the most appropriate business model for viability and revenue generation within the healthcare space
- Create a go-to-market strategy
- Develop an exit-strategy by comparing the costs and benefits of potential exit options

*Develop and sell key messages for various audiences*

- Communicate to align with various audiences and/or business needs (e.g., funding, user acquisition, feedback, partnerships)
- Develop a non-confidential pitch deck that concisely communicates your innovation plan to various audiences
- Demonstrate effective visual communication by developing pitch decks to maximize clarity of message delivery
- Develop pitches of varying lengths for different audiences (e.g., elevator pitch)

## Exhibit A2

*Background research completed to understand the overall appetite of a program centred around biomedical innovation*

1. **Competitor Analysis** – This was completed to gain a better understanding of the current landscape of graduate-level biomedical innovation programming in North America. This analysis was completed in December 2020. The general workflow for this analysis is provided below:
  - Programs that satisfied two criteria: 1. a graduate education and 2. provided programming related to innovation were categorized based on subject focus: Engineering, Design, Digital, Business, Leadership, and Innovation Management.
  - Programs were assessed for:
    - Level and length
    - Target Audience
    - Program Format
    - Course Topics
    - Projects or practicums
    - Noteworthy features
  - Created an *“Innovation Programming Scan”* deliverable that includes Canada, European Union and United States Programs that teach Innovation
2. **In-depth Literature Review and Systematic Analysis** – Completed June 2020
  - Written systematic review of innovation programming and pedagogical best-practices in the fields of health, bioengineering and design
  - Gap analysis
  - Report of qualitative and quantitative measures
  - Created an *“In-Depth Literature Review and Systematic Analysis”* deliverable that includes journal articles about Innovation Education within the last 15 years
3. **Continuous consultation with undergraduate and graduate students** from IBEHS, School of Biomedical Engineering and Medical Sciences using formal and informal methods (e.g., interviews, focus groups, surveys).
4. **Formation of ad-hoc Advisory Committee** including faculty from IBEHS, Health ICE, Health Leadership Academy (HLA), clinicians, entrepreneurs, and external industry consultants.
5. **Engaged with community partners in the Hamilton space** (i.e., doctors, innovators, Health ICE) to act as mentors for future students.

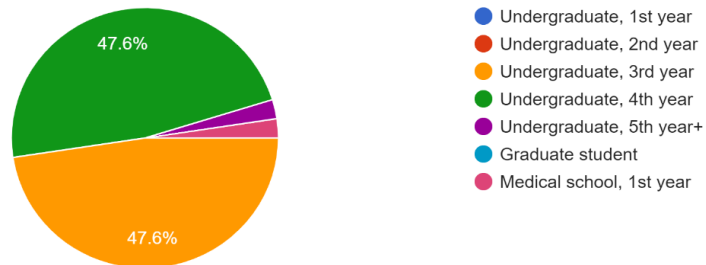
### Exhibit A3

A survey of 3<sup>rd</sup> and 4<sup>th</sup> year IBEHS students suggesting interest in Graduate level training

Below are results of an informal survey conducted of upper year undergraduate students in IBEHS. 42 responses were received between February 2 and 11, 2021.

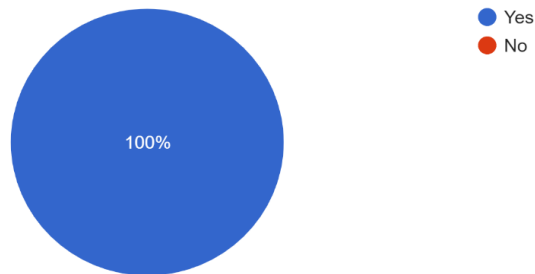
What level of education are you working on?

42 responses



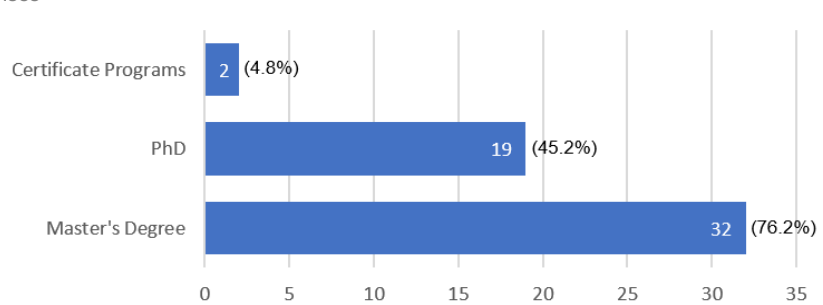
Have you considered additional studies?

42 responses



If yes, which of the following program options have you considered?

42 responses



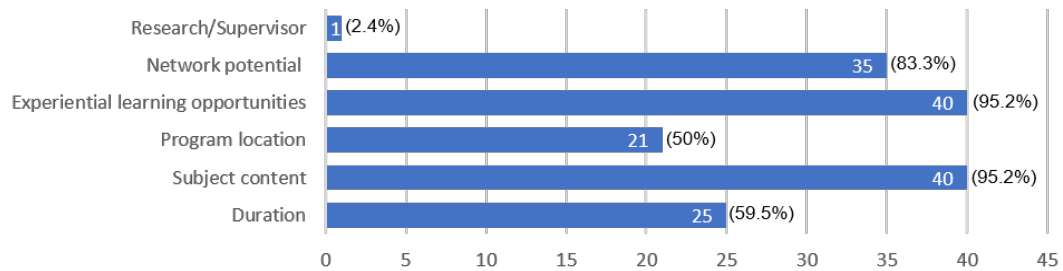
Please indicate the ideal length of a graduate program for you.

42 responses



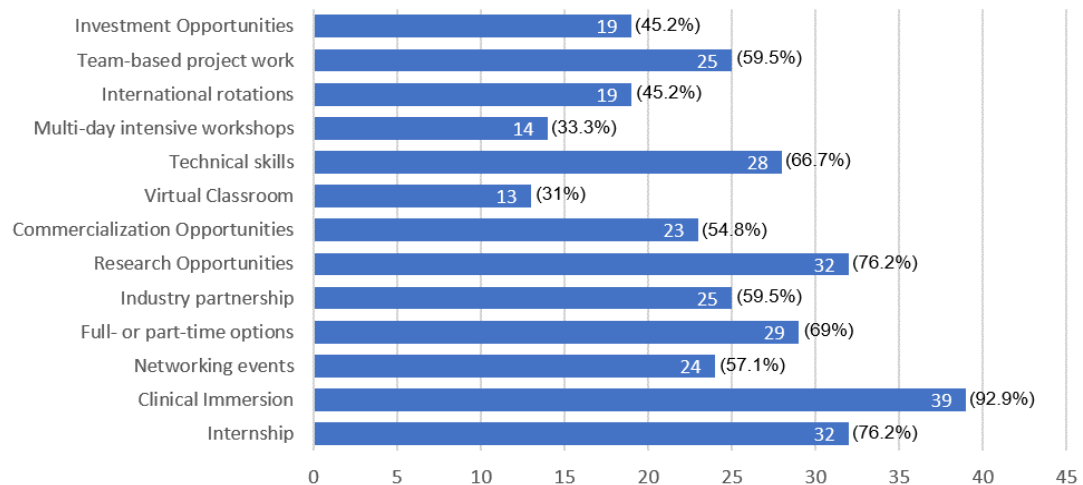
Please list any components of a graduate studies program that would be critical for you to consider applying.

42 responses



Please indicate which program components would be most interesting to you.

42 responses



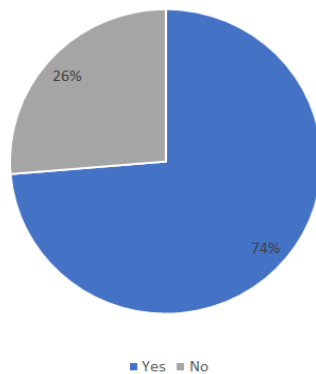
## Exhibit A4

*An informal survey of basic science researchers and clinicians at McMaster suggesting interest in Graduate level training focused on biomedical innovation*

Below are results of an informal survey conducted of basic science and clinician researchers in the Faculty of Science, Faculty of Health Science, and Faculty of Engineering. 28 responses were received between November 5 and December 5, 2021.






Would this training program have been valuable to you or your colleagues had it been previously available?

21 responses



Summary of key themes from additional comments provided:

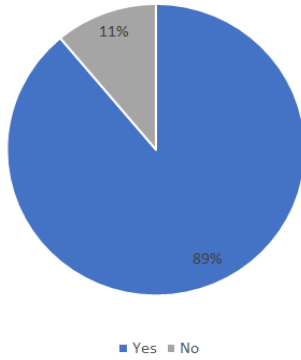
Why MBI would be valuable:

-  Education on navigating regulatory, reimbursement, IP, clinical, and market environment
-  Provides connections & skillsets needed to take innovation to market
-  Clinical immersion- framing problems by working directly with patients
-  12-month program length (ideal for clinicians)
-  Training can grow highly skilled innovation workforce in the biomedical sector

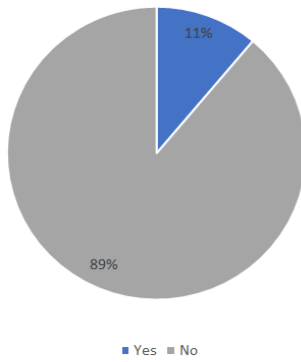
Would you recommend this training to individuals in your institution?



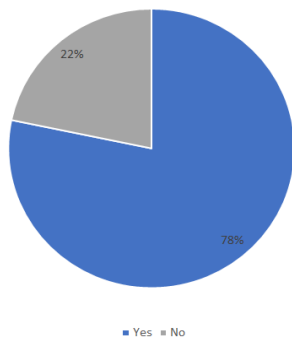
18 responses



Is there too much of a focus on innovation in the clinical setting?  
18 responses



Does the program itself and its delivery appear to be innovative?  
23 responses



## Exhibit A5

*Competitor analysis in Canada of various Universities providing Innovation and Entrepreneurship Masters programs.*

University	Faculty	Program Name	Duration
Queen's	Engineering and Smith School of Business	Master of Entrepreneurship and Innovation	12 months full-time
Toronto	Institute for Management and Innovation, (joint Administration, Business Management, Engineering Management)	Master of Management of Innovation	12 months full-time
McMaster	Engineering	Master of Engineering/ Technology Entrepreneurship and Innovation	20 months full-time
Toronto Metropolitan University	Engineering and Architectural Science	Master of Engineering Innovation and Entrepreneurship, Biomedical Engineering track	16 months full-time
Western	Engineering	Engineering in Medicine	12 months full-time, option for longer duration part-time
Ontario College of Art and Design (OCAD)	N/A	Design for Health	24 months full-time, 36 months part-time
McMaster	Health Sciences	Masters of Biomedical Discovery & Commercialization	12 months full-time
Guelph	Department of Molecular and Cellular Biology and Department of Business Management	Master of Biotechnology	12 months full-time, optional extension of research project to 16 months
Alberta	School of Business	MBA with Specialization in Innovation and Entrepreneurship	20 months full-time
McMaster	Social Sciences	Master of Public Policy in Digital Society	12 months full-time
Waterloo	School of Entrepreneurship and Business	Master of Business, Entrepreneurship, and Technology	12 months full-time, 36 months part-time
Toronto	Institute for Management and Innovation	Masters of Biotechnology	24 months full-time
Windsor	Science	Master of Science in Translational Health Science	12-months full-time

