McMaster University | SCHOOL OF GRADUATE STUDIES
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To : Members of Graduate Council

From : Christina Bryce
Assistant Graduate Secretary

The next meeting of Graduate Council will be held on **Tuesday October 22nd at 9:00 am in MUSC 311/313**

Listed below are the agenda items for discussion.

Please email *cbryce@mcmaster.ca* if you are unable to attend the meeting.

A G E N D A

I. **Opening Remarks**

II. **Minutes of the meeting of September 17th, 2024**

Approval

III. **Business arising**

IV. **Report from the Associate Deans, Graduate Studies**

V. **Report from the Associate Registrar and Graduate Secretary**

VI. **Report from Certificates, Diplomas and Microcredentials Committee**

a. **Graduate Diploma in Global Surgery: Surgical Care Systems & Health Equity**

b. **Non-Academic Microcredentials in Health Technology Assessment**

VII. **Fall 2024 Graduands**

Approval (To be distributed)

VIII. **New Awards and Changes to Award Terms**

Approval (new award only)

IX. **Provisional Guidelines for the Use of Generative Artificial Intelligence in Research**

Information

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Tuesday September 17th at 9:00 am in Council Chambers (GH 111)

Present: S. Hranilovic (Chair), A. Prasad, A. Shakib, D. Trigatti, N. Carter, K. Grandfield, K. Mattison, B. Newbold, F. Homid, M. Gough, N. Wager, M. Verma, S. Heathorn, T. Ruebottom, S. Hanna, C. Biruk, M. Heath, E. Grodek, Y. K. Shin, P. Miu, L. Parker, Y. Kim, A. Gadsen, L. Side, C. Bryce (Assistant Graduate Secretary), S. Baschiera (Senior Associate Registrar and Graduate Secretary)

Regrets: V. Lewis, K. McCallum, B. Milliken, R. Khan

I. Opening Remarks

Dr. Hranilovic reported on the following items:

Highlighted the composition of the committee;

The Task Force on Graduate Funding, noting the following key items to be actioned from the report:

- A subcommittee of Graduate Council for a permanent place for discussions of graduate funding, noting they're working to draft the terms of reference;
- The development of a dashboard for the public release of funding levels, noting work with IRA to automate this process.

Graduate Council Overview

Minutes of the meeting of May 14th, 2024

It was duly moved and seconded, 'that **the Graduate Council approve the minutes of the May 14th, 2024 meeting, as circulated.**

The motion was **carried**.

IV. Business arising

Members discussed the language related to SAS accommodations in the Graduate Calendar and an upcoming presentation from SAS to Graduate Council.

V. Report from the Associate Deans, Graduate Studies

Dr. Heathorn (Faculty of Humanities) reported on the following item:

- An initiative within the Faculty to reimagine the curriculum of Ph.D. programs and upcoming curriculum changes related to this.

Dr. Hanna (Faculty of Health Sciences) reported on the following items:

- Introduction of the new co-presidents of the FHS Graduate Student Association, highlighting the committees they serve on and efforts within the Faculty to increase participation in the nomination and election process;
- A Graduate Diploma in Global Surgery making its way through the governance process;
- The annual U21 (an international group of research intensive universities) will be hosted by the Faculty of Health Sciences, including a doctoral student forum.

Dr. Heath (Faculty of Social Sciences) reported on the following items:

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- The launch of the new M.A. in Indigenous Studies;
- A workshop on how to prepare a successful SHERC;
- An upcoming first year PhD orientation;

Dr. Grandfield (Faculty of Engineering) reported on the following items:

- Engineering Graduate Student Society welcome events;
- A curriculum revamp for the MEEI/MTEI programs;
- A workshop in the Faculty having a workshop on mentorship during fall reading week.

Dr. Newbold (Faculty of Science) reported on the following items:

- A busy year for IQAP;
- The Science GSA annual general meeting and a number of events coming up over the coming year;
- An upcoming call for papers for the Grad Symposium;
- Early discussions on a new masters program.

Dr. Verma (Faculty of Business) reported on the following items:

- Welcome events in the Faculty;
- The development of new programs.

VI. Report from the Associate Registrar and Graduate Secretary

Ms. Baschiera reported on the following items:

- The status of the Grad Pay and Records Optimization projects;
- Work with the MacPherson Institute to include graduate course outlines in the portal in the coming months;
- Recruitment work partnered with the undergraduate office and three days of upcoming fairs;
- Governance procedures and policy review.

VII. New Awards and Changes to Award Terms

Ms. Side provided a high-level overview of the process for bringing a new award forward.

It was duly moved and seconded, '**that the Graduate Council approve the new awards as described in the document.'**

The motion was **carried.**

VIII. Faculty of Health Sciences Graduate Policy and Curriculum Committee Report

For information item.

IX. Teaching and Learning Professional Development Opportunities for Graduate Students

Dr. Hranilovic highlighted a memo that had ben circulated from the Director of MacPherson Institute, noting it was an update on a topic for discussion in the previous year. He provided an updated on the proposed new certificate and noted that the certificate of completion will carry on for now in a more limited form and will need to be revisited.

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Report to the Graduate Council from the Joint Committee on Certificates, Diplomas and Microcredentials

FOR APPROVAL

1. **Non-Academic Microcredentials in Health Technology Assessments**

   At its meeting on September 10, 2024, the Joint Committee on Certificates, Diplomas and Microcredentials approved six new non-academic micro credentials in Health Technology Assessments, as circulated.

   It is recommended,

   that the Graduate Council approve, for recommendation to the University Planning Committee and the Senate, the following non-academic microcredentials in Health Technology Assessments, as circulated.

   a. Fundamentals of Health Technology Assessment
   b. Introduction to Evidence Synthesis for HTA
   c. Introduction to Patient-Reported Outcomes in HTA
   d. Introduction to Health Economic Evaluations
   e. Advanced Evidence Synthesis for HTA
   f. Advanced Economic Modeling for HTA

2. **New Graduate Diploma in Global Surgery: Surgical Care Systems & Health Equity.**

   At the same meeting, the Joint Committee on Certificates, Diplomas and Microcredentials approved the new Graduate Diploma in Global Surgery: Surgical Care Systems & Health Equity, as circulated.

It is recommended,

that the Graduate Council approve, for recommendation to the University Planning Committee and the Senate, the Graduate Diploma in Global Surgery: Surgical Care Systems & Health Equity, as circulated.

McMaster University

NEW PROGRAM PROPOSAL

Graduate Diploma in Global Surgery: Surgical Care Systems & Health Equity

August 2024

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1. PROGRAM

1.1 PROGRAM DESCRIPTION

What

This proposal proffers the development of a four-course Graduate Diploma, entitled *"Graduate Diploma in Global Surgery: Surgical Care Systems & Health Equity"* at McMaster University (henceforth referred to as "Graduate Diploma in Global Surgery"). The one-year Graduate Diploma would be offered primarily asynchronously and online to overcome time zone barriers, travel and visa barriers, financial barriers, improve access for those in the work force, and avoid the inadvertent net loss of providers from low-resource settings to improve academic equity in the field of Global Surgery. Traditionally, academic curriculum in Global Surgery has been high-income country (HIC)-centric through its housing within HIC academic institutions and enrollment of only HIC students. In a field focused on achieving health equity for all, it is imperative that the proposed Graduate Diploma in Global Surgery challenge the status-quo through the mitigation of such barriers in both its delivery and content. Moreover, by engaging expertise and voices from settings where inherent inequities exist (eg., rural/remote HIC, low- and middle-income countries), lived experiences and invaluable perspectives may be shared.

The four proposed courses for the Graduate Diploma in Global Surgery are: Fundamentals of Global Surgery, Contemporary Issues in Global Surgery, Program Planning, Monitoring & Evaluation, and Special Populations and Patient Perspectives in Global Surgery.

Why

Ever since the Lancet Commission on Global Surgery's landmark paper in 2015, the role of surgical care in public health has come to the forefront by highlighting that over *5 billion people* in the world lack access to safe, timely, and affordable surgical care[1] Additionally, 1.27 million additional surgeons, anesthetists, and obstetricians are needed by 2030 to meet global needs for surgical care. Presently, one-third of the world's burden of disease is due to surgical conditions and these will cost the world's economy $12.3 trillion USD between 2015 and 2030.[1] Moreover, the total number of surgically avertable deaths annually out-numbers, by more than five-fold, the annual deaths due to HIV/AIDs, malaria, and TB *combined.* [2]

Global Surgery does not simply refer to the surgeon or the surgery. Instead, Global Surgery is focused on surgical care systems; the components of these systems, how they're interconnected, and the barriers that interfere with these connections. For example, the field considers the patient, the place they're going, the process of getting there, the personnel at the facility, the infrastructure at the facility, and the community-based resources available pre- and post-facility. As such, Global Surgery is an interdisciplinary field that is reliant upon not only the traditional and allied healthcare professions, but also Engineering, Information Technology, Journalism & Media, Law, Business, Policy & Advocacy, Health Administration, Community Health Workers, and more. Global Surgery has been formally defined as "an area of study, research, practice, and advocacy that seeks to improve health outcomes and achieve health equity for all people who need surgical and anaesthesia care."[3]

Given the immense burden of disease,[4] there have been economic and moral arguments for investment into surgical care which have resulted in a relative consensus that it is an "indivisible, indispensable part

of healthcare" and an “essential component of Global Health”[5]. This has led to the formation of collaborations between HIC and low-and-middle-income countries (LMICs) through Global Surgery.”[6] It has been proposed that this growing burden should be addressed through education, training, workforce expansion, and global research. Similarly, the World Bank Disease Control Priorities Project and the World Health Organization Global Initiative for Emergency and Essential Surgical Care advocate for improved access to surgical care as a crucial worldwide need.

As such, the proposed Graduate Diploma would intentionally target a wide array of interdisciplinary students: trainees in the health and allied health professions; graduate students or those who have just finished a Bachelor’s degree in Engineering, Information Technology, Journalism, Law, Business, Policy, or Health Administration; or practicing professionals in the aforementioned disciplines. Following completion of the Graduate Diploma, these individuals may be better suited to integrating academic Global Surgery into their area of expertise in academia, with grassroots or non-governmental organizations, or large agencies such as the United Nations Population Fund, World Health Organization, or the Global Surgery Foundation.

Why Now, Why Here

As an institution, McMaster has a legacy of Global Health involvement but currently, among the rich ecosystem of Global Health experts and a consortium spanning five continents, there exists no core academic training in Global Surgery. Given the magnitude of the burden of disease and the immense need in every domain of surgical care, it is imperative to invest in academic Global Surgery training. Harnessing McMaster’s existing academic Global Health scaffolding, the institution stands to be a national and international leader in the burgeoning field of Global Surgery. Such investments will deploy McMaster alumni in the Global Surgery space as the world’s future leaders, advocates, and policy-influencers who will improve access and reduce barriers to surgical care while ethically and sustainably engaging in Global Surgery partnerships.

1.2 PROPOSAL PREPARATION AND CONSULTATION PROCESS

Global Surgery, defined as the study and practice of improving access to timely, quality, and affordable surgical care for all, encompasses all fields related to surgical care. This includes not only the traditional healthcare disciplines (e.g., primary care, nursing, midwifery, allied health, surgical sub-specialties, obstetrics and gynecology, anaesthesia, perioperative care, emergency medicine, intensive care, oncology, rehabilitation, palliative care) but also extra-healthcare professions including engineering, journalism, business, law, social studies, health administration, and policy. Therefore, in the development of the proposed Graduate Diploma, an array of stakeholders was consulted internally and externally, as evidenced by the appended Letters of Support.

The initial consultation process commenced with a core Global Surgery Advisory Group at McMaster University which is comprised of a diverse panel of experts with significant depth and breadth of relevant experience: Dr. Sonia Anand, Dr. Brian Cameron, Dr. Esther Chin, Dr. Laurie Elit, Dr. Christy Gombay, Dr. Carolyn Levis, Ms. Patty Montague, Mr. David Oldenburger, Dr. Brad Petrisor, Dr. Lynda Redwood-Campbell, and Dr. Caitlin VanDeCappelle. Within McMaster University’s Faculty of Health Sciences, the

Dean and Vice-President (Dr. Paul O'Byrne) was consulted, alongside Chairs of Departments (Dr. Jon Barrett from Obstetrics/Gynecology, Dr. James Paul from Anesthesia, Dr. Mohit Bhandari from Surgery). Dr. Beth Murray-Davis, Chair of the Association of Ontario Midwives and Scientific Director of the McMaster Midwifery Research Centre were also consulted.

Other stakeholders within McMaster University's healthcare landscape were consulted including: Postgraduate Medical Education Associate Dean (Dr. Parveen Wasi), MacGlObAS Director (Dr. Carolyn Levis), MacGlobal Co-Chair (Dr. Andrew Kapoor), Postgraduate Medical Education Global Health Co-Director (Dr. Caitlin VanDeCappelle), and Indigenous Health Associate Dean (Dr. Bernice Downey).

Representing a wide range of interdisciplinary stakeholders at McMaster, the following experts and leaders were consulted: Dean of the Faculty of Engineering (Dr. Heather Sheardown), Mechanical & Biomedical Engineering (Dr. Ravi Selvaganapathy), Primary Care and Refugee Health (Dr. Lita Cameron), Ethics and Humanities (Dr. Lisa Schwartz), Health Policy (Dr. Lydia Kapiriri), and Innovation and Health Technology (Dr. Abubaker Khalifa). An online focus group of an array of students and trainees representing the diverse interdisciplinary fields critical to Global Surgery, was held on March 16, 2024 which confirmed demand and support for such a Graduate Diploma.

Beyond the walls of McMaster, external consultations were undertaken with the following stakeholders: Canadian Red Cross International Emergency Response Unit (Dr. Lynda Redwood-Campbell), Save The Mothers Co-Founder (Dr. Jean Chamberlain), St. Joseph's Health System International Outreach Program (Mr. Mike Nixon), University of Alabama at Birmingham Mary Heersink Institute of Global Health (Dr. Alan Tita) and University of Toronto Dalla Lana School of Public Health Journalism & Health Impact Fellow (Dr. Stephanie Ferguson).

1.3 CONSISTENCY WITH MCMASTER'S MISSION & ACADEMIC PLAN

The Graduate Diploma in Global Surgery aligns with McMaster's 2020-2025 Strategic Mandate Agreement priorities[7] and the 2021 Vision Statement *"impact, ambition, and transformation through excellence, inclusion, and community: advancing human and societal health and well-being".*[8] By forging a foundational understanding of the issues underpinning surgical care systems and health inequity worldwide, the Graduate Diploma aims to cultivate future leaders, policy makers, advocates, and Global Surgery experts to address some of the greatest challenges affecting the world's most vulnerable. This will be accomplished by leveraging McMaster's existing strengths in Global Health, evidence-based practice, and problem-based learning to deliver a unique high-quality program.

The proposed interdisciplinary Graduate Diploma, which will be delivered online and asynchronously to overcome time zone, travel, financial, and personal/professional barriers, will improve academic equity for an array of students globally. This innovative teaching approach[9] is in keeping with the central tenets of McMaster's Faculty of Health Sciences[10]: innovation and excellence; flexibility, nimbleness, and entrepreneurship; diversity, inclusivity, and equity; cultural competency and safety; professionalism; interprofessional and transdisciplinary collaboration; and commitment to local, national, and international communities and partnerships.

In the future, at the discretion of Faculty of Health Sciences planning, consideration may be given to locating this Graduate Diploma in Global Surgery within other existing graduate offerings within the Global Health Office.

1.4 PROGRAM LEARNING OUTCOMES

By the completion of the Graduate Diploma program, students will be able to:

1. Gain an understanding of the Global Surgical landscape, the burden of global surgical disease and contributing factors, and strategies to address the burden of global surgical disease.
2. Analyze ethical issues in Global Surgery through application of ethical frameworks.
3. Critically analyze research evidence to understand the intersectionality of global surgery, climate change and Planetary Health.
4. Gain familiarity and apply the principles of program planning, monitoring, and evaluation to global surgical programs.
5. Understand the global surgical issues experienced amongst diverse groups and special populations and implications for global surgical care.
6. Develop skills in research synthesis and analysis of complex issues
7. Gain experience working in diverse interprofessional cross-cultural teams

1.5 CONSISTENCY WITH DEGREE LEVEL EXPECTATIONS

Students will be required to complete 4 graduate level courses, as outlined in *3.2 Structure & Regulation*. Completion of the program requirements for the Graduate Diploma in Global Surgery will achieve all of the Master of Science (MSc)-level Degree Level Expectations (DLEs) except Research and Scholarship. Students will not be required to complete a practicum or thesis paper as part of the requirements of the program. Table 1 outlines how the program requirements will achieve each of the DLEs. Section *5.3 Curriculum Map* demonstrates the connection of each of the DLEs with the curriculum.

Table 1. Graduate Degree Level Expectations (DLEs) for Diploma in Global Surgery

GRADUATE DLES	**Graduate Diploma in Global Surgery**
1. Depth and Breadth of Knowledge	Students will develop a thorough knowledge and awareness of Global Surgery through assigned readings, guest lectures, and case-studies. PLO 1, PLO 5
2. Research and Scholarship	Students will use research evidence to understand complex issues in Global Surgery. PLO 3, PLO 6,
3. Application of Knowledge	Students will be expected to apply knowledge to identify innovative solutions to complex real-world problemsthrough problem-based learning, case-studies, and assignments. PLO 2, PLO 4, PLO 5

4. Communication Skills	Students will develop communication skills to present arguments and debate complex issues. PLO 7
5. Awareness of Limits of Knowledge	Students will recognize the complexity and intersectionality of issues in Global Surgery and its impact on addressing these challenging real-world problems. Students will be encouraged to identify address knowledge gaps through analysis of complex problems and critical discussion. PLO 1, PLO 3, PLO 6
6. Autonomy and Professional Capacity	Students will be expected to demonstrate initiative, professional autonomy, and develop transferrable skills by addressing real-world Global Surgery problems through individual and group work. PLO 4, PLO 7

1.6 DEMAND FOR PROGRAM

I. Evidence of Societal/Labour Market Need

The field of Global Surgery is unique as it approaches health inequities in surgical care through a horizontal paradigm with cross-cutting themes that transcend boundaries within and between professions. As such, traditional labour market need analyses cannot be performed. Prospective students and current experts in academic Global Surgery are derived from a range of training backgrounds and hold various degrees and credentials that are not limited to a particular sector. Moreover, these individuals may be employed by a range of entities globally ranging from non-governmental organizations, academic institutions, healthcare facilities, ministries of health, private corporations, media outlets, and grassroots organizations.

If one were to take a solely health profession-centric view, which represents but one of the multitude of disciplines engaged in Global Surgery, healthcare made up the second-largest industry group by employment in January 2024 in Ontario (968,100 or 12.2%), behind wholesale and retail trade.[11]

II. Evidence of Student Demand

There is currently no graduate training in academic Global Surgery in Ontario. In this burgeoning field, only two other options to pursue academic Global Surgery exist elsewhere in Canada, thereby leading to a dearth of data pertaining to student demand. The University of British Columbia (UBC) offers a Graduate Certificate in Global Surgical Care and a two-year Master of Global Surgical Care (MGSC)[12,13] while McGill University offers a Concentration in Global Surgery within their Master of Science in Experimental Surgery.[14]

The only pertinent data available is from UBC's MGSC, which was initiated in 2018. Between 2018 and 2022, enrollment in the MGSC doubled.[11] Unfortunately, no disaggregated data regarding local, regional, domestic, and international students are available. During the 2023-2024 academic year, one of the

members of the McMaster Global Surgery Advisory Group, who teaches a course within the MGSC, reported that a record number of students enrolled in said course. This was more than double previous years' enrollment, which contributes to the observation that the demand for graduate level curriculum is increasing as the field of Global Surgery expands. There is no available data on UBC's Graduate Certificate in Global Surgical Care nor McGill University's Concentration in Global Surgery.Given that UBC's Graduate Certificate in Global Surgical Care and MGSC are offered online, such programming would theoretically reach prospective students at McMaster. However, during various clinical and academic teaching encounters with medical students, surgical residents, nursing/midwifery students, and engineering students at McMaster, very few of the Faculty of Health Sciences trainees and Faculty of Engineering students encountered are aware of the field of Global Surgery. Of the few who are aware, most have approached a McMaster faculty member for opportunities. Due to the paucity of Global Surgery curriculum and efforts at McMaster, this faculty has had to refer more than a dozen McMaster students or trainees to UBC's Global Surgery Lab over the last 12 months. An additional 4 students from other Ontario universities have been referred by this faculty member to UBC's Global Surgery Lab. This demonstrates the unmet demand for Global Surgery at McMaster University and within Ontario post-secondary institutions.

Broadly, the demand for graduate training in Global Health remains consistently high. For the 2023-2024 year, a 9% increase from the preceding year was noted in applications to McMaster's MSc in Global Health. Of the 693 applications received,106 students were admitted to this program.[15] Student demand from within this cohort is difficult to estimate given that no academic Global Surgery graduate options are available in Ontario. It would however be reasonable to extrapolate that within such pools of applicants, a portion would be interested in pursuing a concentration in Global Surgery, particularly given the high rate of medical school application following the MSc in Global Health. Moreover, there are those that may have declined McMaster's offer of admission to this program to pursue studies at another institution due to the absence of Global Surgery curriculum at McMaster.

McMaster University is home to Canada's third-largest medical school. The direct clinical applicability of many surgical care initiatives would naturally attract those on the M.D. career path, including those interested in a wide range of non-surgical specialties involved with surgical care (e.g., anesthesia, perioperative care, emergency medicine, primary care, intensive care, rehabilitation medicine, oncology, palliative care, allied health, midwifery). This Graduate Diploma at McMaster capitalizes on this cohort of potential Global Surgery leaders within undergraduate and postgraduate medical education. An online focus group of an array of students and trainees representing the diverse interdisciplinary fields critical to Global Surgery, was held on March 16, 2024, which confirmed demand and support for such a Graduate Diploma. This focus group consisted of one of each of: McMaster University final-year medical student, Queen's University third-year medical student, McMaster Year 2 General Surgery Resident and member of the University of British Columbia (UBC)'s Global Surgery Lab, McMaster Year 5 General Surgery Resident who had previously completed UBC's Graduate Certificate in Global Surgical Care, McMaster Master of Science in Global Health student, and a McMaster Engineering graduate student.

In the wider ecosystem in which McMaster operates, the University of Alabama at Birmingham (UAB) has expressed significant interest in this proposed Global Surgery Graduate Diploma. The Graduate

Diploma was presented during meetings held between McMaster and UAB leadership on March 22, 2024. Subsequent follow-up meetings were held in April 2024 and it was felt that the four proposed courses at McMaster would complement the suite of graduate course offerings at UAB, which currently consists of a single inaugural course on Global Surgery. Moreover, UAB's Director of Global Surgery expressed a need for Global Surgery curriculum for UAB General Surgery residents and conveyed that the proposed online and asynchronous course delivery would be ideal for the demanding and dynamic schedules of such trainees.

Finally, as the field of Global Surgery experiences exponential growth, students that possess academic training in Global Surgery will have an employment advantage. This corroborated by the letter of support from Dr. Geoff Ibbotson, a leader in the field and Executive Director of the Global Surgery Foundation based in Geneva, Switzerland. Specifically, in light of the spotlight placed on Global Surgery by the World Health Assembly in May 2023[16], those with an understanding of the complex intertwining issues that affect surgical care systems will have an advantage even outside of traditional clinical care delivery settings. For example, they will possess the expertise necessary to write logic models or apply for grants with a Global Surgery focus and will also have an advantage in project management and technical advisor roles in this space.

III. Justifiable Duplication

Regionally and nationally, there exists a gap in the academic Global Surgery landscape. There is currently no graduate training in Global Surgery in Ontario. In the remainder of Canada, the University of British Columbia (UBC) offers a Graduate Certificate in Global Surgical Care and a two-year Master of Global Surgical Care[8,9] while McGill University offers a Concentration in Global Surgery within their Master of Science in Experimental Surgery.[10]

Given that UBC's Graduate Certificate in Global Surgical Care and MGSC are offered online, such programming would theoretically reach prospective students at McMaster. However, during various clinical and academic teaching encounters with medical students, surgical residents, nursing/midwifery students, and engineering students at McMaster, very few of the Faculty of Health Sciences trainees and Faculty of Engineering students encountered are aware of the field of Global Surgery. Of the few who are aware, most have approached a McMaster faculty member for opportunities. Due to the paucity of Global Surgery curriculum and efforts at McMaster, this faculty has had to refer more than a dozen McMaster students or trainees to UBC's Global Surgery Lab over the last 12 months. An additional 4 students from other Ontario universities have been referred by this faculty member to UBC's Global Surgery Lab. This demonstrates the unmet demand for Global Surgery at McMaster University and within Ontario post-secondary institutions. Moreover, the students enrolled in McMaster's Graduate Diploma in Global Surgery would be net new students and not those taken from existing programs.

The proposed Graduate Diploma in Global Surgery is distinct from UBC's Graduate Certificate and McGill's Concentration for many reasons. First, the proposed core content is more diverse and offers an introduction to contemporary issues in the field, beyond that of the burden of disease. As a result, graduates will be cognizant of the current landscape of Global Surgery and prepared to effectively

engage and navigate these realities. Second, the proposed Graduate Diploma is in keeping with the classic definition of Global Surgery, where the field involves not only the traditional health and allied healthcare professions, but also extra-healthcare disciplines. As such, the target demographic includes clinicians and those in clinical training programs alongside other professions such as engineering, journalism, business, law, and policy and advocacy. Such non-clinicians would include those who hold a Bachelor's degree in these fields, graduate students in these programs, or practicing or qualified professionals in each of these extra-healthcare fields. Such a diverse student body will facilitate cross-pollination of ideas which transcend professional background and career trajectory. In the same vein, the core and guest faculty will consist of a multidisciplinary array of professionals, many of whom are faculty within McMaster's Global Health Office and the MSc in Global Health. In bringing together clinical and extra-healthcare expertise, this approach will harness synergies to address one of the most pressing challenges facing the world's most vulnerable.

Otherwise, given that there is no current academic Global Surgery curriculum at McMaster, the Graduate Diploma complements the existing suite of Global Health offerings within McMaster and within the larger Global Health Consortium that spans five continents.

1.7 DEGREE NOMENCLATURE

The proposed Graduate Diploma is a stand-alone Type 3 graduate diploma. The "Diploma" nomenclature was selected in keeping with precedents at McMaster. The program name intentionally includes "Global Surgery" to underscore the program's primary focus on the unique aspects of surgical care systems. This also reinforces Global Surgery's position as an essential yet distinct component of Global Health, which is in keeping with the Lancet Commission on Global Surgery[1] and other landmark papers in the field.[2,3] There is explicit reference to "Surgical Care Systems" as a nod to the breadth of the field and "Health Equity" is also present as this is central to both the content and delivery of the Graduate Diploma.

2 ADMISSION & ENROLMENT

2.1 ADMISSION REQUIREMENTS

The Graduate Diploma is intended to be an introduction to the academic field of Global Surgery. Given the inherent interdisciplinary nature of the field of Global Surgery, the course curriculum does not depend on a student's background in any health/surgery or global studies/development profession and there are no explicit or specific degree requirements. However, the final admission requirement listed below intends to self-select applicants who will have had informal exposure to the field (eg., prior volunteer work, previous NGO or grassroots organization programming, employment) which will aid in their success in fulfilling the academic demands of graduate level courses in Global Surgery.

- Completion of a four-year honours undergraduate university (Bachelor's) degree (or equivalent) and a B+ average in the final year of undergraduate study. On a percentage scale, the B+ average equates to a 75 to 79% (8.5/12.0 on the McMaster grade point average scale)

- Applicants whose native language is not English must provide evidence of English proficiency. This can include an official copy of the TOEFL score, or other evidence. A minimum TOEFL (iBT) score of 92 (580 on the paper-based TOEFL test, or 237 on the computer-based TOEFL test) is needed for the Faculty of Health Sciences. Students taking the IELTS are required to achieve a minimum score of 6.5, with a minimum score of 5.5 in each category.

- Two reference letters from instructors or supervisors most familiar with the academic or professional work deemed most relevant to the applicant's demonstrated interest in Global Surgery

- A demonstrated interest in Global Surgery through the applicant's Curriculum Vitae, background, education or experiences, and/or discussed in the Statement of Intent

2.2 ENROLMENT PLANNING & ALLOCATIONS

Enrolment will begin in September 2025. Courses will be offered in the Fall and Winter terms. GLOB SURG 701 "Foundations of Global Surgery" is the pre-requisite for all other courses in the Graduate Diploma but may be taken concurrently with GLOB SURG 703.

Table 2. Timing of Course Offerings

	Course offered			
	701	702	703	704
Fall	x		x	
Winter		x		x

Table 3. Minimum Projected Enrolment Numbers

Annual Total Headcount	**2025/26**	**2026/27**	**2027/28**	**2028/29**	**2029/30**
Year 1	6	10	15	17	21
Year 2		6	10	14	16
Total	6	16	25	31	37

2.3 ALTERNATIVE REQUIREMENTS

The following would be beneficial but not required of applicants:

- Prior work in one's own field in Global Health or Global Surgery or resource-limited settings
- Previous research work in Global Health or Global Surgery

- Previous administrative, policy, or advocacy work in a Global Health or Global Surgery organization, network, or non-governmental organization

2.4 ACCESSIBLE & EQUITABLE ADMISSIONS PROCESSES & PRACTICES

The application process will be fully online to circumvent the need to access hardcopy or postal resources. Given the inherent interdisciplinary nature of the field of Global Surgery, the course curriculum does not depend on a student's background in any health/surgery or global studies/development profession and there are no explicit or specific degree requirements with respect fo field of study.

The Admissions Committee will consist of a diverse interdisciplinary array of representatives with expertise in Global Surgery. Candidates will be assessed based on the three admission requirements outlined in Section 2.1: Four-year honours Bachelor's degree or equivalent with B+ or 75-79% average, evidence of English proficiency, and a demonstrated interest in Global Surgery through the applicant's Curriculum Vitae and Statement of Intent. Offers of admission will be granted to all those that meet these criteria.

Presently, funding sources to support the provision of bursaries are being sought to improve access to graduate academic Global Surgery training for those requiring financial assistance.

3. STRUCTURE

3.1 ADMINISTRATIVE, GOVERNANCE, & COMMUNICATION

The coordination of the Graduate Diploma in Global Surgery falls under the purview of the Global Health Program's administrative unit. This unit operates under the guidance of the Educational Director of the Global Health Program. The Educational Director holds a dual reporting structure, answering to both the Associate Vice President of Global Health and the Vice Dean of Graduate Studies.Course Requirements: Students pursuing the Graduate Diploma in Global Surgery must successfully complete four 3.0-unit online courses.

3.2 STRUCTURE & REGULATION

GLOB SURG 701: Fundamentals of Global Surgery

GLOB SURG 702: Contemporary Issues in Global Surgery

GLOB SURG 703: Program Planning, Monitoring & Evaluation in Global Surgery

GLOB SURG 704: Special Population Considerations & Patient Perspectives in Global Surgery

3.3 GRADUATE PROGRAMS – PROGRAM LENGTH

The Graduate Diploma program encompasses four graduate-level courses. The program completion duration ranges from 8 months to 20 months (Table 4). Students are obligated to pay a per-course fee consistent with the course-load they have selected for that term.

Table 4. Program Length Options

8 months:

Fall	2 courses
Winter	2 courses

20 months:

Fall	1 course
Winter	1 course
Summer	Scheduled Break
Fall	1 course
Winter	1 course

4. CURRICULUM & TEACHING

4.1 PROGRAM CONTENT

The McMaster University Graduate Diploma in Global Surgery addresses the growing need for professional development in Global Surgical Care. The course offerings are designed to give students the core tenets of Global surgical care and a solid foundation to apply to future work towards its advancement. As the courses are held online, students will be exposed to a multidisciplinary global community from both low- and middle-income (LMIC) and high income (HIC) countries. Curriculum will reflect the unique challenges to surgical care delivery for marginalized populations, remote/rural settings, and conflict areas. The target audience will include health and allied health professionals as well as extra-healthcare professions including journalism, policy, engineering, health administration, and public health.

COURSE DESCRIPTION, CONTENT, & OUTCOMES

Fundamentals of Global Surgery (GLOB SURG 701)

This is an introductory course to Global surgery. The course highlights the introduction and indicators of Global Surgery as a humanitarian need and details the burden of surgical care need and its context. The course covers surgical workforce and surgical systems as it relates to the global burden of surgical disease and examines unmet need for surgical care globally. The course will be held in an online format

with weekly e-modules and discussion posts. A midterm and final paper will be required based on the student's selection of one of 2-3 prompts.