## **Exhibit A6**

### *Letters of Support from Key Stakeholders of the Program*

The following pages include four letters of support from:

- Dr. John G. Kelton, Executive Director, Michael G. DeGroot Initiative for Innovation in Healthcare
- Dr. Mohit Bhandari, Professor and Chair, Department of Surgery
- Jennifer McKinnell, Director, Health Sciences Library
- Dr. Heather Sheardown, Dean of Engineering



Dr. John G. Kelton  
Executive Director  
Michael G. DeGroot Initiative for Innovation in Healthcare

1280 Main St. W., HSC 3H50  
Hamilton, ON L8S 4K1

Tel: 905.525.9140  
Ext: 21706  
Fax: 905.524.2983  
Email: keltonj@mcmaster.ca

September 1, 2022

Dear Dr. Michelle MacDonald,

**Re: Letter of Support for the Master of  
Biomedical Innovation Program**

It is with pleasure and enthusiasm that I can write a letter of support in consideration of the Master of Biomedical Innovation (MBI) Graduate Program within the Department of Surgery in the Michael G. DeGroot School of Medicine at McMaster University. A number of years ago, Dean Paul O'Byrne charged me with helping to develop a culture of innovation and entrepreneurial (I&E) activity within the Faculty of Health Sciences at McMaster. With funding provided by a generous gift from Mr. Michael G. DeGroot and subsequently Dr. Marnix E. Heersink, we have been developing a number of complementary initiatives. The Master of Biomedical Innovation will be the pinnacle of all of these initiatives. The program is unique in that it is project-based, using the problem-based learning approach of Health Sciences. The curriculum covers the key competencies of I&E. These competencies in turn were developed by educators and entrepreneurs under the guidance of Dr. Alan Neville.

When we looked for a home department for this master's program, Dr. Mohit Bhandari, Chair of Surgery, expressed his highest level of enthusiasm, and in meetings with members of the department a similar level of enthusiasm was apparent. The development of this MBI has followed a number of steps including a "competitor analysis" performed by an outside consultant, the development of core competencies, a number of pilot educational programs, and most recently, content development by key educators including yourself, Michelle. I anticipate this master's will be both important and highly sought after.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "John G. Kelton".

John G. Kelton, CM, MD, FRCP(C)  
Executive Director, Michael G. DeGroot Initiative for

Innovation in Healthcare Distinguished University  
Professor, McMaster University  
Fellow, Royal Society of Canada  
Emeritus Dean and Vice President, Michael G. DeGroote Medical School, Faculty of Health  
Sciences



**MOHIT BHANDARI**, MD, PhD, FRCSC, O.Ont, C.M.  
Professor and Chair | Department of Surgery  
Canada Research Chair | Distinguished University Professor  
McMaster University

Lakeview Lodge, 3<sup>rd</sup> Floor  
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711 Concession Street  
Hamilton, Ontario L8V 1C3  
Tel: 905-521-2100 Ext. 73188  
Email: [bhandam@mcmaster.ca](mailto:bhandam@mcmaster.ca)

July 20, 2022

Dr. Michelle MacDonald  
Acting Director, MBI  
Co-Director  
Integrated Biomedical Engineering & Health Sciences  
Via email: [Macdonml@mcmaster.ca](mailto:Macdonml@mcmaster.ca)

Dear Michelle,

On behalf of the Department of Surgery, I am pleased to provide you with a letter of support for the Masters of Biomedical Innovation Graduate Program (MBI). The MBI will be unique in Canada as the only entrepreneurship education program that is biomedical-specific, matching healthcare-oriented student innovators with entrepreneurs whose mentorship will facilitate innovation project development. The one-year flexible curriculum delivery will be particularly attractive to members of my Department. Innovation and Entrepreneurship constitute one of the six pillars of the new C.R.E.A.T.E. strategic plan for the Department of Surgery and thus the opportunity to be the host Department for this new Program is completely in line with the direction in which the Department is moving.

To this end, we have been actively engaging members of our Department in discussions about the MBI. I remain confident that the Department will be able to provide a number of individuals who can be mentors and coaches for the MBI, and our trainees and junior members will certainly be encouraged to take this Program. I am also engaging surgical chairs from other institutions to discuss MBI as a potential stream of graduate study for their surgical trainees.

I look forward to collaborating with you and the other members of the Working Group who have been designing this very innovative graduate degree program.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Mohit Bhandari".

Mohit Bhandari O.Ont, C.M. MD, PhD, FRCSC  
Distinguished University Professor  
Chair, Department of Surgery  
Senior Tier Canada Research Chair  
McMaster University



Health Sciences  
Library

Jennifer McKinnell,  
Director, Health Sciences  
Library Health Sciences  
Centre 2B28 1280 Main  
Street West Hamilton,  
ON L8S 4K1

(905) 525-9140 x 24381  
(905) 528-3733  
mckinn@mcmaster.ca  
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September 8, 2022

Michelle MacDonald, PhD  
Co-Director, Integrated Biomedical Engineering & Health Sciences  
Program Department of Biochemistry and Biomedical Sciences

Dear Dr. MacDonald,

I am writing in support of the new Master of Biomedical Innovation program. There are many areas where the Health Sciences Library (HSL) is well poised to support this new program. We have a history of working with experiential and evidence-based learning programs. The librarians and front-line staff are well versed in the processes necessary to teach learners the merits of finding, evaluating, and using the information to apply evidence-based practice and evidence-informed decision-making. However, when trying to understand the impact of any new program on the McMaster libraries, three aspects must be considered: collections, services, and space.

The HSL subscribes to and purchases a vast collection of journals, books, evidence-informed decision-making tools, and video content in subjects related to biomedical sciences, health care research, evidence-based practice, and the social determinants of health. The University Library (managed through Thode, Innis, and Mills Libraries) also provides extensive access to related information. Our interprofessional and interdisciplinary approach to licensing content means that, in most cases, we are already invoiced as a major research institution (meaning our subscription costs fall into the highest billing tier). As a result, adding new students and faculty will not bump us into a new payment category, nor will it force us to renegotiate the terms of our existing licenses.

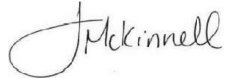
In terms of providing comprehensive health industry information, there are content gaps. As outlined in the proposed budget, the allocation of additional resource funds will be necessary to address these gaps.

The HSL has unused capacity in some of its service areas. Given the program's proposed size and the study level, the HSL can more than support these students through walk-in help and interlibrary loan services. However, the HSL will struggle to meet demand when considering complex graduate research support. Over time, the impact of this new program, combined with the pressures generated from McMaster's larger health innovation community, may require additional staff to meet demand. Assuming funds to hire other employees are currently limited, I recommend that curriculum developers work closely with the HSL to ensure ample time to plan learner interventions and information management support activities. It may be necessary to develop self-paced modules and other asynchronous learning activities to ensure the students develop the advanced information evaluation, use, and management skills we normally expect from our graduate students. Eventually, additional librarian support will be required.

McMaster's libraries have been operating well beyond space capacity for many years. Students often report that they cannot find a place to study in the library. However, it is unlikely that the proposed additional students will create significant extra strain on existing library space.

I am intrigued and excited to learn of the newly proposed Master of Health Innovation program. I believe the HSL is ready and willing to support the new learners. Although there are some areas where creative problem-solving and careful planning are required, I am endorsing the program proposal. Please feel free to contact me if you require additional information.

Yours sincerely,



Jennifer McKinnell  
Director, Health Sciences Library

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**BRIGHTER WORLD**





September 30, 2022

Dr. Michelle MacDonald  
Acting Director, Master of Biomedical Innovation  
Co-Director, Integrated Biomedical Engineering and Health Sciences

Dear Michelle,

On behalf of the Faculty of Engineering, I am pleased to provide you with a letter of support for the Master of Biomedical Innovation Graduate Program (MBI). We, in Engineering, are enthusiastic about this program, and we look forward to partnering with our colleagues in the Faculty Health Sciences.

To my knowledge, the proposed Master of Biomedical Innovation (MBI) will be unique in Canada because it is an entrepreneurial-focused health program training students who have interest in health innovation with regard to all aspects of innovation and entrepreneurship. The content ranges from evaluating areas of care for opportunities to innovate, to the creation of systems or devices that will enhance overall patient care in its broadest sense. Engineering students and faculty are typically skilled with regard to devices, systems analysis, and "making products". Health Science students have unique expertise in the provision of care. I personally believe that this partnership, along with other partners from across the university, will provide unique opportunities for all.

Over the past two years I, and other colleagues in Engineering, have been working with you Michelle, Dr. Neville, Dr. Kelton, among others, to create this program and I am pleased that it is now moving forward to the operational stage. I can commit that we in Engineering anticipate assistance with problem sourcing, problem development, coaching, mentoring, and potentially teaching. We will certainly be encouraging our students to participate in the Master of Biomedical Innovation Graduate Program (MBI).

Congratulations on taking the Master of Biomedical Innovation to this point, and I look forward to it being implemented

Sincerely,

Heather Sheardown  
Dean of Engineering

# McMaster University



**MASTER OF BIOMEDICAL INNOVATION**

**Nov 11, 2022**

Reviewer 1

Name: John Frampton

University Address: Dalhousie University

Reviewer 2

Name: Kieran Murphy

University Address: University of Toronto

Internal Reviewer

Name: Leonard Waverman

Department: McMaster

**Executive summary:**

The mission of the proposed McMaster University, Master of Biomedical Innovation (MBI) program will be to provide multidisciplinary, project-oriented graduate-level education and training to accelerate biomedical innovation. This program will serve to bridge an important gap between medical device design and health systems technology. It will also complement McMaster University's existing undergraduate and graduate programs in medical science and innovation. The content will be delivered in the form of 1.5 credit hour courses, bootcamps, and experiential learning activities over the course of 1 year. While similar in format to other graduate level programs in innovation, the fact that the program will be situated in the Department of Surgery, which has been internationally recognized for innovation in medical education and clinical research, will certainly provide a range of experiences that set this program apart from other programs in Ontario and across Canada focused on educating and training future inventors, innovators, and entrepreneurs.

Through remote interviews with faculty members who participated in developing the program and its curriculum and interested students, the reviewers were able to assess the suitability of the overall program structure, its fit within McMaster University's mission, academic plan, and strategic mandate, and its feasibility with respect to the planned resource allocation. The review team enthusiastically supports the mission of this new program. On the subsequent pages, we have provided comments and recommendations that we hope will facilitate the program approval process and the subsequent program launch.

## Outline of the Visit

Was the site visit: In person:  Virtual site visit:  [Desk Review](#):

If the review was conducted either virtually or via desk review, was this format agreed to by both external reviewers? Yes  No

Was sufficient rationale provided by the Provost/Provost's delegate for an off-site visit?