Indicative Content	Learning Outcomes
1.0 Introduction to Global Surgery • History, MDGs, SDGs • Lancet Commission on Global Surgery (LCoGS) key findings and indicators • Three Delays Model; extrapolating from maternal mortality	• Understand Surgery and what is necessary and required for surgical procedures and care of the surgical patient. • Understand the definition of Global Surgery, its relationship to Global Health, and its applicability to the Sustainable Development Goals (SDGs?) • Identify the key findings and indicators of the Lancet Commission on Global Surgery (LCoGS) • Understand the role of historical frameworks (eg., Three Delays Model) and their extrapolation to Global Surgery • Understand LCoGS' "10 Needs for the Provision of Safe Surgical & Anesthesia Care"
2.0 Global Burden of Surgical Disease • Geography: LMICs - urban vs rural, rural/remote HICs • Bellwether Procedures • Life-saving vs disability-averting care • Cancer care disparities and the inextricable links with Global Surgery • Trauma care, road traffic safety • Burden of Ob/Gyn care including maternal morbidity & mortality	• Describe the global surgical burden of disease and the disparities between and within countries across income levels • Understand surgical care's role in saving lives and averting disability • Understand the calculations for burden of surgical disease: Disability-Adjusted Life Years (DALYs) and Quality-Adjusted Life Years (QALYs) • Understand the role of Bellwether Procedures • Identify the role of surgical care in addressing the global cancer burden • Identify the role of surgical care in addressing the burden of traumatic conditions • Identify the role of surgical care in addressing maternal mortality and morbidity globally • Understand the burden of disease at population, regional, community, and individual levels

3.0 Surgical Workforce • Global distribution of SAOs (surgeons, anesthesiologists, obstetricians) • Surgical workforce development • Task-shifting / sharing in LMICs & HICs • "Brain-drain"	• Familiarity with the global distribution of SAOs and their correlation with LCoGS findings • Describe approaches to sustainable workforce development and capacity building • Debate the advantages and disadvantages of task-shifting / sharing in a variety of settings • Discuss the pull/push factors contributing to global redistribution of the surgical workforce
4.0 Surgical Care Systems • Surgical infrastructure • NSOAPs, Policy • Health economics, payment models • Case studies	• Analyze the multimodal components and factors influencing surgical infrastructure availability, accessibility, and sustainability • Understand the role of NSOAPs and policy considerations in enhancing surgical care systems • Real-world examples of surgical care systems issues applying the above principles and health economics in LMIC & HIC settings

Contemporary Issues in Global Surgery (GLOB SURG 702)

This course focuses on several contemporary issues of Global Surgery including Ethics, Gender Equality, Planetary Health, and Humanitarian Disasters. The course highlights ethical dilemmas and approaches to surgical care provision and distribution, the effect of and proposed strategies to improve gender disproportion in the surgical care workforce and leadership, the reciprocal impact of climate change and surgical care, and the burden of surgical disease and the role of surgical care systems in humanitarian disasters. The course will be held in an online format with weekly e-modules, weekly discussion posts, and an online debate. A midterm and final paper will be required based on the student's selection of one of 2-3 prompts.

Indicative Content	Learning Outcomes

1.0 Ethics in Global Surgery • Ethics of surgical care delivery partnerships • Ethics of academic/educational partnerships • Ethics of research in Global Surgery • Ethics of equipment donation	• Understand the ethical dilemmas in the provision of surgical care • Understand ethical approaches to and dynamics of Global Surgery partnerships, education, research, and equipment donation • Familiarity with the advantages and disadvantages of various platforms of service delivery and how these factor into ethical approaches to surgical care • Familiarity with code(s) of ethics at local, national, and international levels that provide a framework for ethical surgical care • Understand objectives and outputs of ethical pre-departure training for HIC actors • Develop strategies for individual and institutional ethical engagement in Global Surgery rotations and partnerships
2.0 Workforce Gender Inequity • Gender disparities in the global healthcare workforce vs leadership • Intersectionality and inequity in Global Health/Surgery	• Understand the inverse proportions of gender representation in the general global healthcare workforce versus in global health leadership • Understand the unique gender challenges facing the surgical care workforce in LMICs • Develop gender-responsive strategies to addressing these challenges globally
3.0 Planetary Health • Impacts of climate change on surgical care and patient outcomes • Impacts of surgical care systems on planetary health • Challenges of balancing resource realities with planetary health concerns from a local provider's perspective • Associations between planetary health and the development of / response to humanitarian disasters	• Understand the impact of surgical care on climate change • Understand the impact of climate change on surgical care • Understand that climate change disproportionately burdens LMIC populations and vulnerable communities in HICs • Understand the relationship between climate change and humanitarian disasters

4.0 Humanitarian Disasters • Burden of surgical disease from the spectrum of humanitarian disasters (armed conflict, climate, complex emergencies) • The role of surgical care systems in humanitarian disaster response	• Using case studies, understand and critique the complex coordinated response required for humanitarian disasters • Develop an understanding for the phases of humanitarian disaster response • Debate and critique the role of advocacy pertaining to human rights atrocities or violations during humanitarian disaster response

Program Planning, Monitoring, & Evaluation in Global Surgery (GLOB SURG 703)

This course is an introduction to program planning, monitoring, and evaluation in Global Surgery. The course will highlight policies relating to planning in the context of Global Surgery and describe evaluation approaches and their integration into program planning. The student will apply a Logic Model, Risk Matrix, and GANTT chart in their planning and evaluation of a mock surgical care program. The course will be held in an online format with weekly e-modules and weekly discussion posts. Evaluation will include 3 projects of a 1) Logic Model, 2) Program Proposal Brief, and 3) Mock Design of a Program Evaluation.

Indicative Content	Learning Outcomes
1.0 Introduction to Program Planning & Evaluation • History and purpose • Global Surgery & International Development • Programming planning & evaluation cycle • Evaluation approaches	• Understand the historical background of program planning and evaluation • Familiarity with policies related to program planning, monitoring, and evaluation in the context of Global Surgery and International Development • Understand theory of change and results-based management • Understand the program planning and evaluation cycle • Familiarity with evaluation approaches and their purposes
2.0 Program Planning: Identifying the Problem and Goal • Stakeholder engagement • Defining the problem • Situational assessment • Ultimate goal & beneficiaries	• Understand the Logic Model in describing the program's theory of change. • Understand how to identify and engage stakeholders in the program planning process • Define and describe the problem/issue to be addressed • Identify factors contributing to the issue (positive and negative)

	• Identify what is goal to be achieved and who will be benefited/scope of the program
3.0 Program Planning: Program Design and Logic Model • Logic Model • Outcomes & key indicators • Inputs & outputs • Assumptions, external and influencing Factors • Risk management • Budget & timelines	• Understand how to describe the program's ultimate goal**,** and identify outcomes/key indicators and means of measurement • Identify program inputs and outputs • Identify assumptions and factors that may influence program outcomes • Apply a risk matrix and register to assess and manage risk in program planning • Develop a program budget • Apply the GANTT chart in developing a program timeline
4.0 Program Evaluation & Special Considerations • Defining the evaluation question • Identifying the evaluation type • Methods of program evaluation • Developing an evaluation plan • Ethics & legal considerations in program planning & evaluation	• Identify what question the evaluation is meant to answer • Describe the different types of evaluations (formative, process, outcome, economic & impact) and how to use them. • Describe different methods of program evaluation • Understand how to build evaluation into program design and planning • Describe ethical and legal implications in program planning and evaluation

Special Population Considerations & Patient Perspectives in Global Surgery (GLOB SURG 704)

This course introduces students to surgical care in rural/remote and urban settings in special populations. Specific context and study will focus on provision for Indigenous peoples, populations experiencing homelessness, and considerations pertaining to newcome, immigrant, and refugee care. Teaching and discussion will compare and contrast surgical care between low- and middle-income (LMIC) and high-income countries (HIC). The course will be held in an online format with weekly e-modules and weekly discussion posts, as well as guest speakers who are patients or have lived experience in the subject matter. A midterm and final paper will be based on the student's selection of one of 2-3 prompts.

Indicative Content	Learning Outcomes
1.0 Surgical care in rural/remote HICs and Indigenous populations • Canada • Australia	• Recognize barriers to care specific to rural and remote populations • Understand special and historical considerations for determinants of health for the Indigenous patient • Describe specific patient and infrastructure considerations unique to rural/remote and Indigenous populations
2.0 Surgical care for special urban populations • The unhoused • Newcomer, immigrant, refugee • Urban Indigenous communities	• Understand the determinants of health for the unhoused patient • Understand the determinants of health for the newcomer, immigrant and refugee patient • Describe infrastructure considerations in surgical care specific to urban populations
3.0 Comparison of global surgical care in LMICs vs HICs	• Recognize the barriers to infrastructure, capacity building, workforce recruitment/retention, and patient access to surgical care across LMIC and HIC settings • Compare/contrast intra- and inter-country disparities in global surgical care

4.2 PROGRAM INNOVATION

The McMaster University Graduate Diploma in Global Surgery is the only program of its kind available in Ontario. Its online and asynchronous mode of delivery is intentional in an effort to improve academic equity by reducing barriers and facilitating access to academic Global Surgery for all, regardless of profession, career stage, or country of origin/residence. Such flexibility permits learners to integrate academic pursuits amidst busy personal and professional commitments, for which a traditional in-person and synchronous format may otherwise preclude such a course of study.

The Graduate Diploma's weekly discussion forums, on which students must post well-crafted and appropriately referenced responses to predetermined prompts, provides them with direct access to faculty who are leaders in the field and possess a wealth of clinical, academic, policy, or advocacy experience. This unique first-hand exposure to a bottomless cornucopia of knowledge and insight is facilitated by eliminating logistical barriers of travel, visas, and lost income opportunity costs. Moreover, this format facilitates dynamic and rich discussions among an array of interdisciplinary professional classmates from a variety of contexts in LMICs and HICs. Such an opportunity for "cross-pollination"

would be near-impossible for such a complement of individuals in the absence of this mode of delivery. This format also permits real-world critique, analysis, and integration of core academic Global Surgery fundamentals through their real-time application to current events as they happen (eg., humanitarian disasters and armed conflict in the setting of stretched surgical care systems).

Therefore, the proposed Graduate Diploma delivers Global Surgery graduate education through an innovative approach that not only brings the content to the learner, but also unites seemingly disparate areas of expertise together in a joint quest to strengthen surgical care systems for the world's most vulnerable populations.

4.3 MODES OF DELIVERY

Courses will be offered online via Avenue to Learn, McMaster's Learning Management System, whereby an e-module will be completed each week. To facilitate asynchronous course delivery, there will be weekly readings in the form of published articles and multimedia accessible publicly or through the McMaster University library website. This may include online publications and peer-reviewed articles, case examples, videos, and websites. Closed captioning and/or voice-to-text options will be incorporated to facilitate accessibility and inclusion of all students.

Knowledge consolidation and analyses will be driven through weekly discussion posts in response to pre-set prompts which will be pertinent to the week's readings. These discussion posts will improve the student experience through the creation of an online community where students can ask questions, share experiences, express opinions, and respectfully debate and critique ideas among classmates and faculty alike. Online discussion posts and midterm and final assignments will support the students in meeting their Degree Level Expectations, and solidify that they have met the intended Program Learning Outcomes.

No physical requirements other than an electronic device with Internet access will be required. In order to accommodate all students regardless of Internet capacity, deadlines will be communicated in advance and allowances will be made in the event of technological issues.

The Graduate Diploma's online format is an example of scaling McMaster's Digital Learning Strategic Framework[xvii] whereby digital learning is harnessed to build bridges across geographic and temporal chasms[xviii]. In doing so, this Graduate Diploma will improve academic equity by accessing student populations who may otherwise be unable to partake in in-person graduate education. This approach overcomes time zone barriers and permits student participation from their place of residence. It will preclude students from needing to relocate, leave their families, fund travel, or secure visas to enter Canada. In the same vein, students may be enrolled while continuing to work or study which will also prevent the inadvertent net loss of providers from low-resource settings.

4.4 EXPERIENTIAL LEARNING

GLOB SURG 702 "Contemporary Issues in Global Surgery" features an online debate during which students will need to defend a pre-assigned stance on a current issue in Global Surgery. They will be expected to utilize appropriate references and statistics from the Global Surgery literature to corroborate their arguments. The intention is to provide an opportunity to practice effective

communication strategies while engaging in respectful critique in an interdisciplinary setting, which simulates the skills required for writing an Op-Ed or participating in an academic Global Surgery panel.

There is otherwise no experiential learning offered within the proposed Graduate Diploma.

4.5 ACCESSIBILITY & INCLUSION

The Graduate Diploma's online and asynchronous delivery format is an example of scaling McMaster's Digital Learning Strategic Framework[17] whereby digital learning is harnessed to build bridges across geographic and temporal chasms[18]. In doing so, this Graduate Diploma will improve academic equity by accessing student populations who may otherwise be unable to partake in in-person graduate education.

For example, this approach overcomes time zone barriers and permits student participation from their place of residence. It will preclude students from needing to relocate, leave their families, fund travel, or secure visas to enter Canada. In the same vein, students may be enrolled while continuing to work or study which will also prevent the inadvertent net loss of providers from low-resource settings. Such an innovative approach with inherent flexibility will be attractive to an interdisciplinary array of trainees and professionals from low- and middle-income (LMIC) as well as high-income (HIC) countries. Moreover, our program seeks to include participants regardless of financial means and scholarships for learners in need are actively being investigated.

Other mitigation strategies to foster an accessible, inclusive, and equitable learning environment include the provision of closed captioning for video resources and text-to-speech capabilities for online e-modules. Although the online asynchronous delivery of the Graduate Diploma circumvents the aforementioned barriers, it is contingent upon the student having reliable access to internet. This potential barrier cannot be easily mitigated at the programmatic level but allowances will be made for those students who experience challenges submitting assignments on time due to information technology issues.

4.6 RESEARCH REQUIREMENTS (IF APPLICABLE)

The program does not contain major research requirements because it is a course-based program.

5. ASSESSMENT OF LEARNING

5.1 OVERALL PROGRAM QUALITY

At the end of each course, students will be asked to anonymously rate their faculty on 9 domains:

- Overall rating
- Organization and preparedness
- Expertise in the area
- Enthusiasm for teaching the subject matter
- Clarity of communication
- Success in making learning enjoyable

- Facilitation of discussions
- Availability of faculty
- Constructiveness of feedback and guidance

Similarly, students will be asked to anonymously rate the course infrastructure and material delivery on 4 domains:

- Overall rating
- Availability & accessibility of learning materials
- Utility of learning resources and discussion forum
- Utility of midterm and final assignments

Each domain will be scored on a 7-point scale ranging from 1 (poor) to 7 (excellent).

Students will also be able to provide open-ended feedback comments. All feedback will be solicited via a web-based survey tool like Google Forms or SurveyMonkey. This feedback will be gathered at the conclusion of each course. The McMaster Global Health office will collate the feedback and provide individual summaries to Faculty and Program Leadership at the end of each academic year (end of Spring Term).

At the conclusion of each academic year (end of Spring Term), the Program Director, Faculty, and the Global Surgery Advisory Group will gather to review this feedback data to monitor continuous improvement. Based on this data and the discussions at this meeting, a collective decision will be made between the Program Director, Faculty, and the Global Surgery Advisory Group as to the appropriate actions to take regarding necessary amendments to the program for ongoing improvement. The feedback, minutes from the meeting, and the decisions made regarding action items will be documented in an annual report for the Graduate Diploma in Global Surgery.

5.2 METHODS FOR ASSESSING STUDENTS

Student assessment will be based on longitudinal and discrete submissions in the form of weekly discussion posts and midterm and final assignments, respectively.

The weekly discussion posts will assess the student's ability to synthesize core academic material (e.g., landmark papers, textbook chapters) and its application to weekly prompts. Additionally, the discussion forum will assess the student's ability to engage in respectful dialogue and critical thinking with their peers and faculty. This simulates the type of interdisciplinary communication critical to Global Surgery efforts across all domains; service delivery, education and capacity building, research, policy, advocacy, etc.

Midterm and final assignments will assess the student's ability to formulate and organize thoughts into high-quality academic writing while utilizing peer-reviewed and other literature to corroborate arguments. Their selection of one of 2-3 prompts will permit the tailoring of these assignments to their own area(s) of interest while still facilitating the evaluation of critical thinking and persuasive writing to apply core knowledge to real-world scenarios in surgical care.