Yes  No

For those reviews that included an in-person or virtual visit, please indicate the following (or insert the site visit schedule below):

- **Who was interviewed?**

- Vice-Provost and Dean of Graduate Studies (Dr. Steve Hranilovic)
- Acting Program Director (Dr. Michelle MacDonald) and Acting Administrator (Sarah Bouma)
- Curriculum Planning Group (Dr. Anna Korol, Dr. Fran Lasowski, Dr. Michelle MacDonald, Dave Mammoliti, Dr. Alan Neville, and Dr. Greg Wohl)
- Personalized Leadership (Karen Belaire, Dr. John Kelton, Rebecca Repa, and Dr. Kevin Smith)
- Faculty of Health Sciences Administration (Dr. Susan Denburg and Dr. Steven Hanna)
- External Experts (Fiona Bergin, Hugh Hoogendoorn, Dr. Renaud Jacquemart, Randy Peterson, Karen Scraba, and Dr. Leigh Wilson)
- Deputy Provost (Matheus Grasselli)
- Faculty Group (Dr. Wael Hanna, Dr. Michael Hartmann, Dr. Yasser Khan, Dr. Anna Korol, Dr. Michelle MacDonald, Dr. James MacKillop, Dr. Sean Park, and Dr. Bill Wang)
- Prospective Students (Deena Al-Sammak, Emnpreet Bahra, Daniel D'Souza, Lianna Genovese, Serenna Gerhard, Chris Griffiths, Jake Howran, Yuman Irfan, Tyler McKechnie, John Milkovich, and Sophini Supramanian)
- Senior Advisors (Dr. Mohit Bhandari, Dr. John Kelton, Dr. Alan Neville, and Dr. Heather Sheardown)

- **What facilities were seen?**

-None were seen in person. Video renderings were presented to show the planned departmental and learning spaces.

- **Comment on any other activities relevant to the appraisal.**

-The review was conducted via Zoom in the form of group interviews.

**In order to continuously improve the effectiveness and efficiency of site visits/virtual site visits, please comment on the following:**

- **How effective was the proposal brief in preparing you for the visit/virtual site visit?**

- The proposal did a good job of outlining the vision for the program and provided enough general information for the reviewers to understand the overall program structure and prepare questions about the details of the curriculum for the interviews.

- **How could the logistics of the visit/virtual site visit be improved?**

-Some of the sessions (those with 3 interviewees or fewer) could have been a bit shorter and other sessions (some with >9 interviewees) could have been slightly longer.

## **PROGRAM**

- **Comment on if the program's objectives clearly described**

-The proposal provided an overview of the key program objectives that will serve as a framework to develop a detailed curriculum. Overall, the proposal was thoughtfully prepared. The Program Committee may wish to provide additional written details in the following areas.

1) The proposal refers to a gap between device and health systems technology that will be addressed by the MBI program. Outlining some specific problems that need to be addressed to fill this gap would help to motivate the objectives of the program and distinguish it from other graduate level programs in biomedical science and innovation.

2) A major strength of the program is its emphasis on project-oriented and experiential learning. Students entering the program will work on either an individual project or (more preferably) a group project. It would be helpful to prospective students, faculty members, and mentors/coaches to have additional information about appropriate subject areas and scope for these projects. Providing an example of an ideal project would be helpful for students considering the program. The mentors/coaches will be a key part of the student experience. The team has done an admirable job of recruiting mentors/coaches already and is encouraged to continue to do so as they approach the program launch so that students will have access to a diverse range of skillsets and perspectives. It is recommended that the team develops a strategy for vetting projects at the beginning of the program.

3) It is recommended to begin mapping program objectives to program participants, including identifying faculty members who will teach courses and bootcamps and working with them to develop detailed syllabi/activity schedules.

- **Comment on the appropriateness of the degree nomenclature, given the program's objectives**

-Master of Biomedical Innovation (MBI) seems appropriate.

- **Comment on the consistency of the program with McMaster's mission and academic plan; whether the program learning outcomes are clear, appropriate and aligned with the undergraduate or graduate Degree Level Expectations.**

-The program is in alignment with McMaster's mission and academic plan. The Department of Surgery, several other academic units, and prospective students are all clearly in support of the program. The plans presented will be strengthened by including additional details about the projects, courses, and bootcamps, some of which were discussed in the interviews.

- **McMaster's Current Priorities and Strategic Mandate Agreement should be at the forefront of program design. This information can be found in the links provided below:**
  - i. **McMaster's Strategic Mandate Agreement:**  
<https://ira.mcmaster.ca/app/uploads/2020/11/McMaster-SMA3-Agreement-August-31-2020-SIGNED-FINAL.pdf>
  - ii. **McMaster's current priorities:**  
[https://president.mcmaster.ca/app/uploads/2021/05/Institutional-Priorities-and-Strategic-Framework\\_FINAL\\_5May21.pdf](https://president.mcmaster.ca/app/uploads/2021/05/Institutional-Priorities-and-Strategic-Framework_FINAL_5May21.pdf)

**Comments:**

See above.

**Specific Recommendations (where applicable):**

As noted above, the Program Committee may wish to provide additional details in the program proposal. The Program Committee is also encouraged to begin drafting detailed syllabi and preparing learning materials.

**ADMISSION & ENROLMENT**

- **Comment on whether the admission requirements (including any alternative requirements) are appropriately aligned with the program learning outcomes (and/or Degree Level Expectations) established for completion of the program.**

-The admission requirements include completion of an undergraduate honours degree, with a minimum of a B+ average in the final two years of study. There is also a requirement for introductory level entrepreneurship and innovation education along with practical experiences, which the team may wish to soften so as not to exclude students who for many reasons may not be exposed to entrepreneurship and innovation prior to learning about the MBI program. Candidates who meet the minimum admissions criteria will be invited for interviews.

- Are there any applicable alternative admission requirements, including how the program recognizes prior work or learning experience, and if so, are they appropriate?

-None were presented.

**Comments:**

See above.

**Specific Recommendations (where applicable):**

The program committee may wish to soften the requirements around entrepreneurship education and practical experience.

## STRUCTURE

- **Comment on how the program's structure and regulations meet the specified program learning outcomes.**

**NOTE:** The Quality Assurance Framework requires a clear distinction between program objectives, program-level learning outcomes, and [Degree Level Expectations](#). See the [Guidance on Program Objectives and Program-level Learning Outcomes for details on the distinction](#).

The program's structure mostly addresses learning outcomes A1-A9.

- **Is the program's structure and the requirements to meet the program objectives and program-level learning outcomes appropriate?**

Generally, yes. This should become clearer once detailed syllabi and course materials have been developed.

- Do the program's structure, requirements and program-level learning outcomes ensure students meet the institution's Undergraduate or Graduate Degree Level Expectations?

Generally, yes. This should become clearer once detailed syllabi and course materials have been developed.

- Does the (proposed) mode of delivery facilitate students' successful completion of the program-level learning outcomes?

Given the emphasis on group/experiential learning and projects, the mode of delivery seems appropriate.

- Does the curriculum address the current state of the discipline or area of study?

Yes, in a general sense. The structure of the curriculum is in line with other successful graduate level programs in innovation.

### **Comments:**

See above.

### **Specific Recommendations (where applicable):**

The Program Committee is advised to begin drafting detailed syllabi and course materials so that it is clear to everyone involved with the program how the program elements address specific learning outcomes and fulfill Degree Level Expectations.



## CURRICULUM AND TEACHING

- **Comment on how the curriculum reflects the current state of the discipline or area of study; evidence of significant innovation or creativity in the content and/or delivery of the program; the appropriateness and effectiveness of the modes of delivery at meeting program learning outcomes; and how teaching in the program prioritizes areas of accessibility and removes barriers to learning.**

### ***Comments:***

The program curriculum and teaching will provide dedicated innovation and entrepreneurship education and training focused on medical innovation. The program will be situated in the Department of Surgery offering students access to mentorship from leaders in clinical research.

### ***Specific Recommendations (where applicable):***

Draft syllabi should be developed and included with the proposal as it moves forward. Syllabi should include example topics, assignments, etc., and evaluation metrics. By including syllabi and bootcamp details it will also be easier for the team to make an argument for the uniqueness of the program.

## ASSESSMENT OF LEARNING

- Comment on the appropriateness and effectiveness of the proposed methods of assessment in demonstrating achievement of the program learning outcomes, as well as the extent to which the program(s) assess graduating student achievement of the program learning outcomes.
- Are the plans in place to monitor and assess the following, both appropriate and effective?
  - i. The overall quality of the program;
  - ii. Whether the program is achieving in practice its proposed objectives;
  - iii. Whether its students are achieving the program-level learning outcomes; and
  - iv. How the resulting information will be documented and subsequently used to inform continuous program improvement.

***NOTE: Programs should ensure that the plans for monitoring and assessing student achievement provide an assessment of students currently enrolled as well as post-graduation metrics. Please see [Guidance on Assessment of Teaching and Learning](#) for further details and examples of measures for assessing teaching and learning that meet the requirements of the Quality Assurance Framework.***

**Comments:**

These details were not presented in the program proposal.

**Specific Recommendations (where applicable):**

Details about assessment of learning should be included in the program proposal and in the syllabi to be developed. It will be important to identify a strategy for assessment of the bootcamps.

**RESOURCES TO MEET PROGRAM REQUIREMENTS**

- Comment on evidence that there are adequate human, physical and financial resources to sustain the quality of scholarship produced by undergraduate students.
- Given the program's class sizes and cohorts as well as its program-level learning outcomes:
  - a) Is the number and quality of core faculty who are competent to teach and/or supervise sufficient to achieve the goals of the program and foster the appropriate academic environment?
  - b) When adjunct/sessional faculty play a large role in the delivery of the program, is their role appropriate? Are plans in place to ensure the sustainability of the program and the quality of student experience and if so, are these suitable?
  - c) Is the provision of supervision of experiential learning opportunities adequate, if applicable?
  - d) Taking into consideration implications for other existing programs at the university, is the administrative unit's planned use of existing human, physical and financial resources appropriate?
  - e) Are there adequate resources available to sustain the quality of scholarship and research activities produced by students, including library support, information technology support, and laboratory access?

**NOTE: External Reviewers are not expected to assess the financial viability of a program, and internal budgets are not under the purview of the External Review of a New Program Proposal. Provide a general assessment of the administrative unit's planned use of existing financial resources.**

**Comments:**

The list of participants is impressive and collectively the number of participants and various areas of expertise are adequate to launch the program.

***Specific Recommendations (where applicable):***

Mapping program participants to specific curriculum elements (such as classes, bootcamps, project supervision) should help to demonstrate that resources and expertise are in place.