The submission and evaluation of all assessments online will reduce scheduling, geographic, financial, and career stage barriers to student learning by allowing all components of the program to be delivered asynchronously.

5.3 CURRICULUM MAP

PROGRAM LEARNING OUTCOMES (PLOS)	PROGRAM REQUIREMENTS		
	DEGREE LEVEL EXPECTATIONS	TEACHING ACTIVITIES & LEARNING OUTCOMES	ASSESSMENT EVIDENCE
PLO 1 Gain an understanding of the Global Surgical landscape, the burden of global surgical disease, contributing factors and strategies to address the burden of global surgical disease.	Depth and Breadth of Knowledge Awareness of Limits of Knowledge	GLOB SURG 701; lectures, group discussion and required reading	Assessment of participation in online discussion forums, mid-term and final papers
PLO 2 Analyze ethical issues in Global Surgery through application of ethical frameworks.	Application of Knowledge	GLOB SURG 702; lectures, online discussions, required readings, and online debate	Assessment of participation in online discussion forums, online debate, and mid-term and final papers
PLO 3 Critically analyze research evidence to understand the intersectionality of global surgery, climate change and Planetary Health.	Research and Scholarship Awareness of Limits of Knowledge	GLOB SURG 702; lectures, online discussions and required readings	Assessment of mid-term and final papers.
PLO 4 Gain familiarity and apply the principles of program planning, monitoring, and evaluation to global surgical programs.	Application of Knowledge Autonomy and Professional Capacity	GLOB SURG 703; lectures, design of logical model and program evaluation	Assessment of a program logic model, program proposal, and program evaluation
PLO 5 Understand the global surgical issues experienced amongst diverse groups and special populations and implications for global surgical care.	Depth and Breadth of Knowledge Application of Knowledge	GLOB SURG 704; lectures, required readings	Assessment of participation in online discussion forums, mid-term and final papers

PLO 6 Develop skills in research synthesis and analysis of complex issues	Research and Scholarship Awareness of Limits of Knowledge	All Courses; literature search and synthesis	Assessment of participation in online discussion forums, mid-term and final papers
PLO 7 Gain experience working in diverse interprofessional cross-cultural teams	Communication Skills Autonomy and Professional Capacity	All Courses; online discussions	Participation in online discussion forums.

5.4 DEMONSTRATING STUDENT ACHIEVEMENT

The program defines success as achievement of the eight learning outcomes defined in Section 1.4. Specifically, this will be determined by the successful completion of the four courses for the Graduate Diploma in Global Surgery (GLOB SURG 701, 702, 703, 704). As aforementioned, student assessment within each course (701-704) will be determined via longitudinal and discrete submissions in the form of weekly discussion posts and midterm/final assignments, respectively. This intentional combination of assessments facilitates a comprehensive evaluation of the student including their depth and breadth of knowledge, knowledge application and synthesis, and ability to communicate and collaborate. Specifically, the weekly discussion posts will demonstrate their ability to synthesize core academic material while engaging in critical thinking and dialogue pertaining to historical and real-time case examples. The midterm and final assignments will provide an opportunity to formulate compelling pieces of academic writing to demonstrate knowledge application to real-world scenarios in surgical care. This innovative approach facilitates a broad assessment of the student over a wide range of topics and provides the opportunity to hone skills such as respectful dialogue, critical thinking and analysis, and persuasive writing, which are critical to engaging in all domains of surgical care. When considered in totality, such assessments in all four courses will demonstrate that students have met the seven learning outcomes outlined in Section 1.4.

Overall academic progress will be monitored closely by course faculty who will communicate any concerns with the Program Director and administrator. Should any concerns or extenuating circumstances arise, actions will be taken to remediate and provide opportunities to demonstrate successful acquisition of the learning outcomes.

Administration will collect and disseminate such assessments at the conclusion of each course and at the completion of the program. A Graduate Diploma in Global Surgery would be granted upon successful completion of the program. Similarly, anonymized student assessments of the program will be collected at the conclusion of each course and will be grouped into a minimum data set of three student assessments which are non-contemporaneous to ensure anonymity. This will be fed back to Program Leadership and Faculty at the conclusion of each academic year and will influence and inform the continuous quality improvement of the program.

6. RESOURCES

6.1 UNDERGRADUATE PROGRAMS

Not applicable as the proposed Graduate Diploma in Global Surgery is at the graduate level.

6.2 GRADUATE PROGRAMS

6.2.1 ADMINISTRATIVE, PHYSICAL, & FINANCIAL RESOURCES

Courses in the Graduate Diploma of Global Surgery program will be offered entirely online Students will be based off-campus. The program will require a Program Director and part-time Administrator to manage and administer the program. This program will utilize existing space for a Program Director and part-time Administrator within the Global Health Office. Therefore, it is not anticipated that additional space or physical resources will be required.

6.2.2 LIBRARY, TECHNOLOGY, & LABORATORY RESOURCES

All students and faculty will require access to McMaster Universities online-based education software programs including Microsoft 365, Avenue to Learn, and online library resources during the program. There are no anticipated physical technology or laboratory resources required for this program.

6.2.3 FACULTY

Core faculty for the program will be primarily drawn from the Global Health Office and Post-Graduate Medical Education departments. Guest lecturers from other McMaster Faculties and Departments, along with faculty from McMaster's Global Health Consortium, will be invited to contribute their expertise to the interdisciplinary program. International faculty with existing connections to McMaster University faculty may also be invited to give guest lectures and facilitate online discussion.

Table 5. Core Faculty Participation & Qualifications

Faculty Name	Participation	Credentials	Global Surgery Experience
Dr. Esther Chin	701 702	MD, MGSC, FRCSC Obstetrician/Gynecologist Global Health Lead (McMaster University, Dept of Ob/Gyn) Assistant Clinical Professor (McMaster University, Dept of Ob/Gyn) Adjunct Professor	Master of Global Surgical Care (UBC) Graduate Course Global Surgery Teaching Faculty - UBC SURG512 "Global Disability – A Surgical Care Mandate" (Master of Global Surgical Care) - University of Global Health Equity in Rwanda GSE003 "Ethics in Global Surgery" (Master of Global Health Delivery; Global Surgery Option)

		(UBC, Faculty of Surgery, Branch for Global Surgical Care) Visiting Clinical & Academic Global Surgery Faculty (University of Global Health Equity, Rwanda)	Essential Surgical Skills Curriculum (UBC, Global Surgery Lab) - Content Consultant, Ob/Gyn Co-Lead, Lecturer (Aweil, South Sudan) UBC Graduate Course Academic Advisor - SURG560 "Global Surgical Care Field Practicum" UBC Global Surgery Lab - Principal Investigator Society of Ob/Gyns of Canada & Rwanda Society of Ob/Gyns - Rwanda Working Group "Sexual Reproductive Health & Rights Project" Royal College International Development, Aid, & Collaboration Grant Recipient 2024-2027 - Mobile Workshops "Building Capacity to Reduce Cesarean-Related Morbidity in Tanzania" Obstetric Fistula Repair Training (Angola) (see attached Curriculum Vitae)
Mr. David Oldenburger	703	RN, MSc Global Health, PhD(c) McMaster University Coordinator, MacGlObAS McMaster University Global Surgery Collaboration	2015-2017 Program Development and Evaluation on Global Affairs Canada Health Project in West Africa Guest Lecturer, Program Evaluation Course, UBC Masters of Global Surgical Care Tutor, Global Health Foundations, MSc Global Health program, McMaster University
Dr. Brad Petrisor	704	MSc, MD, FRCSC Professor, Department of Surgery, McMaster University	Humanitarian responder Haiti with St. Joseph's International Outreach Program (IOP) since 2010 Collaborator Team Broken Earth, Humanitarian responders Faculty with Uganda Sustainable Trauma Orthopaedic Program. A collaborative effort with McMaster University, UBC and Dept. Of

			Orthopaedic Surgery Mulago National Referral Hospital. Makerere University since 2012 Faculty, Principles and Practice of research Cuba and Uganda Faculty Pune Trauma Operative Course, India. Multiple trips to Haiti, Uganda, India since 2010 for Education, collaboration and capacity building. Canadian Ukraine Surgical Aid Program (CUSAP) - Orthopaedic trauma surgery and reconstruction for casualties of war. Supervisor, Orthopaedic trauma fellowships Hamilton General Hospital, fellows from South Sudan, Kampala, Uganda, and Arua, Uganda. Member, Canadian Orthopaedic Association Global Surgery Invited speaker Orthopaedic Society of Uganda Invited Lecturer McMaster's Master's of Global Health Program – Global Burden of Surgical Disease. Supervisor, independent study project Master's of Global Health Program. Participated as accreditation reviewer for Royal College International Previously Director of Department of Surgery's Global Surgery office Helped collaborate and organize multiple aid distributions after Beirut disaster in collaboration with Stratford Medical Supply warehouse, St. Catharines Warehouse of Hope, Global Logistics Management and Rotary International

Dr. Lynda Redwood-Campbell	704	MD, FCFP, DTM&H (London) MPH (Johns Hopkins) Professor, Department of Family Medicine. McMaster University Co-Director, Global Health. Postgraduate Medical Education (PGME) McMaster Chair, International Advisory Council, Besrour Centre for Global Family Medicine Delegate, Canadian Red Cross, Emergency Response Unit, International Operations UNDAC trained (United Nations Disaster Assessment Coordination team)	25 years' experience in the area of international humanitarian disasters. Academic and scholarly work in this area. Hundreds of presentations nationally and internationally in humanitarian response, humanitarian health settings and humanitarian healthcare ethics. Examples of countries worked, Rwanda post genocide, Pakistan post-earthquake, Haiti post-earthquake and with onset of cholera epidemic, Philippines post typhoon Haiyan, Indonesia post tsunami and many more. Developed a partnership collaboration between SKU Indonesia and DFM McMaster University which has formally been in place for almost 10 years. Developed pre-departure modules for residents going on international health electives, PGME 2023-4
Dr. Caitlin VanDeCappelle	701 702	MD, FRCPC, GCGSC Anesthesiologist, Hamilton Health Sciences Assistant Professor (McMaster University, Dept of Anesthesia) Co-Director, Post Graduate Medical Education Global Health Committee Co-Director, Post Graduate Medical Education MacGlobal Program	Executive, MacGlObAS (McMaster University Global Surgery Collaboration) Essential Surgical Skills Curriculum (UBC, Global Surgery Lab) - Content Consultant, Anesthesia Lead, Lecturer (Aweil, South Sudan) Facilitator, PGME International electives post-return quarterly group Debrief

Table 6. Proposed Core Faculty for Graduate Diploma in Global Surgery Courses

Course	Core Faculty
GLOB SURG 701 – Fundamentals of Global Surgery	Esther Chin & Caitlin VanDeCappelle,
GLOB SURG 702 – Contemporary Issues in Global Surgery	Caitlin VanDeCappelle & Esther Chin
GLOB SURG 703 – Program Planning and Evaluation in Global Surgery	David Oldenburger
GLOB SURG 704 – Special Populations & Patient Perspectives in Global Surgery	Brad Petrisor & Lynda Redwood-Campbell

6.2.4 STUDENT FINANCIAL SUPPORT

Presently, funding sources to support the provision of bursaries are being sought to improve access to graduate academic Global Surgery training for those requiring financial assistance.

6.2.5 FACULTY RESEARCH FUNDING

Although the Graduate Diploma in Global Surgery is not research-oriented, please see the table below for Core Faculty Research Funding. Please see the attached CVs for Dr. Chin and Dr. Redwood-Campbell for further details pertaining to record of research or scholarship in the field.

Table 7. Core Faculty Research Funding

Operating Research Funding by Source and Year				
	Source			
Year [1]	**Granting Councils [2]**	**Other Peer Adjudicated [3]**	**Contracts**	**Others [4]**
2024-2027		Royal College International Development, Aid, & Collaboration Grant ($90,000) - "Building Capacity to Reduce Cesarean-Related Morbidity in Tanzania" (Dr. Esther Chin)		
2021-present		Developing primary care physician's competency in multi-disaster preparedness in Hamilton, Canada; Learning from the COVID pandemic experience. A phenomenology study ($5000) – (Dr. Lynda Redwood-Campbell)		
2018-present		Collaboration for research of emergency response in international and domestic settings, Grant, Canadian Red Cross ($42,490.00) - (Dr. Lynda Redwood-Campbell)		
Totals		$137,490		

1. *Year may be academic year or calendar year, as appropriate for the institution [specify].*
2. *<u>Do not</u> include equipment grants, conference grants, or grants allocated by the university such as SSHRC minor grants in this column.*
3. *Explain source and type in footnote.*
4. *University allocated grants (such as SSHRC minor grants).*

6.2.6 SUPERVISION

Students will not have a designated supervisor during the program. However, the Program Director will monitor students' progress and address any academic concerns with program faculty. The Core Faculty's supervisory privileges are detailed in Table 8.

Table 8. Core Faculty Supervisory Privileges

Faculty Members by Field						
			Fields if applicable			
Faculty Name & Category of Appointment	**Home Unit [1]**	**Supervisory Privileges [2]**	**1[3]**	**2**	**3**	**4**
Category 1 [4]						
Dr. Brad Petrisor -	Dept of Surgery	Masters PhD				
Dr. Lynda Redwood-Campbell	Dept of Family Medicine	Masters				
Category 2						
Dr. Esther Chin – Assistant Clinical Professor Adjunct	Dept of Ob/Gyn	Masters				
Dr. Caitlin VanDeCappelle – Assistant Professor	Dept of Anesthesia	Masters				
Category 6						
David Oldenburger	Global Health					

1. *This is the budget unit paying the salary: department, school, research centre or institute, or other.*
2. *Indicate the level of supervisory privileges held by each faculty member: e.g., full, master's only, co-supervision only, etc.,*
3. *Either give the field name or a footnote reference to it.*
4. *List faculty members under the categories suggested, as applicable*

<u>Category 1</u>: tenured or tenure-track core faculty members whose graduate involvement is exclusively in the graduate program under review. For this purpose the master's and doctoral streams of a program are considered as a single program. Membership in the graduate program, not the home unit, is the defining issue.

Category 2: non-tenure-track core faculty members whose graduate involvement is exclusively in the graduate program under review.

Category 3: tenured or tenure-track core faculty members who are involved in teaching and/or supervision in other graduate program(s) in addition to being a core member of the graduate program under review.

Category 4: non-tenure track core faculty members who are involved in teaching and/or supervision in other graduate program(s) in addition to being a core member of the graduate program under review.

Category 5: other core faculty: this category may include emeritus professors with supervisory privileges and persons appointed from government laboratories or industry as adjunct professors. Please explain who would fall into this category at your institution.

Category 6: non-core faculty who participate in the teaching of graduate courses.

Table 9. Core Faculty Thesis Supervision History

Completed and Current Numbers of Thesis/Other[1] Supervisions by Faculty Member												
	Completed								**Current**			**Other Major Research Paper (Master's Level)**
Member	**Master's**						**PhD**	**PDF**	**Master's**	**PhD**	**PDF**	
Dr. Esther Chin [2]	0(0)						0(0)	0(0)	1(0)	0(0)	0(0)	1(0)
Mr. David Oldenburger	0(0)						0(0)	0(0)	0(0)	0(0)	0(0)	2
Dr. Brad Petrisor	2											1
Dr. Lynda Redwood-Campbell	4											2
Dr. Caitlin VanDeCappelle	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)					

1. *If desired, columns (or an additional table) may be added to reflect the supervision of major research papers at the master's level. Do not include supervisory committee activity in this table.*
2. *Indicate the current number of students being supervised by the faculty members and, in parentheses, the total number of past students that the faculty member has supervised.*

7. QUALITY & OTHER INDICATORS

7.1 ACADEMIC QUALITY OF THE PROGRAM

Each year, the following will be used to document and demonstrate the quality of the program:

- Scholarly and other productivity measures
    - E.g., student publications in peer-reviewed journals pertaining to Global Surgery, student presentations at academic meetings
- Annual assessment of students and alumni activity in Global Surgery in rural/remote HIC settings, LMICs, or with international organizations and NGOs
    - E.g., clinical, educational, research, capacity building, policy, advocacy
- Time from onset to completion of the Graduate Diploma's four courses
- Grades/averages of students enrolled in the Graduate Diploma's four courses
- Formative student assessments and feedback
- Retention rate of students who enter and complete the program
- Student supports
    - E.g., funding for conferences, scholarly work

The above data will be gathered on an annual basis at the conclusion of each academic year by the part-time administrator for the Graduate Diploma. In addition to the student feedback gathered at the end of each course and collated at the end of each academic year (end of Spring Term) detailed in Section 5.1, the above data will be reviewed during a meeting between the Program Director, Faculty, and the Global Surgery Advisory Group to monitor continuous improvement. This meeting will occur at the conclusion of each academic year (end of Spring Term). Based on this data and the discussions at this meeting, a collective decision will be made between the Program Director, Faculty, and the Global Surgery Advisory Group as to the appropriate actions to take regarding necessary amendments to the program for ongoing improvement. The feedback, minutes from the meeting, and the decisions made regarding action items will be documented in an annual report for the Graduate Diploma in Global Surgery.

7.2 INTELLECTUAL QUALITY OF THE STUDENT EXPERIENCE

Students will be expected to take responsibility for their own learning and interaction with fellow students and faculty on discussion forums. The faculty will provide constructive feedback to the students on a regular basis regarding the quality and frequency of participation in the online discussion forum and the midterm and final assignments as detailed in Section 5.

Students are expected to submit their own original work which is appropriately referenced using high-quality sources. All submitted work may be formally assessed for plagiarism with programs such as "turnitin.com". Any student using artificial intelligence (e.g., ChatGPT) must clearly cite its use. Students are warned to check and appropriately cite original references. Any academic dishonesty will be navigated as per the policies and procedures of McMaster University.

The faculty will all have appropriate academic credentials, Global Surgery experience, and connections which will enhance students' exposure to real-world applications of the curriculum's core content. The

faculty will oversee both the teaching and grading of student work and no teaching assistants will be utilized. Thus, students will receive direct feedback from the faculty.

The program will reflect the unique and diverse needs of the students who may be at various career stages and located globally. This will be facilitated through online and asynchronous course delivery which permits access to course content provided the student has internet connectivity.

To ensure ongoing improvement for the student experience, program data pertaining to student feedback and the academic quality of the program will be reviewed during an annual meeting between the Program Director, Faculty, and the Global Surgery Advisory Group at the conclusion of each academic year (end of Spring Term), as detailed in Sections 5.1 and 7.1

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McMaster University

NEW PROPOSAL
Non-Academic Microcredentials in Health Technology Assessment

May 17, 2024

TABLE OF CONTENTS

1 GENERAL INFORMATION

Name of (Proposed) Program:	Non-Academic Microcredentials in Health Technology Assessment
Department(s):	Department of Health Research Methods, Evidence, and Impact
Faculty:	Health Sciences
Proposed Start Date:	September 2025

Contact Information (1)		**Contact Information (2)**	
Name:	Feng Xie	Name:	Brittany Humphries
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2 COVER LETTER

The Health Technology Assessment (HTA) graduate program was one of flagship programs in the Department of Health Research Methods, Evidence, and Impact (HEI). As you may be aware, our HTA program has been facing certain challenges in recent years, due in part to faculty retirements and limitations in funding support. However, rather than viewing these challenges as setbacks, we see them as a unique chance to revitalize and strengthen the program by attracting young, talented researchers and redeveloping our research and education portfolio to bring it back to the international stage.

The Non-Academic Microcredentials in HTA will leverage the Department's success in the field by inviting faculty members who have relevant methodological expertises to be involved in the development and delivery of a series of non-academic microcredentials. This will ensure that the content from each microcredential meets the rigourous academic standards that the Departments is known for, and that learners have an opportunity to engage with experts in the field. Beyond academic knowledge, a key objective of these microcredentials is to facilitate the development of applied skills. To this end, individuals with professional experience conducting HTA in a real world setting will be consulted during the development and delivery of the microcredentials. This will ensure that the content and assignments are tailored to the needs of our target learners - who are seeking to develop practical skills and the mindset required to conduct HTA. The combination of our faculty's expertise with the perspective and experiences of government and the consulting industry will be invaluable assets as we seek to overcome the current constraints and shape a vibrant and cutting-edging HTA program.

3 BACKGROUND

3.1 DESCRIPTION

HTA is a multidisciplinary field of research that systematically collects, evaluates, and synthesizes data on the clinical, economic, social and ethical aspects surrounding the use of a health technology (e.g., drugs, device, diagnostic). The overall goal of HTA is to provide evidence-based information to determine the value of a technology at different points in its life cycle and inform clinical practice and reimbursement and coverage policy decisions.

As healthcare budgets are increasingly strained, HTA is playing a greater role in healthcare resource allocation decisions around the world. Examples include:

- Public HTA agencies have been established in Canada (Canadian Agency for Drugs and Technologies in Health [provinces excluding Quebec], Institut national d'excellence en santé et services sociaux [Quebec]) and abroad (National Institute for Health and Care Excellence [UK], Pharmaceutical Benefits Advisory Committee [Australia], Health Intervention and Technology Assessment Program [Thailand]) to provide reimbursement recommendations for new health technologies
- Private, nonprofit, organizations (Institute for Clinical and Economic Review [US]) are similarly performing HTA to determine value for money
- Public (pan-Canadian Pharmaceutical Alliance), private (Telus Health, Blue Cross), and hospital drug plans are using HTA to inform pricing negotiations
- International HTA networks (European Network for Health Technology Assessment [EUnetHTA,] BeNeLuxA Initiative on Pharmaceutical Policy, Valletta Declaration Group, FINOSE initiative for joint HTA in Nordic countries, International Network of Agencies for Health Technology Assessment [INAHTA]) are being established to promote joint HTA and drug pricing
- Pharmaceutical companies and consulting firms are engaged in evidence generation to support HTA

Although the authority and responsibility given to HTA agencies varies from country to country, HTA is growing across health systems as different stakeholders move towards evidence-based decision-making and seek to maximize value for money given resource constraints. This has resulted in a growing demand for HTA skills among working professionals globally.[1]

There are individual HTA graduate courses[2-4] as well as Masters and Doctorate programs available across Canada,[5, 6] including an HTA specialization in the Health Research Methodology graduate program at McMaster University.[7] However, many working professionals today may not need the depth or breadth of knowledge that these types of graduate programs provide. They also may not have the time or financial resources to attend full or part time graduate training. Therefore, we are proposing a

series of six Non-Academic Microcredentials in HTA to address the need for a more applied and accessible form of education among working professionals.

Compared to traditional graduate programs, microcredentials are specific to a particular topic, require less resources than a full degree, and can be completed over a shorter time frame. The microcredentials are intended to be self-paced, offering learners flexibility in terms of time, place, and learning speed. The online format offers further convenience for learners that may be restricted by geographic location. This opens new education opportunities for organizations that need to upskill their workforce as well as job-seekers, or working professionals in need of flexible learning opportunities to change or further their careers.

The HTA microcredentials are designed to attract individuals from diverse backgrounds who are interested in gaining foundational knowledge of HTA methods and their application to real-world decision-making. The target audience includes:

- Working professionals who want to advance their career (e.g., physicians and allied health professionals, pharmacy and health benefit program managers, health policy and program administrators, researchers and staff in the pharmaceutical, diagnostics, and medical device industries, professionals working in Ministries of Health and other government departments responsible for healthcare decision-making)
- Organizations who need specialized HTA training for their employees (e.g., patient groups, government agencies, consultancies, pharmaceutical companies, hospitals and other healthcare providers, health insurance providers etc.)

The microcredentials will be based on key HTA concepts and methodologies. This includes four introductory level microcredentials on core HTA methodologies (1. *Fundamentals of Health Technology Assessment*; 2. *Introduction to Evidence Synthesis for HTA*; 3. *Introduction to Patient-Reported Outcomes for HTA*; and 4. *Introduction to Health Economic Evaluations*) and two intermediate/advanced level microcredentials (5. *Advanced Evidence Synthesis for HTA*; and 6. *Advanced Economic Modeling for HTA*). Learners would be able to sign up for individual microcredentials, which would be completed online over 6 weeks. Upon successful completion of a microcredential, learners will receive a non-academic microcredential in recognition of their competency in one of the four core HTA methodologies.

While the offerings are structured in such a way that each microcredential may be taken individually, introductory and intermediate/advanced microcredentials could also be taken sequentially and result in a cumulative learning experience. *Fundamentals of Health Technology Assessment* will provide learners with an introduction to key concepts and the practice of HTA as well as current applications and controversies surrounding its use to inform health policy and decision-making. *Introduction to Evidence Synthesis for HTA* will introduce learners to the widespread and growing application of evidence synthesis methods in HTA. As part of this course, learners will explore the steps involved in identifying, synthesizing, and critically appraising different types of evidence (e.g., clinical, cost, patient-reported outcomes) according to the latest methodological and reporting guidelines, such as Cochrane[8] and the Preferred

Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).[9] Case studies from recent HTAs will be used to highlight common approaches and pitfalls. *Introduction to Patient-Reported Outcomes for HTA* will introduce learners to outcomes measures from the patient perspective that quantify the impact of health technologies. This microcredential is designed to familiarize learners with the range and scope of what measures are used for, how they are developed and evaluated, and how they can be incorporated into HTA. *Introduction to Health Economic Evaluations*, provides an opportunity for learners to learn about the process of conducting economic evaluations. This includes an introduction to basic concepts and methodologies of economic evaluations as well as an exposure to simple health economic modeling. Published guidance, including the ISPOR Consolidated Health Economic Evaluation Reporting Standards (CHEERS) reporting standards for economic models will be presented and discussed.[10, 11] *Advanced Evidence Synthesis for HTA* covers advanced methods of evidence synthesis used for HTA. It is designed to provide learners with in-depth and hands-on experience designing, analysing, and interpreting the results from a range of evidence synthesis methods (e.g., meta-analysis, network meta-analysis, population-adjusted indirect treatment comparison, matching adjusted indirect comparisons, simulated treatment comparisons). Case studies from recent HTAs will be used to highlight common approaches and pitfalls. *Advanced Economic Modeling for HTA* is a microcredential in health economic modeling methods that teaches learners the essential skills for developing a model for HTA. The microcredential covers different methods for modeling techniques, analyses of uncertainty, and validation of health economic models. There is a heavy emphasis on hands-on learning-by-doing with real world practical examples. For a fulsome description of each course, please refer to Section 5.2.

The non-academic microcredentials will be housed within the Continuing Professional Development (CPD) office in the Faculty of Health Sciences. It should be noted that the non-academic microcredentials are not part of any academic undergraduate or graduate program offered by the Department. Rather, they are designed to introduce a different audience (i.e., working professionals) to the concepts, methods and critical issues in the design and conduct of HTA from an applied learning perspective. Skills gained through completion of each microcredential will allow learners to understand key HTA concepts and methodology and to think critically of its application in informing policy and resource allocation decisions.

3.2 PROPOSAL PREPARATION AND CONSULTATION PROCESS

The proposal was developed by Feng Xie, PhD and Brittany Humphries, PhD. As part of the development process, extensive consultations were held with stakeholders across McMaster University. Several of the individuals consulted have experience either developing online education programs or working on HTA in an industry setting. The intent of this consultation was to conceptualize an online HTA learning experience that can address unmet learning needs using an innovative, financially sustainable, education model. The individuals consulted include:

HEI Department stakeholders:

- Alfonso Iorio, Chair, Department of Health Research Methods, Evidence and Impact

- Nick Dery, Director of Administration, Department of Health Research Methods, Evidence and Impact
- Mitchell Levine, Assistant Dean, Graduate Program in Health Research Methdology, Faculty of Health Sciences; Professor, Department of Health Research Methods, Evidence and Impact
- Romina Brignardello-Petersen, Associate Professor, Associate Chair, Education, Department of Health Research Methdology, Evidence, and Impact
- Lehana Thabane, Professor, Department of Health Research Methods, Evidence and Impact
- Jean-Eric Tarride, Chair of Heath Technology Management; Director, Centre for Health Economics and Policy Analysis; Associate Professor, Department of Health Research Methods, Evidence and Impact
- Lawrence Mbuagbaw, Associate Professor, Department of Health Research Methdology, Evidence, and Impact; Director, Biostatistics Unit, St Joseph's Healthcare - Hamilton
- Robby Nieuwlaat, Director, Graduate Diploma in Clinical Epidemiology; Associate Professor, Department of Health Research Methdology, Evidence, and Impact
- Gabriella Watson, Program Manager, Graduate Diploma in Clinical Epidemiology
- Emma Apatu, Director, Master of Public Health Program; Associate Professor, Department of Health Research Methods, Evidence, and Impact; Member, Centre for Health Economics and Policy Analysis
- Michael Zoratti, Assistant Professor (Part-Time), Department of Health Research Methods, Evidence, and Impact; Director, RainCity Analytics; Graduate of the Health Research Methodology program

Stakeholders outside of the HEI Department:

- Steve Hanna, Vice-Dean, Faculty of Health Sciences; Associate Dean of Graduate Studies, Health Sciences
- Rebecca Misiak, Program Administrator, Office of Vice Provost, Teaching and Learning
- Katrina Espanol-Miller, Educational Developer, Paul R. MacPherson Institute for Leadership, Innovation and Excellence in Teaching
- Lorraine Carter, Director, Centre for Continuing Education
- Florent Lefevre-Schlick, Program Manager, Certificates of Completion & Industrial Training Programs, Faculty of Engineering
- Teresa Chan, Associate Dean, Continuing Professional Development (Previous)

3.3 CONSISTENCY WITH MCMASTER'S MISSION AND ACADEMIC PLAN

i. **McMaster's Strategic Mandate Agreement:**

These microcrentials support McMaster University's commitment to **Skills & Job Outcomes**.[12] Microcredentials are a powerful tool to facilitate movement of higher education graduates into the workforce. Because they are designed to offer rapid, career-relevant skills training, they can improve student recruitment and graduate employability. In a survey of 5,000 students and employers across 11 countries (Australia, Egypt, France, Germany, India, Mexico, Saudi Arabia, Turkey, the United Arab Emirates, the United Kingdom, and the United States), 90% of respondents either agreed or strongly agreed that earning a professional certificate will help them stand out to employers and secure jobs when they graduate – while 86% agreed that a micro-credential would help them succeed in their job.[13] This sentiment was confirmed by employers, among which 88% agreed or strongly agreed that a professional certificate strengthens a candidate's application.[13]

With regard to HTA, the need for health economics and outcomes research has expanded globally, fueling demand for professionals trained in the discipline. As part of the design of this microcredential program, we spoke with recent graduates and industry stakeholders to better understand their learning needs and ensure positive employment outcomes. We also reviewed the competencies framework developed by the International Society for Pharmacoeconomics and Outcomes Research (ISPOR),[14] the leading professional society in the field of HTA. The objective was to ensure that the microcredentials provide learners with the in-demand, specialized skills they need to secure a stable and high-paying job in this rapidly growing field. There are a broad range of HTA-related jobs (e.g., in research, marketing, policy, management) available for graduates among non-profits, consultancies, and pharmaceutical companies.[15] The salary for these jobs is often significantly higher than the Canadian average (mean of $54,000 in 2021).[16] For example, a July 2023 posting for a Policy and Program Analyst position at CADTH, a Canadian HTA agency, offered a salary range of $97,000 to $127,000 per year.[17]

ii. **McMaster's current priorities:**

The HTA microcredentials align with several of the current institutional priorities.

Inclusive excellence: HTA has been described as "everyone's business"[18] – from the health economist, to the policy maker, research scientist, pharmacy benefit manager, and practicing healthcare professional. The evolving knowledge requirements of this field, plus career advancement, draw people back to the classroom on an ongoing basis throughout their life. However, many individuals are unable to pursue in-person or full-time education due to competing work and family commitments, as well as geographic location.[19] Microcredentials support increased access to post-secondary education and life-long learning by providing an additional option for learners at any stage of their education and career journey to gain skills that meet their education and employment goals.