**QUALITY AND OTHER INDICATORS**

- Please provide commentary on the indicators the department will use over the first five years to document and to demonstrate the quality of the program.
- Comment on the quality of the faculty (e.g., qualifications, funding, honours, awards, research, innovation and scholarly record, appropriateness of collective faculty expertise to contribute substantively to the program and commitment to student mentoring).
- Comment on any other evidence that the program and faculty will ensure the intellectual quality of the student experience.
- Comment on any evidence of how faculty members will ensure the intellectual quality of the student experience.

-The reviewers did not have any specific comments related to quality and other indicators.

**CONFIDENTIAL SECTION**

Provide any commentary or recommendations on confidential areas.

***Comments:***

None.

***Specific Recommendations (where applicable):***

None.

## SUMMARY & RECOMMENDATIONS

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Provide a brief summary of the review. Please include commentary on any clearly innovative aspects of the proposed program together with recommendations on any essential or otherwise desirable modifications to it, as applicable.

Recommendations that are clear, concise, and actionable are the most helpful for universities as they prepare to launch new programs. Include specific steps to be taken on any essential or otherwise desirable modifications to the proposed program.

*NOTE: The responsibility for arriving at a recommendation on the final classification of the program belongs to the Appraisal Committee. Individual reviewers are asked to refrain from making recommendations in this respect.*

### Recommendation 1:

Consider expanding the pool of clinical mentors, for example, by including additional mentors from anesthesia, ER, critical care, interventional radiology, interventional neuroradiology, vascular surgery, cardiology, and other tool using professions.

### Recommendation 2:

At a high level, the program is exciting and has potential to accelerate innovation at McMaster among young innovators. To ensure that the program can be launched in the near future, the team should start developing detailed materials for courses, projects, and bootcamps.

### Recommendation 3:

The projects are viewed as the most important program element. It is recommended that students be strongly encouraged to work on projects in groups. This will also make administration and management easier.

### Recommendation 4:

Care should be taken in mentoring students to ensure that they appreciate that many business ventures fail, and that innovation often involves an element of risk. The Program Committee may wish to shift the emphasis towards learning how to think and work with an innovation mindset rather than starting a business.

### Recommendation 5:

Each program element should have an instructor or team member mapped to it. Drafting detailed syllabi and course materials should help identify program responsibilities and areas where additional expertise is needed.

### Recommendation 6:

Continue to review other similar programs around the world to avoid pitfalls and identify successful strategies to build a great program that can be adapted to meet student needs as the innovation landscape shifts.

Recommendation 7:

This is an ambitious program to be covered in three terms. The first year will give the Director and the faculty a very good indication of whether the time frame allowed is sufficient or should be increased by one term or more.

Recommendation 8:

Consider a formal committee structure to support student success.

Signature: **John Frampton** \_\_\_\_\_

Signature: \_\_\_\_\_  

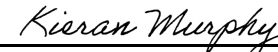

Date: \_\_\_\_\_  
November 17, 2022

Signature: **Leonard Waverman** \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: **Kieran Murphy** \_\_\_\_\_

Signature: \_\_\_\_\_  


Date: \_\_\_\_\_  
Nov 17 2022

Reviewers' Report Guidelines + Template  
New Program

Last Updated: December 8, 2021

Recommendation 7:

This is an ambitious program to be covered in three terms. The first year will give the Director and the faculty a very good indication of whether the time frame allowed is sufficient or should be increased by one term or more.

Recommendation 8:


Consider a formal committee structure to support student success.

Signature: John Frampton \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: Leonard Waverman \_\_\_\_\_

Signature:  \_\_\_\_\_

Date: 12/11/2022 \_\_\_\_\_

Signature: Kieran Murphy \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Master of Biomedical Innovation

External Review  
Program Response

*December 14, 2022*

On behalf of the curriculum planning group for the Master of Biomedical Innovation (MBI) graduate degree, we are appreciative of the review panel's time and expert assessment of the program. It was encouraging to read that the panel, *"enthusiastically supports the mission of the new program"* and considers that, *"a major strength of the Program is its emphasis on project-oriented and experiential learning."*

The review panel provided eight recommendations for consideration by McMaster University to improve the program and guide it to a successful implementation. To best respond to the reviewer's feedback, supplemental planning material has been created by the planning group and added to this narrative response. The appendices provide examples of more detailed curricular information and planning documents cited by the reviewers as important to the review process to assess teaching activities and graduate-level expectations.

**Response to Recommendations:**

**Recommendation 1: Consider expanding the pool of clinical mentors:**

The MBI program is being developed in collaboration with the Michael G. DeGroot Health Innovation, Commercialization, and Entrepreneurship group that has created a health innovation incubator called, *The Clinic*. Through *The Clinic*, there is a growing number of mentors (currently ~20) with varied expertise, interested in advising McMaster health innovators. The Clinic is actively developing its network within the Faculty of Health Sciences and is leading events to introduce clinical faculty members, with biomedical innovation and entrepreneurship experience, to learn about opportunities to be a mentor in the MBI and other Clinic initiatives. For example, a recent 'innovation synergy' meeting brought together innovation-minded faculty from the Faculty of Health Sciences, Department of Medicine, and biomedical engineers from the Faculty of Engineering to network and discuss opportunities for collaborations in project development. From meetings such as these, we expect to recruit clinical and non-clinical project mentors for project teams in the MBI.

**Recommendation 2: The team should start developing detailed materials for courses etc.**

The program team is actively building curricular plans, program content, and bootcamp-based experiences. To demonstrate the progress of this work outlines for three courses are provided (Appendix A) and an overview of the first bootcamp is also attached (Appendix B). These outlines describe the course objectives, student activities, required readings and student

assessment. A course instructor has been identified for each of these courses. Planning for the remaining courses is underway with an expected completion of Spring 2023.

**Recommendation 3: Students should be encouraged to work in groups.**

The MBI Planning Group is aware of the importance of the “Co-Founder” factor in successful innovations and will strongly encourage students to work on a project in a team.

**Recommendation 4: Promote innovation mindset over starting a business.**

This is an important recommendation. The planning group heeds the feedback that the proposal over-emphasizes the value proposition that an MBI student will graduate the program as an entrepreneur with a marketable product. The planning group is in full agreement that the opportunity for students will be to develop expertise in biomedical entrepreneurship and gain an innovation mindset. Revisions to the proposal language will be made and emphasized in the recruitment strategy through marketing materials and promotion plans.

**Recommendation 5: Each program element should have an instructor.**

Course construction and faculty recruitment for course leadership is underway. A preliminary list of course instructors is attached (Appendix C). Recruitment is expected to be complete by Spring 2023.

**Recommendation 6: Continue monitoring similar programs and strategize to meet student needs in a changing innovation landscape.**

An environmental scan of Canadian comparator programs is provided (Appendix D). A scan of international programs has been completed and can be made available upon request. The MBI Planning Group will continue to monitor the entrepreneurship education environment, scanning university/college websites, social media announcements, meeting, and conference announcements, etc. Feedback from external mentors and collaborators, as well as international partners at the University of Alabama Birmingham, Marnix E. Heersink Institute for Biomedical Innovation and Entrepreneurship to ensure the program remains responsive to the evolving innovation learning landscape.

**Recommendation 7: Monitor program time frame sufficiency.**

The Program Director and the planning group will be carefully following the progress of the first cohort of MBI students to monitor objective achievement within the one-year timeframe. Given that production of a marketable innovation, the product is not required for degree completion, the planning team remains confident that the twelve-month timeframe will be appropriate.

**Recommendation 8: Formal committee structure to support student success.**

An Academic Progress Committee will be formed to review students struggling to achieve program objectives and will offer recommendations to support their success. Students will also be supported with a program faculty advisor who will help guide their learning journey in the MBI.



## **Response to Additional Report Commentary**

### **1. Program Objectives:**

The MBI will be the first biomedical innovation graduate degree program in Canada that will offer students the opportunity for students to innovate across the health innovation continuum from the design of new devices to health system solutions. The proposal provides examples of potential projects that have developed out of The Clinic. For example, the proposal describes a successful student-led innovation of an assistive device that enables people with limited fine motor skills to write and draw. Another student team has developed a modified “manipulable” endotracheal tube to combat the problem of difficult airway curvatures. Both projects have progressed along the innovation pathway; the former is now commercially available. Potential MBI students will be made aware of such projects and the supportive educational entrepreneurship ecosystem that has allowed these innovations to develop successfully.

### **2. Admission & Enrolment:**

The review panel suggested that program prerequisites be broader. The planning team appreciated this feedback and will be revising the criteria to identify entrepreneurship and innovation education or experience as an asset but not a requirement for admission.

### **3. Structure:**

Each course is based on one or more of the nine competencies and their associated enabling competencies as detailed in the MBI Proposal (Exhibit A1 page 30). Each learning outcome identified in the proposal relates to one of the competencies and is mapped to the corresponding graduate degree-level expectations (MBI Proposal, page 8).

#### **Assessment of Learning:**

As noted in the MBI Proposal, students will receive a final grade for each course. The format of assessment will be similar for each course and will be defined as the course curricula are further developed. Students will attend a case-based bi-weekly tutorial and will be assessed on their performance in the tutorial, via contribution to discussion, ability to apply the course concepts to the case, collaboration with fellow students, and professional behaviour. Assessment during bootcamps will include oral pitch presentations on the status of their projects to peers and team self-reflections on their performance in project development. Lastly, during each quarter course, students will undertake a written reflection on their application of the course concepts to their project as well as a written assignment commentary on an entrepreneurship case. For the project courses (MBI 701, 702, 703), each team of students will make an oral presentation and a written report to their coach that assess their attainment of milestones for their project that reflects the program learning outcomes/competencies.

Milestones are detailed below:

**Milestone 1: Identify needs**

- What is the health/biomedical need you have identified; what value can be gained through solving the identified need and to whom is this value brought

**Milestone 2: Assess market landscape**

- Prepare a 1-2 page depiction of the existing and emerging solution landscape (clinical, utilization, economic) for your identified area and relevant needs; prepare a gap analysis of the solution landscape (charts, graphs, visuals)

**Milestone 3: Develop prototype**

- Prepare a 1-2 page depiction of your ideation process and solution front-runners based on the need criteria, existing solution landscape and initial stakeholder feedback through prototype testing

**Milestone 4: IP and Regulatory Strategy**

- Create a spreadsheet outlining your analysis of relevant patents; consider the medical classification and regulatory pathway of your proposed solution; discuss the development process of your proposed solution

**Milestone 5: Funding Strategy**

- How will you acquire the necessary resources and funding to move your innovation forward; outline potential pitch competitions and incubators you can access; determine your customer/beneficiary and how you propose to acquire them

**Milestone 6: Pitch product or process**

- Prepare a 5-minute pitch of your proposed solution; What is your technology readiness level (TRL); outline the testing plan, proposed timeline and resources needed to progress this project.