Teaching and learning: At the core of the traditional higher education system is a degree. However, during the COVID pandemic, there was an increase in alternative learning models and digital offerings. A new category of education, called micro-credentials, gained widespread acceptance among employers, policymakers, and the

workforce.[20] A variety of edtech firms (e.g., Coursera, Udacity, Skillshare)[21-23] began offering these smaller, stackable, learning units – and higher education institutions in Canada followed suit. A 2021 survey conducted by the Colleges & Institutes Canada (CICan) found that 45% of Canadian colleges and institutes are currently offering microcredentials via a mix of online and in-person delivery, and another 33% are planning to do so in the future.[24]

The proposed non-academic microcredentials in HTA will leverage this innovative education model to provide more individuals with the opportunity to learn from world-class faculty at McMaster University, whose research helps inform health policy and practice locally, nationally and internationally. Graduate students enrolled in the Department of HEI already have a unique profile. Compared to the Faculty of Health Sciences, HEI has the highest number of international students (15.1%, 51 out of 337 enrolled in 2022), the most students enrolled in graduate certifications or diplomas (20.8%, 70 out of 337 enrolled in 2022), and a high percentage of part-time students (39.5%, 133 out of 337 enrolled in 2022).[25] This makes the Department well positioned to respond to the evolving learning needs of non-traditional learners through the development of innovative teaching models.

Research and scholarship: The Faculty of Health Sciences is considered to be the birthplace of 'Evidence-Based Medicine' and an internationally renowned academic institution in health economics and HTA,[26-28] With the development of these non-academic microcredentials, the Department will attract of a new type of learner (i.e., the working professional) from a diverse array of health- and management-related backgrounds. It is anticipated that this will create opportunities for faculty to establish new research collaborations and obtain funding outside of McMaster University. This will serve to bolster our reputation in the field of HTA as well as strengthen our position as Canada's leading university for industry-sponsored research.[12]

Engaging local, national, Indigenous, and global communities: Microcredientials are part of an ongoing effort to expand the postsecondary education market. Delivered in an exclusively online format to both domestic and international leaners, the microcredientials will increase McMaster University's presence in HTA locally, nationally, and internationally.

3.4 LEARNING OUTCOMES

The overarching aim of the non-academic microcredentials in HTA is to increase learners' understanding of and ability to conduct HTA. It is believed that learners will come from a variety of professions and disciplines; and therefore need a comprehensive education regarding the concept of HTA itself and the methodology of different components (e.g., evidence synthesis, patient-reported outcomes, economic evaluation). The learning scaffolding that underpins these microcedentials follows a sequential growth model where the learners acquire an understanding of the basic concept of HTA in the introductory microcredentials (*Fundamentals of Health Technology Assessment, Introduction to Evidence Synthesis for HTA, Introduction to Patient-Reported Outcomes for HTA,* and *Introduction to Health Economic Evaluations*) and progressively move towards developing intermediate to advanced knowledge and skill development in core methodologies (*Advanced Evidence Synthesis for HTA* and

Advanced Economic Modeling for HTA).

Particular attention was paid to the ISPOR Health Economics and Outcomes Research Competencies Framework[14] and other surveys of health professionals' training needs when developing the learning outcomes for the microcredentials. Beyond the addressing multidisciplinary nature of HTA, industry statekholders have communicated that there is difficulty in connecting theory with practice.[1] As result, each microcredential develops applied capabilities for a specific element of HTA (with the exception of *Fundamentals of Health Technology Assessment,* which introduces the foundational concepts of HTA). Upon completion of a microcredential, learners will be able to not only describe the methodology of a key component of HTA (e.g., systematic literature review, patient-reported outcomes, economic evaluation) but also demonstrate the practical skills and mindset that are required to conduct HTA in that area.

3.5 CONSISTENCY WITH DEGREE LEVEL EXPECTATIONS

Depth and Breadth of Knowledge: Upon completion of a non-academic microcredential, learners will be able to demonstrate a systematic understanding of a key HTA methodology (i.e., evidence synthesis, patient reported outcomes, or health economics). This includes knowing the requirements and basic technical knowledge to produce the evidence required for HTA as well as the ability to critically appraise its application in informing policy and resource allocation decisions.

Research and Scholarship: Non-academic microcredentials do not require students to complete a research internship, scholarly paper, or thesis. Therefore, this does not apply.

Application of Knowledge: Throughout each microcredential, learners will be expected to apply knowledge from course content through a variety of means. This can include discussion with peers in online discussion forums, quizzes, and exercises. Individuals enrolled in a microcredential will gain experience applying their learnings in real-world contexts by engaging with HTA case studies and published guidelines.

Communication Skills: Communication is central to the conduct of HTA. Microcredential content will reflect the centrality of interdisciplinary communication. Learners will be offered opportunities to practice and improve their communication skills through discussions and exercises.

Awareness of Limits of Knowledge: Learners enrolled in an HTA microcredential will gain an understanding of the current applications and challenges in using evidence-based information to inform policy and resource allocation decisions. As experts in the field, faculty will expose learners to the latest methods, guidelines, and challenges, thereby giving learners a sense of the rapidly evolving knowledge base in HTA. Learners will be encouraged to think critically in their own work and to pursue the latest research available on such topics as the field of HTA grows.

Autonomy and Professional Capacity: These non-academic microcredentials are intended to provide working professionals with the core skills that are needed to conduct

HTA. Learners will engage with various methodologies in HTA and how to apply them in real-life decision-making contexts. The competencies that will be developed in learners of the program are desirable in candidates for current and future health research and management-related positions, as the goal of achieveing ‘value for money’ in healthcare resource allocation increases in urgency among health systems around the globe.

3.6 DEMAND

I. EVIDENCE OF SOCIETAL/LABOUR MARKET NEED

Many businesses in Canada have been affected by a skills gap, which is a disparity between the number of jobs available and workers with the right skills to fill them. According to the Statistics Canada Survey of Employers on Workers’ Skills, more than half (56.1%) of Canadian businesses reported in 2021 that their overall workforce was not fully proficient to perform their job at the required level.[29]

Efforts are being made to address the skills gap. Nearly three-quarters (71.0%) of Canadian businesses report that they have provided training to their employees,[29] indicating a willingness to invest in professional development opportunities. The Ontario Government has provided further support through the Micro-credentials Challenge Fund (worth $15 million),[30] the launch of the eCampusOntario Micro-credential Toolkit[31] and the expansion of the Ontario Student Assistance Program (OSAP) to include over 600 microcredential programs.[30] Unlike diplomas, the intention of these newly available loans and grants for microcredentials is to support rapid training opportunities for in-demand skills that employers need.[30]

As healthcare resources in Canada are increasingly strained, there is a growing demand to develop specialist skills in HTA[32] - which points to the value of continuing professional education.[14] In Alberta, Athabasca Univeristy received $330,000 in funding to develop a new health economics micro-credential (no indication of being of open for enrollment as of August 2023).[18] Ontario does not have a similar program and, as of July 6, 2023, there were 1,386 unfilled health economics jobs in the province.[33] Note that health economics is just one of the core competencies required to conduct HTA.

The HTA skills gap is not restricted to Canada. The World Health Organization 2015 Global Survey on Health Technology Assessment found that the main barrier to HTA development in healthcare decision-making in almost all 194 countries included in the survey was a lack of qualified human resources.[34] Fewer than half of responding countries had academic or training programmes to build HTA capacity.[34] Additional needs assessments conducted in the European Union,[35] the Eastern Mediterranean region,[36] Zambia,[37] Ghana,[32] India,[38] and Ukraine[39] confirmed post-graduate training needs in core HTA competencies (e.g., health economics and outcomes research).

II. EVIDENCE OF STUDENT DEMAND

Before the COVID pandemic, faculty from HEI hosted an annual three day HTA workshop. On average, there were between 20-30 participants each year. Attendees were from academic, public, and private sectors, highlighting the interest among

working professionals to receive additional HTA training without taking time out of their career to obtain a graduate degree or diploma. This sentiment was confirmed in conversations with industry stakeholders, who indicated that there is a high need for job-specific training in HTA.

Because the HTA workshop was conducted in-person, attendees were primarily from the Greater Toronto Area. However, more individuals globally are requiring foundational training as new HTA agencies and regulations are established. The University of Sheffield offers a four week online introductory HTA course offered through the EdTech firm Future Learn.[40] As of August 2023, they report a total of 13,379 learners enrolled in the course. Thus, there is clearly demand for HTA training outside of the graduate space currently offered by McMaster University. Note: the HTA courses on Future Learn offer broad introductions to HTA (with no specific focus on key methodologies, such as patient reported outcomes).

With regard to McMaster University, Dr. Feng Xie, a Professor in the HEI Department, supervises or mentors 10 international students at any given time. He receives additional requests each year from potential students in China, Nigeria, Iran, Ethiopia, Pakistan, and elsewhere as many countries have limited opportunities to offer HTA courses.[39] Again, this indicates a clear demand for HTA training that McMaster University is unable to fulfill. The non-academic microcredentials in HTA may appeal to these prospective international students due to its online, mostly asynchronous, format. In addition to student supervision, Dr. Xie frequently travels internationally to provide HTA training. A one-hour online lecture in 2021 had over 500 registered attendees. This indicates an openness to online learning experiences offered by McMaster University faculty.

III. JUSTIFIABLE DUPLICATION

As part of the consultation process, we consulted with leaders in HEI to ensure that the proposed microcredentials complement current offerings. The Department offers an HTA specialization to graduate students but there are fundamental differences with the non-academic microcredentials in HTA. The HTA specialization is part of an advanced degree. As such, it provides students with in-person, in-depth learning experiences, and the option of a thesis to prepare them to become independent researchers. In contrast, the microcredentials are an exclusively online learning experience designed for working professionals. No credit hours will be provided. The microcredentials will provide learners with a comprehensive, understanding of the methodologies required to conduct HTA as well as guidance for applying them in a real-world setting.

While there is some overlap in the topics covered (i.e., evidence review or economic evaluations), the objectives, content, and assessments of the microcredentials will be fundamentally different from current academic offerings to suit the needs of our target learners - who are seeking applied, rather than technical or theoretical, knowledge. Industry statekholders have communicated that there is a difficulty in connecting theory with practice.[1] Working professionals may not necessarily need the technical skills to independently program an entire economic model but they do need knowledge of health economic concepts, practical experience working with models (e.g., opening models, changing inputs, running analyses), and an understanding of their strategic application

in HTA. This will be reflected in both the learning outcomes and assessments of each microcredential.

Beyond content, an important difference between the HTA microcredentials and graduate courses currently offered by HEI, is the delivery. Unlike the graduate courses, the HTA microcrendentials will be offered exclusively online. As a result, the microcredentials will reach a new set of learners that would otherwise not be enrolled in graduate training at McMaster University.

3.7 DEGREE NOMENCLATURE

Non-Academic Microcredentials in Health Technology Assessment is the appropriate title for these offerings.

Microcredentials are short and flexible online programs that offer skills that align with labour market needs.[41] As a non-academic offering, there are no specific admission or rigourous program requirements (i.e., to ensure consistency with undergraduate or graduate degree level expectations at McMaster University). Nor are there credit hours that may be used towards a degree. This is because many individuals, particularly working professionals, may not have the time, interest, or resources to enroll a in traditional academic program. For example, an individual working within the pharmaceutical industry may choose to pursue a microcredential to further specialize in a particular area of interest (e.g., health economics) and advance their career.

The practice of HTA is reflected in the microcredential content, allowing learners and employers to easily understand the general focus of the program. Each microcredential will cover a different topic (e.g., evidence synthesis or patient reported outcomes) as it is relates to the practice of HTA. By having this concept woven into the content of each microcredential, learners will be encouraged to approach each topic from a specific, applied, learning perspective. The name of each microcredential reflects the level of mastery of each topic (i.e., Inductory or Advanced).

4 ADMISSION & ENROLMENT

4.1 ADMISSION REQUIREMENTS

In line with McMaster University's *Certificates, Diplomas & Microcredentials Policy* (2023),[42] there are no admission requirements for the non-academic microcredentials in HTA.

However, to ensure that learners are successful in their online microcredentials, it will be recommended that they:

- Are proficient in the English language
- Have an undergraduate or equivalent, with a basic course in statistics or research design recommended
- Have knowledge and skills with general computer applications, such as videoconfering (Zoom) and Microsoft Office (Word, Excel, PowerPoint)

For the advanced microcredentials, there will be an added disclaimer that the microcredential is designed for those with some experience with evidence synthesis or health economics (depending on the option selected by the learner). Note: this is standard practice for short courses on advanced topics in this area, which do not have formal admission requirements.[43]

4.2 ENROLMENT PLANNING AND ALLOCATIONS

To maintain feasibility, we will take a staggered approach to launching the microcredentials. In the first year (2025-26), we plan to offer two microcredentials, with an anticipated enrollment of 5 learners per microcredential. Each subsequent year, we will launch two new microcredentials and increase enrollement. In the second year, we anticipate achieveing a state of six courses with ≈ 10 learners each. To maximize flexibility, each microcredential will be offered multiple times per year (with two iterations to start).

Academic Year	Number of microcredentials offered	Number of learners per microcredential	Number of iterations per year	Total Enrolment
2025-26	2	5	2	20
2026-27	4	10	2	80
2027-28	6	10	2	120

4.3 ALTERNATIVE REQUIREMENTS

No alternative requirements for admission into a non-academic microcredential in HTA exist.

5 STRUCTURE

5.1 ADMINISTRATIVE, GOVERNANCE AND COMMUNICATION

The administrative home of the non-academic microcredentials in HTA will be CPD. The microcredentials will be managed by a 0.2 FTE/Year 1 and 0.4 FTE/subsequent years Director (Dr Brittany Humphries) with oversight by Dr Feng Xie, a Professor in the HEI Department. The Director will report to Dr Feng Xie. We will consult with the Department Chair and Assistant Dean, Health Research Methodology Program.

The Director will be responsible for:

- Oversight of the delivery and coordination of microcredentials, scheduling of instructors, instructional recruitment, evaluation, and instructional support
- Leading instruction of the microcredentials;
- Leading recruitment activities, managing learner experience, curriculum planning and implementation
- Meeting the reporting requirements outlined in the Microcredentials Policy
- Enforcememnt of microcredential requirements and regulations

- Leading and/or contributing to strategy and ongoing quality improvement of the program to meet the evolving needs of the HTA community and learners

Eventually, the non-academic microcredentials in HTA may be supported by a Coordinator who will support administrative tasks. They would serve as the main administrative contact for admissions, calendar changes, and coordination of other activities.

5.2 STRUCTURE AND REGULATION

Each microcredential will be a stand-alone offering. After successful completion of a microcredential, learners will receive a non-academic microcredential in the topic they have selected.

Microcredentials and descriptions

Fundamentals of Health Technology Assessment
Health technology assessment (HTA) is a dynamic and rapidly evolving process that embraces different types of evidence to assess the clinical, economic, social, and ethical impact of a health technology (e.g,. drug, device, or other intervention). Historically, HTA agencies produced reports to inform policy or clinical decision-making. However, increasingly diverse organizations are undertaking HTAs to inform different types of decisions, such as listing a drug on a formulary, determining the coverage offered by an insurance plan, or issuing guidance statements on the use of a technology in a particular healthcare system. This microcredential will provide learners with an introduction to the principles of HTA as well as its current applications and controversies. Using real-world examples and guidelines, learners will explore about the basic methodologies involved in conducting HTA and how it is used by different actors to inform different types of decisions.

Introduction to Evidence Synthesis for HTA
This microcredential will introduce learners to the widespread and growing application of evidence synthesis methods in HTA. As part of this microcredential, learners will learn the steps involved in identifying, synthesizing, and critically appraising different types of evidence (e.g., clinical, cost, patient-reported outcomes) according to the latest methodological and reporting guidelines, such as Cochrane[8] and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).[9] Case studies from recent HTAs will be used to highlight common approaches and pitfalls.

Introduction to Patient-Reported Outcomes in HTA
Patient-reported outcome (PRO) measures are used to quantify the impact of a disease or intervention from the patient perspective. This microcredential is designed to familiarize learners with the range of what PRO measures are available, what they are used for, how they are developed and evaluated, and how they can be incorporated into HTA. Learners will gain first hand experience selecting an appropriate PRO, analyzing outcome data, and interpreting its significance for HTA decision-makers. Case studies from recent HTAs will be used to highlight common approaches and pitfalls.

Introduction to Health Economic Evaluations

This microcredential will provide learners with an introduction to basic concepts and methodologies of economic evaluations. Learners will explore the different types of economic evaluation available (e.g., cost-minimization, cost-effectiveness, cost-utility, cost-benefit, and budget impact analysis) and their application in HTA. As part of the microcredential, learners will gain experience building a simple health economic model. HTA requirements and published guidance statements, including the ISPOR Consolidated Health Economic Evaluation Reporting Standards (CHEERS) reporting standards for economic models, will be presented and discussed.[10, 11]

Advanced Evidence Synthesis for HTA
This microcredential covers intermediate to advanced methods of evidence synthesis and their application to HTA. It is designed to provide learners with in-depth and hands-on experience designing, analysing, and interpreting the results from a range of advanced evidence synthesis methods (e.g., meta-analysis, network meta-analysis, population-adjusted indirect treatment comparison, matching adjusted indirect comparisons, simulated treatment comparisons). Case studies from recent HTAs will be used to highlight common approaches and pitfalls.

Advanced Economic Modeling for HTA
This is an intermediate to advanced microcredential in health economic modeling methods that teaches learners the essential skills for developing a model for HTA. The microcredential covers different methods for modeling techniques (e.g., decision tree, Markov model), analyses of uncertainty, and validation of health economic models. There is a heavy emphasis on hands-on learning-by-doing with real world practical examples. Prior knowledge of Excel is essential.

Enrollment policy
Microcredentials will operate separately from the Health Research Methodology program's courses. The intention of the non-academic microcredentials in HTA is not to duplicate the educational experience of the Health Research Methodology graduate program. Instead, the microcredentials are projected to appeal to working professionals who may work in various fields related to HTA and who are interested in upskilling by undertaking a learning experience that provides more flexibility than what is currently offered by the HEI Department. Tuition will be charged per microcredential and will be comparable with other asynchronous microcredentials offered by McMaster (i.e., Engineering).

Learners enrolled in a microcredential will not be given priority for admissions considerations to graduate programs at McMaster University, although this may strengthen their application. Interested applicants will be encouraged to consult each program's admissions requirements.

5.3 MICROCREDENTIAL LENGTH

The microcredentials are designed to be completed at a self-paced for learners over the course of 6 weeks. This ensures that the program meets the Ontario Ministry of Colleges and Universities' requirements for microcredentials (which must be shorther than 12 weeks in duration).[44]

6 CURRICULUM AND TEACHING

6.1 MICROCREDENTIAL CONTENT

The needs of industry stakeholders were central to informing the content of the microcredentials. Many working professionals (e.g., physicians and allied health professionals, pharmacy and health benefit program managers, health policy and program administrators, research and staff in the pharmaceutical, diagnostics, and medical device industries) are finding themselves in positions where knowledge of HTA is required but they are without any formal training. As such, the non-academic microcredentials in HTA are designed around the idea that people from diverse backgrounds deserve an educational experience that will teach them about the fundamentals of HTA through an applied learning lens. The microcredentials will be delivered by faculty and professionals in the field. Content of the non-academic microcredentials in HTA will be on general methodological concepts as well as their application in real-world settings as demonstrated by published guidelines and case studies. Exercises will be created to facilitate the development of practical skills.

6.2 INNOVATION

One of the innovative aspects of this proposal is how the microcredentials are structured. HEI recently launched two online graduate Diplomas in Clinical Epidemiology and Community and Public Health. As part of the consultation process, we spoke with individuals who had experience in either setting up or running these programs. Although both the Clinical Epidemiology and Community and Public Health programs are graduate diplomas, it was suggested that to instead consider microcredentials. One benefit of microcredentials is the flexibility. Learners can sign up for a single course, meaning they (or their employers) do not have to commit the time and money to complete a Diploma up front.

A market scan was conducted to see if there are similar diplomas, certificates, or microcredential programs in HTA or relevant disciplines. While there are a small handful of programs offering a combination online postgraduate certificates and/or diplomas, none of them provide the same flexibility as the proposed non-academic microcredentials in HTA. For example, a student interested in learning about health economic modelling must enrolled in either a Certificate (duration of ≈ 1 year) or Diploma (duration of ≈ 2 years) program. The only one-off online courses available are 4-week introductory HTA courses offered by the the universities of Glasgow and Sheffield or general health research courses offered by the University of Aberdeen. These do not provide the type of specialized, applied, training that working professionals involved in HTA need (e.g., in patient-reported outcomes and other core methodologies).

There is also innovation with regard to the content of the microcredentials. A 2022 study investigating existing HTA training initiatives around the world found a limited number of HTA training programs targeting healthcare professionals.[45] Unlike current offerings, the non-academic microcredentials in HTA are specifically designed to develop the core compentencies required for working professionals to conduct HTA – which includes an evidence synthesis component, patient-reported outcome data, and health economic evaluation. The content leverage the various strengths of McMaster University's HEI

Department. Not only are faculty recognized as world leaders in HTA, they have experience hosting an annual three day HTA workshop with attendees from academic, public, and private sectors (i.e., working professionals who want to receive additional HTA training without taking time out of their career to obtain a graduate degree). The non-academic microcredentials in HTA intend to incorporate the same hands-ons learning experience from the workshop and Health Research Methodology program. The planning and evaluation of the non-academic microcredentials will also be informed by the various professionals in the field who can provide a unique learning experience for learners through the practical application of course content in real-world settings.

Market Scan of Diplomas or Certificates in HTA

Institution	Name	Content	Duration	Delivery	Link
University of Glasgow	Postgraduate HTA Certificate	Courses: • HTA: Policy and Principles • Statistical Methods for Health Technology Assessment and Evidence Based Medicine • Health Economics for HTA • Real-World Data in Health Care Decision-Making • Health Technology Assessment in a Global Context • Survival Analysis for Health Technology Assessment • Evidence Synthesis • Maximising the Value of Clinical Trial Data: Analysis for Economic Evaluation and Modelling • Decision Analytic Modelling and Early Health Technology Assessment • Choice Experiments for Health Economics, HTA, and One Health • Qualitative Research Methods for Public Health	1 year (3 courses)	Online	https://www.gla.ac.uk/postgraduate/taught/healthtechnology assessment/
	Postgraduate HTA Diploma		2 years (6 courses)	Online	
	Digital Certificate	Course: • Introduction to Health Technology Assessment	4 weeks (1 course)	Online	https://www.classce

Institution	Name	Content	Duration	Delivery	Link
University of Sheffield	Postgraduate Certificate International Health Technology Assessment and Reimbursement	Courses: • Methods and Processes in International Health Technology Assessment • Systematic Reviews and Evidence Synthesis: Principles • International Healthcare Systems and Reimbursement • Cost-effectiveness Modelling in Health Technology Assessment • Economic Evaluation in International Health Technology Assessment • International Health Technology Assessment and Reimbursement Real World Case Studies • Randomised Controlled Trials to Support Reimbursement Decision Making • Using Evidence in the Design and Development of Models • Building Cost-effectiveness Models for Health Technology Assessment • Utility and Patient-reported Outcomes Data in Health Technology Assessment	1-2 years (4 courses)	Online	https://www.sheffield.ac.uk/postgraduate/taught/courses/2023/international-health-technology-assessment-and-reimbursement-online-msc-pg-certificate-pg#modules
	Postgraduate Diploma International Health Technology Assessment and Reimbursement		2-4 years (8 courses)	Online	
	Digital Certificate	Course: • Health Technology Assessment: Choosing Which Treatments Get Funded	4 weeks (1 course)	Online	https://www.futurelearn.com/courses/hta

Institution	Name	Content	Duration	Delivery	Link
University of York	Postgraduate Certificate Health Economics for Health Care Professionals	Courses: • Basic Economic Concepts • Health Economics: Concepts and Analysis • Introduction to Health Care Evaluation • The Economics of Health Care Systems • Statistics for Health Economics • Advanced Topics in Economic Evaluation	1 – 2 years (3 courses)	Online	https://www.york.ac.uk/study/postgraduate-taught/courses/pgce
	Postgraduate Diploma Health Economics for Health Care Professionals		1 – 2 years (6 courses)	Online	https://www.york.ac.uk/study/postgraduate-taught/courses-2023/pgdip-health-
University of Aberdeen	Health Economics for Health Professionals Postgraduate Certificate	Courses: • Introduction to Economics and Health Economics • Economic Evaluation Principles and Frameworks • Economic Evaluation – Application and Policy • Economics of Health Behaviour • Health Care Systems and Policy • Health Informatics • Qualitative Health Research • Evidence-Based Health • Designing Real-World Trials • Fundamentals of Research Design • Applied Statistics	9 months (4 courses)	Online	https://on.abdn.ac.uk/degrees/health-economics-for-health-professionals/#how
	Health Economics for Health Professionals Postgraduate Diploma		18 months (8 courses)	Online	

Institution	Name	Content	Duration	Delivery	Link
	Short courses	Courses: • Applied Statistics • Designing Real-World Trials • Economic Evaluation Principles and Frameworks • Evidence-Based Health • Fundamentals of Research Design • Health Informatics • Qualitative Health Research	14 weeks (1 course)	Online	
Duke-NUS Medical School	Graduate Certification Programme in Health Economic Evaluation	Courses: • Introduction to Health Econometrics • Introduction to Health Economic Modelling • Advanced Econometrics • Advanced Health Technology Assessment Methods	1 year (4 courses)	Online	https://www.duke-nus.edu.sg/hssr/education/graduate-certificate-in-hee
University of Alberta	Graduate Embedded Certificate (GEC) in Health Economic Evaluation*	Courses: • Introduction to Health Economics • Introduction to Health Economic Evaluation • Advanced Health Economic Evaluation • Introduction to Health Care Finance • Health Policy Development (3 units) • Technology Assessment for Health Care • Methods for the Assessment of Health-Related Quality of Life • Topics in Public Health: Critical Appraisal of Random Controlled Trials or equivalent	1 year (4 courses)	Not specfied	https://www.ualberta.ca/public-health/programs/graduate-certificates/graduate-embedded-certificate-in-health-economic-

*Only open to graduate students at the University of Alberta

6.3 MODE(S) OF DELIVERY

An instructor will lead the delivery of each microcredential. Microcredential instructors will be full or part-time faculty members of the Department of HEI. The primary instructor will be the Director, along with Dr Feng Xie.

The microcredentials will be offered fully online using Zoom and the CPD's learning management system (fac.dev) that is open to external learners. The Department of HEI is currently using Zoom to successfully to run their online diplomas and other graduate programs. fac.dev is CPD's learning management system. It provides a robust platform for asynchronous instruction.

6.4 LEARNING ACTIVITIES

Asyncrohonous interactions will occur between learners and instructors via fac.dev by:

- **Uploading pre-recorded video lectures from instructors.** Every week, there will be a module with approximately 1.5 hours of content that is split into 'bite-size' sections of mini-lectures.
- **Uploading suggested readings.** For each module, learners will be provided will a list of suggested readings to further their learning.
- **Uploading quizzes.** A short multiple choice quiz (5-10 questions) will be prepared for major topics in each microcredential to assess learners' understanding. Whenever possible, the questions will be based on a real-world HTA case study.
- **Uploading exercises.** An optional exercise will be prepared for major topics in each microcredential to allow the learner to apply the lecture content and gain first-hand experience engaging with a core HTA methodology. Each exercise will take around 1 hour to complete.
- **Uploading video-recorded 'run-throughs' for each exercise.** Each exercise will be accompanied by a written answer sheet and/or video-recorded run-through to support learners.
- **Hosting online discussion boards.** Learners will be able to post questions about the lectures and exercises online. Discussion boards will be managed by the instructor.

While the majority of the microcrentials will be asynchronous, each one will have **live question and answer (Q&A) sessions** hosted via Zoom so that learners may interact directly with instructors and other faculty from the HEI Department.

The lectures, quizzes, and live Q&As will amount to 2 hours per week. An additional 1 hour per week is expected for the optional exercises, with an understanding that the time commitment will vary between individuals.

6.5 EXPERIENTIAL LEARNING

Experiential learning will occur throughout each microcredential. In each microcredential, learners will be given an opportunity to practice their communitication skills and engage in exercises that emulate real world practice to equip them with the practical skills and mindset to conduct a component of HTA.

6.6 ACCESSIBILITY

Admissions & Structure: There will be no addimissions requirements for the non-academic microcredentials in HTA. Because the microcredentials will be offered online, it will expand the reach of the type of learners that can participate. All microcredentials will run mostly asynchronously (with the addition of live Q&As), further supporting learner flexibility and accommodating those living in a different time zone or engaged in part- or full-time employment.

Curriculum & Teaching: Instructors will create online environments that facilitate a sense of belonging for all learners. This includes actively facilitating discussions in online forums and providing closed captions for all videos to support learners with hearing impairments, who are still mastering the English language, or who process information better from seeing written words.

Instructors will set clear expectations for the quizzes and exercises and will work with learners one-on-one to deal with unexpected situations. The Director and instructors may consult with the MacPherson Institute as necessary to make sure that microcredentials are designed and delivered in a way that reflects universal design.

Compliance with AODA: The Director will ensure that the delivery of each non-academic microcredential meets the standards by the Accessibility for Ontarians with Disabilities Act (AODA) and the McMaster University Accessibility Plan 2012-2025.

6.7 RESEARCH REQUIREMENTS (IF APPLICABLE)

The microcredentials are non-academic and do not require learners to complete a research internship, scholarly paper, or thesis. Therefore, this section does not apply.

7 ASSESSMENT OF LEARNING

7.1 METHODS FOR ASSESSING LEARNERS

A non-academic microcredential acknowledges that "*an individual has completed learning activities related to a coherent set of skills, competencies, or knowledge that does not meet the requirements of an academic program at McMaster University*."[42]

Learners enrolled in a non-academic microcredential in HTA will engage in activities aimed at both the acquisition of knowledge and the demonstration of applied skills as it relates to HTA. These are the two, overarching, goals of each microcredential.

Because our target learners are working professionals, there will be no major essay or exam. Instead, learning outcomes will be assessed using quizzes. For each major topic within a microcredential, learners will complete a short multiple choice quiz (5 to 10 questions) online to assess their understanding of the lecture content. Whenever possible, the quiz include content from a real-world HTA case study. The quizzes will be graded by the learning management system. Learners will require a 70% to pass and will be able to take the quiz as many times as needed (similar to the employee health and safety training modules at McMaster University). This ensures that the microcredentials have an evaluation component, which is required by McMaster

Univeristy.[42] As recommended in eCampus Ontario's Microcredential toolkit, the use of regular quizzes throughout each microcredential provides learners with access to low-stakes opportunities for them to reflect on their own learning and identify gaps in understanding.[46] Automated grading ensures that the feedback is instantaneous. Learners can reach out via email, post on the discussion boards, or ask questions during the live Q&A sessions to receive additional, direct, feedback from instructors.

Not all formative assessments will be graded.[46] For each microcredential**,** learners will also have the option to complete hands-on exercise(s) that will allow them to apply the lecture content in practice and gauge their own learning and progress. This will equip them with the practical skills and mindset to conduct a component of the HTA process.

7.2 CURRICULUM MAP

A curriculum map is presented below.