**Appendix A:**  
**Course Outlines for MBI**

The following pages include outlines of the following MBI courses:

Appendix A1: Course Outline for MBI 701- Clinical Immersion Stream Project .....	6-10
Appendix A2: Course Outline for MBI 704- New Value Creation .....	11-16
Appendix A3: Course Outline for MBI 706- Intellectual Property .....	17- 21

**Appendix A1:**  
**Masters of Biomedical Innovation (MBI)**  
**MBI 701 – Clinical Immersion Stream Project**  
**Fall 2023 Course Outline**

**COURSE DESCRIPTION**

This is an experiential, project-based course that gives students the opportunity to apply concepts from courses and bootcamps to an innovation-driven project. Students will work in teams to identify and design solutions for unmet clinical needs based on exposure to real-world healthcare environments and clinical stakeholders. Students will be evaluated on the completion of a set of milestones that focus on the desirability, feasibility and viability of their innovation with access to personalized coaching, mentorship and leadership development. Emphasis will be placed on user-centred design, entrepreneurship competencies, and development of teamwork and communication skills.

**INSTRUCTOR AND CONTACT INFORMATION**

Instructor: Anna Korol  
[korola3@mcmaster.ca](mailto:korola3@mcmaster.ca)

Office Hours: TBD

**LEARNING OUTCOMES**

Upon successful completion of the course, the student should be able to:

A1	<b>Identify</b> unmet clinical needs in a healthcare setting and prioritize using a decision matrix
A3	<b>Evaluate</b> the value proposition of a biomedical product or process
A9	<b>Communicate</b> with various stakeholders engaged in the healthcare system
A6	<b>Engage</b> in co-creation and collaboration when designing novel tools and services
A4	<b>Outline</b> the procedural and documentation requirements related to intellectual property and biomedical technology testing
A6	<b>Implement</b> strategies for effective leadership and conflict management when working in a team setting

## COURSE REQUIREMENTS

### Textbooks

There is *no required textbook* for the course. All required reading materials will be made available for free as online documents through the course management system (Avenue) and through use of peer-reviewed literature available online through the [McMaster library](#).

### Hospital Placement Health and Safety Training Requirements

To enter hospitals, students require health and safety clearance from the Faculty of Health Sciences Health Screening Office and the Hamilton Health Sciences Student Affairs office.

Placements are located within a healthcare setting. The hospitals and healthcare facilities continue the requirement to wear a **medical mask** while indoors, therefore you will be required to wear a mask during placements and to follow all guidelines required by the hospital site. The university continues to monitor the situation closely and update the [covid19.mcmaster.ca](https://www.mcmaster.ca/covid19) website.

## COURSE ACTIVITIES

This course will be delivered through roundtable coaching sessions, and on-site hospital placement. Students will initially be placed in small groups in one of four different clinical areas to identify opportunities for innovation (Interventional Radiology, Neurosurgery, Vascular Surgery, Cardiology). Through observation and discussion with clinicians in these clinical areas, students will begin to identify unmet needs (problem identification) On-going meetings with the clinicians and support from their coaches will allow students to prioritize unmet needs, develop needs statements, identify root causes of the observed problems and proceed to problem validation through literature searches and communication with potential stakeholders. The desirability, feasibility and viability of solving these needs will inform the clinical project focus for MBI 702.

**COACHING SESSIONS:** Two hours every other week

The purpose of the coaching time will be to:

- Introduce project milestone concepts through the Biomedical Innovation Roadmap
- Receive coaching and access to external mentors as project progresses
- Lead discussions with project teams to share project progress and placement experiences
- Seek feedback through team-team check-in meetings
- Protected time and space to collaborate and ideate as a team on completion of milestones
- Make oral presentations to coaches to allow for assessment of application of course concepts to your project.

**HOSPITAL PLACEMENTS:** After the first placement (approximately 4 hours), subsequent meetings with the clinician, either in the clinical setting or in an office setting will be determined by the need for further observations to clarify the unmet needs/problem identification and their prioritization.

The purpose of this block is to:

- Identify unmet clinical needs and opportunities for innovation in a healthcare setting
- Communicate with various stakeholders engaged in the healthcare system
- Test the desirability, feasibility and viability of a novel tool or service in a clinical setting

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## ASSIGNMENTS AND EVALUATION

Throughout the course, you will complete a set of milestones and oral presentations that reflect your ability to apply the concepts learned in MBI 704,705 and 706 to your project:

<b>Individual Assessments</b>	<b>Weight</b>
Oral Presentations(OP)	25%
OP 1 Clinical area background and the healthcare system	
OP 2 Needs finding and filtering process	
OP 3 Assess market landscape and existing/emerging solutions	
OP 4 IP and Regulatory Considerations	
Instructor and Coach impression mark	10%
<b>Team-Based Assessments</b>	
Biomedical Innovation Project-Milestone template completion	40%
Milestone 1 Problem Identification	
Milestone 2 Assess Market Landscape	
Milestone 4 IP and Regulatory Strategy	
Final Assessment	25%
Final Report and Application	

## GRADE CONVERSION

At the end of the course your overall percentage grade will be converted to your letter grade in accordance with the following conversion scheme.

LETTER GRADE	PERCENT	LETTER GRADE	PERCENT
A+	90 to 100	B+	75 to 79
A	85 to 89	B	70 to 74
A-	80 to 84	B-	60 to 69
F	0 to 59		

## ACADEMIC INTEGRITY

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at: [www.mcmaster.ca/academicintegrity](http://www.mcmaster.ca/academicintegrity)

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations

## **AUTHENTICITY / PLAGIARISM DETECTION**

Some courses may use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. For courses using such software, students will be expected to submit their work electronically via A2L so it can be checked for academic dishonesty. Students who do not wish their work to be submitted through the plagiarism detection software must inform the Instructor before the assignment is due. No penalty will be assigned to a student who does not submit work to the plagiarism detection software.

**All submitted work is subject to normal verification that standards of academic integrity have been upheld** (e.g., on-line search, other software, etc.). For more details about McMaster's use of Turnitin.com please go to [www.mcmaster.ca/academicintegrity](http://www.mcmaster.ca/academicintegrity).

## **LATE AND MISSED ACADEMIC WORK**

Where students miss a scheduled deliverable or are absent for a required component for legitimate reasons as determined by the course instructor, the weight for that deliverable/component will be distributed across other evaluative components of the course at the discretion of the instructor. Documentation explaining the circumstances that resulted in missing the scheduled deliverable or assessment must be provided to the course instructor within five (5) working days of the missed deadline.

If you do not submit documentation for a missed deliverable or the course instructor determines that your reason is not legitimate, you will automatically lose 10% for each day your deliverable is late.

## **POTENTIAL COURSE MODIFICATIONS**

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.



**Appendix A2:**  
**Masters of Biomedical Innovation – Fall 2023**  
**MBI 704 – Opportunities for New Value Creation**  
**Course Outline**

**COURSE DESCRIPTION**

This initial course is designed to allow learners to identify unmet needs, identify potential root causes of observed problem(s), and validate them. Students will also learn how the healthcare system functions so that they can identify important stakeholders in the healthcare space. They will develop decision matrices for prioritizing observed needs.

**INSTRUCTOR AND CONTACT INFORMATION**

**Instructor:** Professor Michael Hartman  
**Support Instructor:** Sean Park  
**Email:** [mhartma@mcmaster.ca](mailto:mhartma@mcmaster.ca)

**LEARNING OUTCOMES**

Upon completion of this course, MBI students will be able to:

- Develop a decision matrix to help with prioritization of unmet needs
- Identify unmet needs and articulate as need statement
- Identify the potential root cause(s) of the observed problem(s)
- Identify and prioritize stakeholders in the healthcare space
- Map out the current workflow/infrastructure
- Validate the problem (through publications, hospitals, stakeholder interviews, etc.)
- Conduct background research into your area of interest

## REQUIRED READINGS

Barsoux J-L et al. Identifying Unmet Needs in a Digital Age. *Harvard Business Review*; July-August 2022.

Jacoby, A. (2017). Reframing the problem: Design thinking essentials. Reading: *Academic Conferences International Limited*.

MacFadyen, J. S. (2014). Design Thinking. *Holistic Nursing Practice*, 28 (1), 3-5. doi: 10.1097/HNP.0000000000000008.

Roberts, J. P., Fisher, T. R., Trowbridge, M. J., Bent, C. (2016). A design thinking framework for Healthcare Management and Innovation. *Healthcare*, 4(1), 11–14. Doi: 10.1016/j.hjdsi.2015.12.002

Saidi, T., Mutswangwa, C. T., & Douglas, T. S. (2019). Design thinking as a complement to human factors engineering for enhancing medical device usability. *Engineering Studies*, 11(1), 34–50. Doi: 10.1080/19378629.2019.1567521

## SUPPLEMENTARY READINGS

Liedtka J. Why Design Thinking Works. *Harvard Business Review*. September-October 2018

McCarthy et.al. Unmet needs: relevance to medical technology innovation. *J.Med. Eng. Technol*, 2015;39(7): 382-387

*What is a decision matrix?* ASQ. (n.d.). Retrieved November 11, 2022, from <https://asq.org/quality-resources/decision-matrix> .

## COURSE ACTIVITIES

### Introductory Bootcamp (In-Person)- Needs Finding & Problem Exploration

Day 1: Lecture with panel and a Q&A introducing the needs exploration, problem identification and prioritization, worked example with entrepreneurs

Day 2: Mini-Project focused on needs-finding with a team related to the clinical theme of the week (device, digital, pharma streams)

Day 3: Facilitated session bringing in: 2-4 clinicians, 2-4 patients, 2-4 researchers for students to identify unmet needs live

Day 4: Mini-Project group presentations

MBI- 704, New Value Creation, 2023-2024

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### **Content Delivery (Online, asynchronous)**

Each week there will be one 20 minute video of an entrepreneur explaining how they have applied the course learning objectives to their health start-up. These worked examples will feature medical devices, digital health, diagnostics, and pharmaceuticals across the duration of the course.

### **Tutorials (Online, synchronous)**

Bi-weekly tutorials will be two hours in duration and focus on a group-based guided discussion of written case studies demonstrating application of course concepts to medical device, digital health, diagnostic, or pharmaceutical innovation projects. Students will be evaluated on participation and contributions to discussions at these sessions.

## ASSIGNMENTS AND EVALUATION—MBI 704

Students' grades will be calculated as follows:

<b>Deliverable</b>	<b>Evaluated by:</b>	<b>Weight</b>
Written assignment, week1	Instructor	40%
Written assignment, week 3	Instructor	40%
Tutorial Evaluation	Tutor	20%
Total		100%

*PLEASE NOTE: Any late submissions will incur a 10%, per day, late penalty.*

## GRADE CONVERSION

At the end of the course your overall percentage grade will be converted to your letter grade in accordance with the following conversion scheme.

LETTER GRADE	PERCENT	LETTER GRADE	PERCENT
A+	90 to 100	B+	75 to 79
A	85 to 89	B	70 to 74
A-	80 to 84	B-	60 to 69
F	0 to 59		

## ACADEMIC INTEGRITY

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

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2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations

## **AUTHENTICITY / PLAGIARISM DETECTION**

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## **LATE AND MISSED ACADEMIC WORK**

Where students miss a scheduled deliverable or are absent for a required component for legitimate reasons as determined by the EMBA Academic Director, the weight for that deliverable/component will be distributed across other evaluative components of the course at the discretion of the instructor. Documentation explaining the circumstances that resulted in missing the scheduled deliverable or assessment must be provided to the EMBA Academic Director within five (5) working days of the missed deadline.

If you do not submit documentation for a missed deliverable or the EMBA Academic Director determines that your reason is not legitimate, you will automatically lose 10% for each day your deliverable is late.

## **POTENTIAL COURSE MODIFICATIONS**

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

**Appendix A3:**  
**Masters of Biomedical Innovation – Fall 2023**  
**MBI 706 – Intellectual Property**  
**Course Outline**

**COURSE DESCRIPTION**

Protecting one's invention is the most important aspect of creating a successful health innovation! Intellectual Property comes in many different shapes and forms: patent (protecting the function or design of your solution), trademark (protecting a specific name or phrase), copyright (protecting written framework) or a trade secret (the know how or secret recipe to your solution). All can act as a competitive advantage and allow the commercialization and monetization of ideas. This course is designed to allow learners to identify the types of IP and how they can create an IP strategy that supports their businesses. Students will be able to search IP literature and identify if their ideas are patentable and will have freedom to operate. Resources available at the Clinic and McMaster will be identified to assist with IP strategies and support.

**INSTRUCTOR AND CONTACT INFORMATION**

**Instructor:** Frances Lasowski  
**Email:** Lasowsfj@mcmaster.ca

**LEARNING OUTCOMES**

Upon completion of this course, MBI students will be able to:

- Conduct patent searches
- Evaluate IP protection mechanism and identify relevant requirements (novelty usefulness, non-obviousness)
- Determine confidential aspects of the novel solution and mechanisms for maintaining confidentiality in externally-facing communications (ex. NDAs)
- Collaborate with relevant parties (e.g. legal support, MILO) to develop and execute an IP strategy

## REQUIRED READINGS & RESOURCES

- MILO IP Handbook
- CIPO Intellectual Property: It's yours. Own it. Factsheet
- CIPO IP Foundations Series
- CIPO IP Management Series
- Kelly Holloway & Matthew Herder (2019) A responsibility to commercialize? Tracing academic researchers' evolving engagement with the commercialization of biomedical research, *Journal of Responsible Innovation*, 6:3, 263-283, DOI: [10.1080/23299460.2019.1608615](https://doi.org/10.1080/23299460.2019.1608615)
- Link, A. N., Danziger, R. S., & Scott, J. T. (2018). Is the bayh-dole act stifling biomedical innovation? *Issues in Science and Technology*, 34(2), 33-35.
- Other relevant IP readings to cases

## COURSE ACTIVITIES

### Bootcamp 1 (In-Person)

Day 1: IP searches and resources available through McMaster

Day 2: IP debate (teams will be given cases that went to court or are before the courts over patent infringement and compensation)

### Content Delivery (Online, asynchronous)

Each week there will be one 20 minute video outlining the basics of IP or the nuances of IP for different health care areas (i.e. pharmaceuticals, medical devices, digital health solutions, etc). These will include case studies of specific companies that used creative IP strategies to secure their strategic advantage in the market place.

### Tutorials (Online, synchronous)

Bi-weekly tutorials will be two hours in duration and focus on a group-based guided discussion of written case studies demonstrating application of course concepts to medical device, digital health, diagnostic, or pharmaceutical innovation projects. Students will be evaluated on participation and contributions to discussions at these sessions.



<b>ASSIGNMENTS AND EVALUATION</b>
-----------------------------------

Students' grades will be calculated as follows:

<b>Deliverable</b>	<b>Evaluated by:</b>	<b>Weight</b>
Bi-Weekly Assignments (3)	Instructor	36%
IP Debate	Instructor	10%
Final Report (In Residency)	Instructor / Capstone Faculty / Sponsor	30%
Tutorial Assessments	Instructor/Tutor	24%
Total		100%

*PLEASE NOTE: Any late submissions will incur a 10%, per day, late penalty.*

## GRADE CONVERSION

At the end of the course your overall percentage grade will be converted to your letter grade in accordance with the following conversion scheme.

LETTER GRADE	PERCENT	LETTER GRADE	PERCENT
A+	90 to 100	B+	75 to 79
A	85 to 89	B	70 to 74
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F	0 to 59		

## ACADEMIC INTEGRITY

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## LATE AND MISSED ACADEMIC WORK

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If you do not submit documentation for a missed deliverable or the EMBA Academic Director determines that your reason is not legitimate, you will automatically lose 10% for each day your deliverable is late.

## POTENTIAL COURSE MODIFICATIONS

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

# Appendix B: Masters of Biomedical Innovation Fall 2023 Bootcamp

	Monday September 11	Tuesday September 12	Wednesday September 13	Thursday September 14	Friday September 15
<b>MORNING</b> 8:30 a.m. – 12 p.m.	Program Orientation Faculty and Student Introductions Icebreaker Activity	Reflection MBI 705 Market Assessment Activities, Guest Speakers TBD	Immersion Innovation Experiences Biointerfaces Institute Makerspace 3D Printing	Reflection MBI 704 New Value Creation Activities, Guest Speakers TBD	Reflection MBI 705 Pitch Fundamentals and Practice Pitch Activites
<b>LUNCH</b> Noon- 1:00 p.m.	Lunch Guest Speaker: Dr. Kevin Smith	Lunch	Lunch	Lunch Guest Speaker: Rebecca Repa	Lunch
<b>AFTERNOON</b> 1:00 – 4:30 p.m.	MBI 704 New Value Creation Activities, Guest Speakers TBD	MBI 704 New Value Creation Activities, Guest Speakers TBD	Immersion Innovation Experiences McMaster Hospital Network Locations TBD	MBI 705 Value Proposition Activities, Guest Speakers TBD	MBI 701 Pathways to Problem Identification and Validation
<b>EVENING</b> 5:00 – 8:30 p.m.	Opening Dinner Guest Speaker: Dr. Marnix Heersink	Dinner Coaching and Mentoring Activities		Innovation Synergy Networking Event	

### Appendix C

#### Master of Biomedical Innovation

##### Preliminary Course Instructor Summary

	<i>Name</i>	<i>Title</i>	<i>Department</i>
<b>701</b>	Anna Korol	Assistant Professor	Medicine
<b>702</b>	Bill Wang	Assistant Professor	Surgery
<b>703</b>	Anna Korol	Assistant Professor	Medicine
<b>704</b>	Michael Hartmann	Professor	Medicine
<b>705</b>	t.b.d.		
<b>706</b>	Frances Lasowski	Adjunct Professor	Engineering
<b>707</b>	Sean Park	Assistant Professor	Medicine
<b>708</b>	t.b.d.		
<b>709</b>	Michael Hartmann	Professor	Medicine/Business
<b>710</b>	Jon Stokes	Assistant Professor	Biochemistry
<b>711</b>	t.b.d.		
Electives	Jon Stokes	Assistant Professor	Biochemistry
	Mehdi Moradi	Associate Professor	Engineering

**Appendix D:  
MBI Comparison to Existing Masters Programs**

<b>University</b>	<b>Faculty</b>	<b>Program</b>	<b>Unique Offerings</b>
McMaster University	Health Sciences	Master of Biomedical Innovation (MBI)	<p>Learners will apply the theories and entrepreneurship competencies acquired throughout the curriculum to a program-long, venture-oriented project course, with opportunities to identify a biomedical problem to work on or start with a project idea the student already has in mind.</p> <p>Team projects may include innovations in medical devices, diagnostics, therapeutics, digital technologies, or drug delivery systems.</p> <p>By the end of the program, graduates will have gone through the full life-cycle of creating a business and product with the personalized support of coaches and mentors as well as leadership training.</p> <p>Students will have access to The Clinic @ Mac facility offering commercialization support, events, collaborative workspace, and access to resources.</p>
McMaster University	Engineering	Master of Engineering/Technology Entrepreneurship and Innovation (MEEI/MTEI)	<p>The Enterprise Project is at the heart of this program, spanning the entire study period. This project will result in both a business and a viable Proof-of-Concept.</p> <p>Evaluation for the project consists of three defence-like presentations to a 5-person Enterprise Advisory Committee to ensure students are effectively applying skills and competencies from the courses to this project.</p>
McMaster University	Health Sciences	Master in Biomedical Discovery & Commercialization (MBDC)	<p>Includes an internship in sectors related to the pharmaceutical or biotechnology industry.</p> <p>Biomedical consulting projects train students to create business plans, market assessments and a pitch deck for new ventures. Teams are paired with an entrepreneur or company to gain first-hand experience.</p>
University of Toronto	Institute for Management and Innovation	Master of Management Innovation (MMI)	<p>Designed for individuals interested in pursuing management careers in technology-focused organizations.</p> <p>The final 4 months of the 12-month program are dedicated to a mandatory internship.</p> <p>One-on-one coaching and mentorship opportunities are available as well as professional development workshops to assist in internship searching.</p>
Queens University	Smith School of Business	Master of Management Innovation and Entrepreneurship (MMIE)	<p>Provides students with business and design skills to succeed as entrepreneurs, including a year-long project opportunity for experiential learning.</p> <p>Three highly intensive, on-campus bootcamp style sessions spread throughout the program designed to develop business acumen.</p> <p>Access to pan-university incubator/accelerator, engineering labs and SparQ Maker space.</p>

December 21, 2022

Dr. Steven Hranilovic  
Vice-Provost and Dean of Graduate Studies  
Gilmour Hall, 212, McMaster University  
1280 Main St. West  
Hamilton, ON L8S 4K1

**Re: Master of Biomedical Innovation (MBI) New Program Review - Faculty's Response**

Dear Steve,

We thank Drs. Frampton, Murphy, and Waverman for their thoughtful review of the proposed Master of Biomedical Innovation program in the Faculty of Health Sciences. We agree with their assessment that a major strength of the proposed program is its project-oriented and experiential approach. In addition to overall commentary, the reviewers make a number of helpful suggestions for ensuring the success of the program. We have reviewed the program team's response to the review report, and we are confident that they are appropriately addressing the recommendations in the run-up to the program's launch.

The reviewers prudently request that more detail be provided regarding the assessment of learning, draft course outlines, and teaching staff assignments. The program team has responded appropriately, with additional details. Although we recognize that curriculum details and staffing arrangements are necessarily tentative at this time, we agree that these details are helpful for appraising the scholarly weight and the required capacity for instruction, and we are reassured by the program team's response. The program has a good start in recruiting clinical mentors to work with students and we expect that the work of expanding and diversifying this pool will be continuous and ongoing.

We agree with the reviewers' suggestion to encourage students to work on their projects in groups. We recognize that individual assignments are the norm for graduate education, and so we encourage the program to search out the best practices for group-based assignments and evaluation. The reviewers also recommend that curriculum should emphasize an innovation mindset, rather than the expectation that the students will start a business arising from their work in the course. The program team notes the wisdom of this, generally, as well as appropriately emphasizing that this addresses the reviewers' question of whether the 12-month curriculum is realistic.

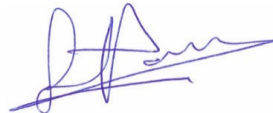
Once again, we thank the reviewers for their insightful report. We thank the program team for their well-crafted self-study and thorough response to the review. We are confident that this innovative program will be a successful and sustainable addition to the line-up of excellent graduate programs in

Health Sciences at McMaster University. Finally, we thank the staff in the School of Graduate Studies for their significant support in mounting a successful site visit.

Sincerely,



Susan Denburg  
Executive Vice-Dean and  
Associate Vice-President, Academic  
Faculty of Health Sciences



Steven Hanna  
Vice-Dean and  
Associate Dean of Graduate Studies  
Faculty of Health Sciences

cc: Christina Bryce, Assistant Graduate Secretary  
Stephanie Baschiera, Associate Registrar and Graduate Secretary



**New Graduate Program or Existing Program Undergoing Major Changes (more than 30%)**

**Details of Resource Implications and Financial Viability**

**Faculty:** Health Sciences

**Program Name:**

Master of Biomedical Innovation

**A. FINANCIAL SUSTAINABILITY OF PROGRAM**

Complete New Graduate Program Budget template (appendix A1) which will populate table below:  
 In the case of Interdisciplinary programs, also append the Draft MOU between faculties. (Appendix A2)  
 In the case of Collaborative programs, also append the Draft MOU between institutions. (Appendix A3)

REVENUE	2023/24	2024/25	2025/26	2026/27	2027/28
Program Generated Gross Graduate Revenue	\$475,500	\$821,705	\$1,003,568	\$1,185,697	\$1,356,848
Other Revenue (Specify)	\$300,000	\$150,000	\$50,000	\$0	\$0
<b>Total Gross Revenue</b>	<b>\$775,500</b>	<b>\$971,705</b>	<b>\$1,053,568</b>	<b>\$1,185,697</b>	<b>\$1,356,848</b>
University Fund / Research Infrastructure Contribution	-\$22,476	-\$38,840	-\$47,436	-\$56,045	-\$64,135
Total Support Unit Allocations (Indirect Costs)	-\$226,690	-\$255,768	-\$285,212	-\$315,969	-\$346,811
<b>NET REVENUE</b>	<b>\$526,335</b>	<b>\$677,097</b>	<b>\$720,920</b>	<b>\$813,683</b>	<b>\$945,902</b>
Total Teaching Costs	-\$241,625	-\$255,656	-\$269,889	-\$284,334	-\$299,000
Total Admin Salaries & Benefits	-\$98,250	-\$101,198	-\$104,233	-\$107,360	-\$110,581
Total Student Support (From operating)	-\$50,000	-\$60,000	-\$70,000	-\$80,000	-\$100,000
Total Capital/Equipment Costs	-\$10,000	\$0	\$0	-\$10,000	\$0
Total Other Direct Expenses - Supplies/Services/Travel etc	-\$43,500	-\$43,500	-\$53,500	-\$53,500	-\$63,500
Total Share of Faculty's Central Expenses	-\$90,345	-\$156,124	-\$190,678	-\$225,282	-\$257,801
<b>PROGRAM EXPENSES</b>	<b>-\$533,720</b>	<b>-\$616,478</b>	<b>-\$688,300</b>	<b>-\$760,476</b>	<b>-\$830,882</b>

<b>IN-YEAR (Surplus/ Deficit)</b>	<b>-\$7,385</b>	<b>\$60,620</b>	<b>\$32,620</b>	<b>\$53,207</b>	<b>\$115,019</b>
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<b>Total Grad support per FT student (Scholarship, Taship) excluding RA</b>	<b>\$2,500</b>	<b>\$1,364</b>	<b>\$1,296</b>	<b>\$1,250</b>	<b>\$1,370</b>
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If the program is showing an ongoing going deficit please indicate whether it is truly incremental to the current faculty financial position. Provide a rationale for proceeding with ongoing negative returns.

**B. NUMBER OF STUDENTS**

	FT	PT		
Intended Steady-state annual intake	40		Year achieved:	2026
Intended Steady-state total enrolment	40		Year achieved:	2026
Number of International Students included in steady state	2	0		

Proposed number of additional students to University at steady state: ( i.e. Are the program students additional (net new) or redistributed from other existing programs within the Faculty or in other Faculties. )

40

Will there be an impact to enrollments in Programs in other Faculties? No If yes, Please Describe:

**C. FORMAT OF INSTRUCTION**

	Fall	Winter	Summer (May-June)	Summer (July-August)	Annual program units?
During which terms will the program run?	X	X	X	X	30

Is there a co-op or internship as part of the program?

No Describe:

What percentage of instruction will be online?

What percentage of instruction will be off campus?

If either is greater than zero please provide information:

The new Master of Biomedical Innovation is designed to be maximally flexible. Course work will be primarily delivered online, with four short-duration, in-person bootcamps.

**D1. PROPOSED TUITION FEE**

reference: [http://www.mcmaster.ca/bms/student/SAC\\_fees\\_grad.html](http://www.mcmaster.ca/bms/student/SAC_fees_grad.html)

Is approval being sought for a Ministry-funded Program?

No Do Standard Tuition rates apply ? (If No, specify fees below)  No

**Proposed Tuition Fee:**

	Domestic		International	
	Full Time	Part Time	Full Time	Part Time
Per Year :	\$ 34,500		\$ 60,000	
Per Term (if applicable):	\$ 11,500		\$ 20,000	
Per Course (if applicable):				

Rational for proposed fees (describe or append results of market assessment) and describe how they adhere to MTCU policy if seeking ministry funding :

See attached market comparison. Tuition Fee has been proposed to be in alignment with other comparator professional masters programs

**D2. SUPPLEMENTARY FEES**

reference: [http://www.mcmaster.ca/bms/student/SAC\\_fees\\_grad.html](http://www.mcmaster.ca/bms/student/SAC_fees_grad.html)

Will regular Mandatory Supplementary Fees apply?

Full Time  Yes Part Time  No Modified only  No

If no, please contact [Dean of Grad Studies](#) for guidance and provide resulting proposed applicable fees and rationale:

Are there other mandatory costs for students? (Coop/Internship fees, supplies, books, uniform, equipment, field trips, professional exam fees, etc?)

NO Describe & Approximate amounts:

**E. EXTERNAL RESOURCES: donations, special grants, research overhead, endowment funds, Space, etc.**

Please provide information about any external funds or resources that will be available to the program.

	Onetime	Ongoing	Value \$	Details
<a href="#">eg. Access to lab space</a>		x	\$ 1	CANMET - Longwood
The Marnix E. Heersink School of Biomedical Innovation and Entrepreneurship is providing program start-up funds until the program reaches steady-state enrollment and/or program solvency. Students will also access donor-funded scholarships and awards.	X		\$ 500,000	

**F. FACULTY RESOURCES - Please append evidence of endorsement from other faculties affected if necessary.**

If courses are also being taught in other faculties, please list

Faculty:  Engineering Faculty:  N/A Faculty:  N/A

Incremental FTEs required:	Health Sciences	Engineering	N/A	N/A	Comments
Faculty - Tenure Track		X			Engineering Faculty with experience in Biomedical Innovation may teach in the program (roles of sessional, coach or tutor)

Faculty - Sessional and CLAs	1.7				In addition to teaching CLA and sessional faculty, CAWAR FHS faculty primarily within the Department of Surgery and across clinical departments will be recruited as tutors and coaches to support program delivery.
Staff	1				Existing staff within The Clinic will provide additional administrative support as needed (marketing, event coordination etc.). Finance and HR support via the Department of Surgery
Teaching Assistants					
<i>Additional Non-salary costs in other Faculties</i>					

Increases in FT faculty are for modeling purposes only and does not imply approval to hire. Normal approval processes apply.

**G. OTHER RESOURCE IMPLICATIONS:**

*Unless otherwise defined in the categories below, please use these descriptions to define impact:*

- No Impact:** Can be dealt with as part of normal, daily operations. No budgetary or resource impact.
- Minor:** Can be dealt with in a mutually agreed timeframe using existing personnel. Resources pre-approved or readily available. No disruption to other approved work priorities.
- Major:** Must be scheduled as a project (not able to deal with as part of regular operations). Budget not approved or readily available; source of funding to be determined. May require external resources. May require reprioritization of previously approved tasks.

**1. PHYSICAL FACILITIES** - Please contact [Coordinator, Design and Space Management x23898](#) for assistance in determining additional resource costs if needed.

Please indicate the likely space resource implications of the proposal	Impact	New Sq Ft Required	Approx Existing Sq Ft required	Comments (include location and for new space, plans to fund and acquire space)	If major new central budget req'd, estimate \$
Faculty space- Offices,Labs,seminar rooms, student space, etc	Minor	-	200.0	<b>A space is being created for the Marnix E. Heersink School of Biomedical Innovation and Entrepreneurship, which will serve as the home for the MBI. This project is underway (in MDCL) with an expected completion of September 2023. This project (\$1.5M) is funded through the Heersink gift.</b>	
Other space (excluding registrar controlled classrooms)	None				

Facilities  
Facilities

**2. TECHNOLOGY RESOURCES** - Please contact [UTS Director, Technology x21888](#) for assistance in determining impact if needed.

Please indicate the likely impact on central technology resources for the proposal	Impact	Are additional resources required to support this program? If so, please list.	If Major, estimate \$
UTS Computer Labs and Software	None		
Network/Internet/Cloud services access & usage	Minor		
Audio-Visual / Telecommunications	Minor		
Wireless Connectivity	Minor		
Other (Please specify)	Minor		

UTS  
UTS  
UTS  
UTS  
UTS

**3. LIBRARY SERVICES** - Please contact [Associate University Librarian, Collections x26557](#) for assistance in determining impact if needed.

Please indicate the likely Library resource implications of the proposal	Impact	Are additional resources required to support this program? If so, please list.	If Major, estimate \$
Staffing (Add'l service desk staff, add'l librarians, new staff with skills/knowledge not currently present)	Minor	Discussions with HSL have begun around the shared recruitment (and funding) of a librarian with innovation and entrepreneurship resource expertise that could support The Clinic (FHS Incubator) and the MBI, among other initiatives within FHS.	
Collections, One Time Purchases (books, ebooks, purchased online resources)	Minor	no significant additions	

Libraries  
Libraries

Collections, Ongoing Subscriptions/licenses (print or online journals)	Minor	no significant additions		Libraries
Technology and Computing (new or add'l hardware/software, increased digital storage capacity)	None			Libraries
Library Spaces (study space, new or specialized user or collection spaces)	None	students will have access to their own space and The Clinic (in the HSL library)		Libraries
Other (Please specify)	None			Libraries

**4. OFFICE OF THE UNIVERSITY REGISTRAR - Please contact the Registrar for assistance in determining impact if needed.**

Please indicate the likely resource implications of the proposal	Impact (Select)	Support required	Area Responsible	If Major, estimate \$
Admissions/Recruitment	Minor	Recruiting and Admissions aligned with current 101 processes	SGS	
Student Record Support (maintaining records, transcripts, grades, student card, etc)	Minor	Standard services for graduate program		
Class Scheduling Services	None	Managed by Dept/Faculty		
Classrooms	None	Scheduled into Faculty controlled classrooms or only summer term or off campus		

**5. STUDENT SUPPORT - Please contact Assistant Dean, Student Services for assistance in determining impact if needed.**

Please indicate any other possible resource impacts	Impact	Please Describe any impacts on the support areas	If Major, estimate \$
Student Services - International Student support	Minor		
Student Services - Athletics & Rec, Health/Counselling, Career	Minor		
Residences	None		
Grad Scholarships/Bursaries*	Minor	\$ - Avg. Annual Draw on Scholarship pool	\$ -

\*If you are anticipating OSAP funding for these students please contact SFAS to provide additional information to activate approval from MTCU

**6. MIETL- Please contact Educational Consultant for assistance in determining impact if needed.**

Please indicate any other possible resource impacts	Impact	Please Describe any impacts on the support areas	If Major, estimate \$
Re/Development of blended or online courses	Minor	Course Development being managed through the Department (MGD HealthICE and Heersink School); liaising with MacPherson as required	
Learning Management System (Avenue to Learn)	Minor		
Training and development for TAs or faculty	Minor		
Research on teaching and learning initiatives	Minor		
Other (Please specify)	Minor		

**7. OTHER**

Please indicate any other possible resource impacts	Impact	Please Describe any impacts on the support areas	If Major, estimate \$
Financial Services	None		
Human Resources	Minor		
Advancement	None		
Research Services Office	None		
Other (Please specify)	None		

Please provide names below and check box to verify that approval has been obtained by each:

	Check box
Department Chair/ Area Director <u>Mo Bhandari, Chair, Department of Surgery</u>	X
Faculty Dean or Director of Administration <u>Sue Galloway, Executive Director Finance, FHS</u>	X
Associate Vice-President , Finance & Planning (Academic) <u>Susan Denburg, Executive Vice-Dean &amp; AVP Academic, FHS</u>	X
Submitter <u>Sarah Bouma, Director, MGDII/Heersink School</u>	

## Exhibit A5

*Competitor analysis in Canada of various Universities providing Innovation and Entrepreneurship Masters programs.*

University	Faculty	Program Name	Approximate Tuition	Duration
Queen's	Engineering and Smith School of Business	Master of Entrepreneurship and Innovation	Canadian: \$35,490 per year International: \$51,705 per year	12 months full-time
Toronto	Institute for Management and Innovation, (joint Administration, Business Management, Engineering Management)	Master of Management of Innovation	Canadian: \$32,500 per year International: \$61,200 per year	12 months full-time
McMaster	Engineering	Master of Engineering/Technology Entrepreneurship and Innovation	Canadian: \$9,720 per year International: \$45,045 per year	20 months full-time
Ryerson	Engineering and Architectural Science	Master of Engineering Innovation and Entrepreneurship, Biomedical Engineering track	Canadian: \$29,639 per year International: \$54,314 per year	16 months full-time
Western	Engineering	Engineering in Medicine	Canadian: \$13,761 per year International: \$43,500 per year	12 months full-time, option for longer duration part-time
Ontario College of Art and Design (OCAD)	N/A	Design for Health	Canadian: \$9,080 per year International: \$21,939 per year	24 months full-time, 36 months part-time
McMaster	Health Sciences	Masters of Biomedical Discovery & Commercialization	Canadian: \$19,845 per year International: \$68,307 per year	12 months full-time
Guelph	Department of Molecular and Cellular Biology and Department of Business Management	Master of Biotechnology	Canadian: \$9,909 per year International: \$23,331 per year	12 months full-time, optional extension of research project to 16 months
Alberta	School of Business	MBA with Specialization in Innovation and Entrepreneurship	Canadian: approx. \$15,500 per year International: approx. \$30,000 per year	20 months full-time
McMaster	Social Science	Master of Public Policy in Digital Society	Canadian: \$29,100 per year International: \$55,500 per year	12 months full-time
Waterloo	School of Entrepreneurship and Business	Master of Business, Entrepreneurship, and Technology	Canadian: \$34,254 per year International: \$64,701 per year	12 months full-time, 36 months part-time

Toronto	Institute for Management and Innovation	Masters of Biotechnology	Canadian: \$21,675 per year International: \$47,109 per year	24 months full-time
Windsor	Science	Master of Science in Translational Health Science	Canadian: \$9,877 per year International: \$26,433 per year	12-months full-time

**MEMO**

DATE: January 10, 2023

TO: University Planning Committee

FROM: Dr. Karen Mossman, Vice-President, Research



RE: Closure of Institute for Multi-Hazard Systemic Risk Studies (INTERFACE)

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On behalf of the Institute for Multi-Hazard Systemic Risk Studies (INTERFACE) Governing Board, I request the formal closure of INTERFACE as a Senate approved Research Institute and its transition to a Research Group.

INTERFACE was established as a McMaster Senate approved Research Institute in March of 2015 reporting to the Office of the Vice-President, Research. In Spring of 2021, as per the policy [Guidelines for the Governance and Review of Research Institute, Centres and Groups](#), INTERFACE underwent a five-year external review. The External Review Board (ERB) met with various stakeholders (faculty members, external organizations, students and staff) and provided their report to the INTERFACE Governing Board. The report addressed both areas of strengths and weaknesses. The ERB recommended that the Institute look to a) increase faculty membership and external engagement to truly constitute a multi-disciplinary and collaborative Research Institute as defined in RCI policy and b) become more independent and financially sustainable from central funding support. The Governing Board then tasked the Director to develop and administer a new plan to fulfil those recommendations.

In Spring of 2022 following up on the implementation of the ERB recommendations, the INTERFACE Governing Board assessed that the Institute had not achieved any increase in faculty engagement, nor demonstrated the ability to build towards operation without significant and continuing university funding support. Deliberations resulted in the Governing Board unanimously voting to transition INTERFACE from an Institute to a Research Group. The Director was informed in June 2022 that the Governing Board would be recommending that INTERFACE transition to a Research Group with effect from December 31<sup>st</sup> 2022 (providing a six month ramping down period).

The five-year ERB report is attached for information.

KM:jt

## External Review of the McMaster Multi-Hazard Institute: INTERFACE

Submitted March 15<sup>th</sup>, 2021

### **External Review Board Members:**

**Chair:** Mr. Jerry Hopwood, President, University Network of Excellence in Nuclear Engineering  
Ms. Marlene Lenarduzzi, Head, Counterparty Credit Risk and Market Risk Strategic Initiatives, BMO Financial Group  
Dr. Miroslav Nastev, Research Geo-Scientist, Environment and Energy of Natural Resources Canada

### **Mandate:**

The External Review Board (ERB) has been constituted to provide an external review of the McMaster “Interface” multi-hazard institute. The ERB looked at status and the progress over the initial five years, and assessed the institute according to the Terms of Reference provided by McMaster (attached). The ERB reviewed the supporting documentation, and met the institute team and stakeholders on February 24<sup>th</sup>. We were able to carry out sufficient review, to complete our evaluation and recommendations.

### **ERB View -- the Context:**

The vision of the institute as a multi-disciplinary platform that focuses on systemic risk assessment, analysis, and management is timely. The ERB recognizes that society and systems are greatly interconnected, thus the Institute’s multi Hazard approach to assessing and managing risks offers a unique value proposition. This value is somewhat evidenced by the Institutes success in attracting grants, broad membership and numerous publications.

### **Institute Performance**

The institute has completed its first five years of operation. It has successfully progressed towards the goals of its establishment proposal. There is still some way to go to fully achieve these goals and to take its place as a self-standing entity. In the context of McMaster’s portfolio of institutes, this does not seem unreasonable. The institute is one of the smallest at McMaster, but is executing research of significance, and with a broad, and increasingly multi-disciplinary coverage, and this is consistent with McMaster institute expectations. So far, the institute has been driven largely by the energy, entrepreneurship and enthusiasm of its director. The institute has gathered a significant number of funded projects, and has delivered on publication, but needs to do more to connect with the stakeholders who can gain value from the work. The institute has broadened somewhat from a starting point focused on civil engineering, but there is much more scope for broader studies.

### **Strengths:**

- Energetic and passionate leader in Wael El Dakhkni. Wael is viewed as an excellent researcher who is able to attract a “dream team” of top talent and supporters to the institute.
- Faculty and membership feel the work is meaningful, and are highly complementary of the Institute’s accomplishments and the quality of the Director.
- Students are highly satisfied with their studies for the Institute; view the experience as unique and providing unique benefits via opportunities to collaborate across faculties and with industry.



- Institute has already achieved significant project results that “show the way” forward

**Weaknesses:**

- Wael is overwhelmed with too much work and lack of stable support.
- Lack of stable funding envelop makes it difficult to hire and provide employees with stability
- The institute has no dedicated space for members to meet, collaborate, and benefit from colocation. The institute seems be caught in a bureaucratic ‘no-man’s land’ where it is not eligible for faculty space due to its tie to the VP of Research.
- Lack of clear business plan that articulates how the vision will be achieved concretely
- Lack of outreach and promotion to bring visibility and build relationships with stakeholders
- External stakeholders were not able to articulate specific benefits they achieved from their involvement with the institute
- The institute has not built a senior leadership, and does not have natural successor at this point.

**Opportunities:**

- Complex problems such as Climate change, global pandemics provide demand for the institutes multi-disciplinary approach to risk assessments – the recent multi-sectoral emergency in Texas is a prominent example.
- Tremendous opportunities to expand cross faculty engagement – particularly with social sciences, health sciences, the Climate Change institutes, and others
- The university has resources to support promotion, webinars... that could provide a cost-effective way to increase external awareness of the Institute

**Threats:**

- Wael may become frustrated by the lack of support and leave to join a university that is more supportive or perhaps join the private sector or let the institute collapse.
- The institute’s unique value proposition may be overtaken by initiatives elsewhere

**Recommendations:**

The Director has got the institute going well through the initial challenging phase. We recommend he continue in his role. We do recommend that he needs senior assistance with day to day organizing capabilities to complement Wael’s strengths—a “COO” role.

The institute governance should be adjusted as seen fit by McMaster, to:

- Provide a stable funding mode, sufficient to provide support to the Director
- Provide a stable home for the Institute, (a single host faculty), with a dedicated space, while encouraging and enabling a broader set of multi-disciplinary projects
- Creating a clear governance relationship with Wael to a single representative individual, who represents McMaster but can also provide a sponsor role and act as a mentor
- Set up a regular reporting process to give an appropriate level of structure and guidance, consistent with other McMaster Institute processes; for instance providing progress against

goals, a scorecard or dashboard of status, and the opportunity to record challenges or obstacles to progress.

- Encourage the Director to achieve key goals for the next period:
  - o Develop a well-structured business plan
  - o Outreach and promotion of the institute
  - o Stronger relationships with external stakeholders

Report prepared by External Review Board:

Jerry Hopwood

Marlene Lenarduzzi

Miroslav Nastev