Microcredential	Learning Outcomes	Learning Activities	Assessment
Fundamentals of Health Technology Assessment	By the end of this microcredential, learners will be able to: 1. Describe the HTA process and how it contributes to value assessment and evidence-based decision-making; 2. Identify the evidence requirements for HTA (e.g., systematic literature review, economic evaluation, consideration of ethical, legal, and social impact); and 3. Debate current applications of HTA from different stakeholder perspectives (e.g., patients, providers, payers, regulators) and healthcare systems.	• Watching video recordings of lectures • Reading suggested materials • Posting on discussion boards • Attending live Q&A sessions	• Multiple choice quizzes
Introduction to Evidence Synthesis for HTA	By the end of this microcredential, learners will be able to: 1. Describe the process for identifying, synthesizing, and	• Watching video recordings of lectures	• Multiple choice quizzes

Microcredential	Learning Outcomes	Learning Activities	Assessment
	critically appraising a body of evidence according to the latest methodological and reporting guidelines; 2. Design a basic literature search and select the appropriate method for evidence synthesis based on the type of evidence considered (e.g., clinical, cost, quality of life); and 3. Critically appraise the methodological quality of included studies and identify sources of bias.	• Reading suggested materials • Posting on discussion boards • Completing a hands on exercise • Attending live Q&A sessions	
Introduction to Patient-Reported Outcomes for HTA	By the end of this microcredential, learners will be able to: 1. Describe the concept of PROs and how they contribute to the evaluation of health technologies; 2. Compare the unique features of different PROs and select the appropriate measure for HTA ; and	• Watching video recordings of lectures • Reading suggested materials • Posting on discussion boards	• Multiple choice quizzes

Microcredential	Learning Outcomes	Learning Activities	Assessment
	3. Summarize key considersations for analysis and interpretation of PRO data.	• Completing a hands on exercise • Attending a live Q&A session	
Introduction to Health Economic Evaluations	By the end of this microcredential, learners will be able to: 1. Describe the different types of economic evaluations and their role in HTA; 2. Develop a protocol for conducting an economic evaluation, including specifying the intervention and comparator(s), population, time horizon, perspective, outcomes considered, data sources, and analytic approach; and 3. Interact with and interpret the output of a simple economic model in Microsoft Excel.	• Watching video recordings of lectures • Reading suggested materials • Posting on discussion boards • Completing a hands on exercise • Attending a live Q&A session	• Multiple choice quizzes
Advanced Evidence Synthesis for HTA	By the end of this microcredential, learners will be able to: 1. Describe advance evidence synthesis methods and emerging meta-analytic	• Watching video recordings of lectures	• Multiple choice quizzes

Microcredential	Learning Outcomes	Learning Activities	Assessment
	techniques that are being used for HTA; 2. Develop a protocol for conducting a meta-analysis; 3. Use statistical software (i.e., R) to run a meta-analysis; and 4. Interpret and communicate the results of a meta-analysis.	• Reading suggested materials • Posting on discussion boards • Completing a hands on exercise • Attending live Q&A sessions	
Advanced Economic Modeling for HTA	By the end of this microcredential, learners will be able to: 1. Develop an advanced economic model in Microsoft Excel; 2. Conduct sophisticated sensitivity analysis techniques, including probabilistic sensitivity analysis, to assess the uncertainty surrounding key parameters; and 3. Interpret and communicate the results of an economic evaluation.	• Watching video recordings of lectures • Reading suggested materials • Posting on discussion boards • Completing a hands on exercise • Attending live Q&A sessions	• Multiple choice quizzes

7.3 DEMONSTRATING LEARNER ACHIEVEMENT

Learners who successfully complete a microcredential will receive a Non-Academic Microcredential in recognition of their demonstrated achievement of the knowledge and application of one of the core components of HTA. In line with the microcredentials currently offered by McMaster Continuing Education, each learner will receive an email containing a link to the microcredential in a digital format.[41] It will outline the specific skills, competencies, and specialized learning they have obtained from the microcredential. This tamper-proof credential includes information such as the issuing institution, the date earned, learning outcomes, and evaluation criteria. Learners can use the microcredential in different ways to demonstrate their achievements:

- Include it as a link on their resume
- Add it to their LinkedIn and Facebook profiles
- Share it with potential employers
- Print a copy to give to their employer
- Share it with family and friends
- Print it and frame it

8 RESOURCES

8.1 *ADMINISTRATIVE, PHYSICAL AND FINANCIAL RESOURCES*

Administrative resources: The non-academic microcredentials in HTA proposes to have a complement of one 0.2 FTE/first year and 0.4 FTE/subsequent years Director. The Director will have oversight of the microcredentials, serve as a lead instructor and be responsible for curriculum coordination and administrative support (e.g., coordinating guest lectures and live Q&As), responding to academic questions and quizzes. Additional support may be provided by current full or part-time faculty members from the HEI Department.

CPD will be responsible for housing the microcredentials. They will liaise with prospective learners, support registration and setup, resolve technical questions and issues, and credentialing. The HEI Department will be reponsible for promotions, HR and finance related oversight and support, and fee covers support unit costs.

Physical Resources: The microcredentials will be offered online; therefore, no new space is required. Since the Director will be hired from the Department, they will already have workspace in the Communication Research Library where the Centre for Health Economics and Policy Analysis (CHEPA) offices are located. Further, the Department supports flexible work, and some work may be done from home.

Financial Resources: The non-academic microcredentials in HTA will be self-funded. Tuition will make up the bulk of the revenues. Beyond start-up costs (e.g., for developing content), the largest expenses are for the salary of the Director (for managing the microcredentials) as well as the administrative costs for CPD (for housing the microcredentials) and HEI (for HR and financial oversight).

The non-academic microcredentials in HTA will exist outside of current graduate and undergraduate program offerings. Individuals registered in a non-academic microcredential are classified as 'Learners' (not 'Students') at McMaster University. Learners do not have access to University resources or any University service which a McMaster student pays supplemental fees alongside tuition (e.g., Libraries, University Technology Services, Student Affairs, Registrar's Office, School of Graduate Studies, Pulse Fitness Centre). The CPD, where the program is housed, will assume responsibility for managing the admissions process and maintaining learners' records. Therefore, the impact on McMaster University resources is expected to be minimal.

8.2 *LIBRARY, TECHNOLOGY, AND LABORATORY RESOURCES*

The non-academic microcredentials in HTA will be offered solely online using platforms such as fac.dev and Zoom. The University currently has a Zoom license for all McMaster instructors. Learners will be required to purchase their own Zoom license as these will not be provided by the University. Learners will not require access to the Health Sciences Library at McMaster University nor other any other library, technology, or laboratory service (including wireless connectivity) to complete a microcredential.

8.3 *FACULTY*

The Director and Dr Feng Xie will lead the development of the microcredential content and teaching activities. With approval of the Chair, other faculty members of the HEI Department will contribute to the microcredentials by helping to provide input (e.g., by reviewing PowerPoint slide decks) or deliver content (e.g., by attending a live Q&A session on Zoom). The faculty have extensive expertise in the core HTA methodologies and educating students and healthcare professionals. We do not anticipate that these contributions to the HTA microcredential program would have significant impact on the workload of the full or part-time faculty members in the Department.

8.4 *STUDENT FINANCIAL SUPPORT*

Microcredentials will be fully self-funded and learners will not be seeking financial support from McMaster University.

8.5 *FACULTY RESEARCH FUNDING*

Not applicable. The non-academic microcredentials in HTA are not research focused.

8.6 *SUPERVISION*

The non-academic microcredentials in HTA are not part of an academic program and therefore will not require student supervision. Instruction of the microcredentials will be led by two faculty members in the HEI Department (Drs Feng Xie and Brittany Humphries), with support from other faculty as necessary.

9 QUALITY AND OTHER INDICATORS

9.1 ACADEMIC QUALITY OF THE PROGRAM

The non-academic microcredentials in HTA will draw on methods used by the HEI Department's Health Reseach Methodology program to assess quality of its programming. Evaluations will be administered at the end of each microcredential and

faculty will discuss quality improvement as necessary. Metrics such as enrollment, completion rates, and time-to-completion will be tracked to inform administration.

9.2 INTELLECTUAL QUALITY OF THE STUDENT EXPERIENCE

The HTA program was one of flagship programs in the Department of HEI at McMaster University. Today, McMaster University is considered to be a world leader in the field of HTA due to faculty's contributions to the development of evidence-based medicine and HTA. The non-academic microcredentials in HTA will leverage the Department's success in this field. It will ensure that the content from each microcredential meets the rigourous intellectual standards that the Departments is known for, and that learners have an opportunity to engage with thought leaders in the field.

Beyond acquiring knowledge, a key objective of the program is to facilitate the development of applied skills. To this end, faculty with professional experience conducting HTA in a real world setting will also contribute to the development and delivery of the microcredentials. This will ensure that the content and evaluations are tailored to the needs of our target learners - who are seeking to develop practical skills and the mindset required to conduct HTA.

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October 2024 Graduate Council

New Awards – For Approval

The Anne Pitul Memorial Award

Terms:

Established in 2024 by Stephen Pitul, in loving memory of his wife, Anne Pitul. To be awarded to undergraduate or graduate students who demonstrate academic and/or research excellence within the Education Program in Anatomy. Expenditures from the fund should be guided at the discretion of the Program Director of the Faculty of Health Sciences Education Program in Anatomy.

Note: This is an FHS award.

Term Changes – For information only

Current name: A Noble Pursuit: The MBA Leadership Scholarship

Current terms:

Established in 2015 by Ron Noble, MBA (Class of ’84). To be awarded annually by the School of Graduate Studies, on the recommendation of the DeGroote School of Business awards selection committee, to a full time student entering Level II of the MBA program who has declared a specialization in Health Services Management. Preference will be given to those students who achieved high academic standing, and demonstrate qualities of leadership and commitment to health management.

Revised name: The Ron Noble Social Impact Leadership Scholarship

Revised Terms:

Established in 2015 by Ron Noble, MBA (Class of '84). To be awarded annually by the School of Graduate Studies, on the recommendation of the DeGroote School of Business awards selection committee, to a full time student entering Level II of the MBA program who has declared a specialization in Health Services Management. Preference will be given to those students who achieved high academic standing, and demonstrate qualities of leadership, a commitment to health management and their positive contributions to society.

Reason for Term Changes:

Donor request.

Current name: The John Deere Foundation Graduate Scholarship in Innovation Management.

Current terms:

Established in 2001 by the John Deere Foundation of Canada. To be awarded by the School of Graduate Studies on the recommendation of the DeGroote School of Business to a student enrolled in the MBA program, who will be pursuing the Accounting and Financial Management Services specialization.

Revised name: The John Deere Foundation Graduate Scholarship in Strategic Business Valuation or Finance

Revised Terms:

Established in 2001 by the John Deere Foundation of Canada. To be awarded by the School of Graduate Studies on the recommendation of the DeGroote School of Business to students enrolled in the MBA program, who will be pursuing the Strategic Business Valuation or Finance specialization.

Reason for Term Changes:

To broaden the pool of eligible students due to a recent strategic review.

Provisional Guidelines for the Use of Generative Artificial Intelligence in Research

September 2024

Introduction

McMaster's Provisional Guidelines on the Use of Generative Artificial Intelligence in Research are structured to provide guidance for the use of generative AI across the three primary stages of the research lifecycle: preparation, conducting research, and dissemination. Each stage presents opportunities and risks, which these guidelines aim to anticipate and address.

Audience

The audience for these Guidelines is 'researchers' at McMaster, a broad category intended to include faculty researchers, graduate students engaged in research activities, and staff and undergraduate students who may be taking part in research activities.

Moreover, while these guidelines are written to be broadly applicable, there are contextual differences in disciplines and research areas, as well as differences for **graduate student researchers.** Graduate students should attend to these Provisional Guidelines and the Guidelines for the Use of Generative AI in Teaching and Learning, as both apply. For graduate students in coursework the guidelines for Teaching and Learning are especially relevant; for graduate students engaged in graduate research, the guidelines here are pertinent.

Where possible, it is noted where these contextual differences may alter the guidelines, but feedback is encouraged on how these guidelines may be further refined to reflect these differences.

External Bodies

Differences among disciplines are mirrored in differences among granting agencies and publication venues. Researchers should carefully review the expectations and guidelines of these external bodies before using generative AI in any stage of the research process.

Duration

The rapid pace at which technology is developing means these guidelines will need review and revision to ensure they remain current with technological advancements and emerging practices. That said, these guidelines will be in place until summer 2025.

General Guidelines

1. Generative AI tools may create false, misleading, or biased outputs. Critically evaluate and personally verify any outputs used in the research process. Researchers are personally accountable for the accuracy and integrity of their work.
2. Many legal and ethical debates have yet to be settled around the appropriate use of generative AI and of inputting personal information or copyright texts into generative tools. Researchers should ensure they are informed about these debates and make appropriate legal, ethical, and political decisions in their research.
3. Researchers who use generative AI should complete this module to help them review and reflect on broader societal implications of the use of generative AI, including labour, copyright, bias, and environmental impact.
4. Researchers who use generative AI in any context should cite or acknowledge its use drawing on McMaster Libraries' LibGuide and follow any publication/granting specific instructions.

Guidelines Related to Research Preparation

All researchers should

- Carefully assess whether generative AI is an appropriate tool for their specific research question, methodology, and goals. They should consider the potential benefits and drawbacks of using AI-generated content or analysis in their work.
- Evaluate the compatibility of generative AI with their discipline's established research practices, theoretical frameworks, and epistemological assumptions. They should be mindful of potential tensions or contradictions that may arise from the use of generative AI in their field.
- Evaluate the generative AI tools being considered for use against intellectual property, data security, privacy, ethical, political, and democratic considerations with support from the Copyright Office, Privacy Office and Information Security. In this evaluation researchers are advised to weigh the risks of inappropriate or unanticipated uses, intellectual property infringement, potential data leaks, profiling, statistical inferences, or broken tech promises for their use case.
- If using generative artificial intelligence in research activities, researchers should consider using institutionally supported tools that have a completed Privacy and Algorithmic Impact Assessment.
    - McMaster has an enterprise license for Microsoft Copilot which ensures that, **when logged in using McMaster credentials**, data used is not shared with either Microsoft or McMaster and confidential, personal or proprietary information can

therefore be used. See: Start Here with Copilot for currently licensed tools and capabilities.
    - If researchers intend to use other tools, they should consult with the Privacy Office and the Office of Legal Services before use.
- Establish clear protocols for documenting the use of generative AI throughout the research process, including recording the inputs and settings used, as well as any modifications or adjustments made along the way, and any use in preparation of research materials. This documentation supports transparency, reproducibility, and accountability. **[Protocol guide in development]**

Graduate student researchers and supervisors should

- Discuss the role of generative AI in the graduate student research project and its alignment with the expectations and norms of their supervisor, discipline, and academic community; graduate researchers should seek and receive explicit and documented approval to use generative AI in their research activities. See Appendix A.

Guidelines Related to Conducting Research

All researchers should:

- Assess the quality and validity of AI-generated data and analysis. This may involve cross-referencing with other data sources or conducting manual checks or audits.
- Follow data security and privacy requirements for any generative AI tools being used.
- Mitigate any ethical risks and challenges associated with using generative AI in data collection and analysis in consultation with the McMaster Research Ethics Board.
- Make the use of generative AI in research as transparent and reproducible as possible. Keep a record and provide detailed information about the inputs, prompts, tools, techniques, and data sources used, as well as any code or scripts employed in the analysis. While reproducibility of generative AI outputs poses challenges, researchers should aim to make research as reproducible and transparent as possible by documenting these steps. provide prompts or inputs.
- Ensure that use of generative AI does not circumvent or shortchange learning and research processes associated with personal reading, reflection, analysis, context, and the personal embodied experience and insight brought by human researchers and communities

Graduate student researchers should

- In discussion with their supervisor, plan and document how they will demonstrate their own intellectual contributions and mastery of the subject matter when using generative

AI in their research. They should be prepared to answer questions and demonstrate appropriate knowledge and expertise about any aspect of their research and its relevance to their program learning outcomes.

Guidelines Related to Disseminating Research

All researchers should

- Clearly disclose and describe the use of generative AI in their research outputs, including publications, presentations, and other dissemination materials. See McMaster Library's LibGuide "How do I Cite Generative AI" and cite and acknowledge accordingly.
- Ensure that their use of generative AI in research dissemination aligns with the norms, standards, and expectations of their discipline or field.
- Be aware of any specific requirements or restrictions imposed by journals, conferences, granting agencies or other dissemination venues regarding the use of AI-generated content. They should carefully review the submission guidelines and editorial policies to ensure compliance and avoid potential issues in the publication process.
- Not use AI-generated content verbatim and always critically evaluate the appropriateness and relevance of the generated text, images, or other media for their specific research context.

Further Work

To support researchers in deciding if and when to use generative AI in the research enterprise and to use it responsibly and well, further work is required. Specifically the AI Expert Panel on Research will work over the 2024-25 year to develop and share:

- A Protocol for documenting the use of generative AI in all stages of research
- A module specific to researchers that describes the risks and challenges of using generative AI

Appendix A: Supervisor and Graduate Student Researcher and/or Research Team Conversation Guide

Graduate students and supervisors should also consult the "Communication tool for supervisory relationships" before discussing generative AI use.

1. What do you [graduate researcher/supervisor/team member] already know about generative artificial intelligence and what might you need to learn before incorporating these tools into your graduate research? What is your individual approach to generative artificial intelligence? What do you believe about its value or risks?
    a. *Possible discussion prompts:*
        i. *How would you describe your 'philosophy of AI use'? When, how, and why do you think AI should be used in research?*
        ii. *How might generative AI intersect with, influence, or impact your professional goals?*

2. What scholarly activities within my graduate research/research may benefit from the use of generative AI?
    a. *Possible discussion prompts:*
        i. *What value might generative AI bring?*
        ii. *For graduate student researchers: What impact might using generative AI for [this task] have on my core learning experience as a graduate student researcher?*
        iii. *What phases of the research process and research activities would most benefit from the inclusion of generative AI?*
    b. *Examples:* translation, copy-editing, brainstorming, concept explanation, drafting, coding, data analysis, data visualization, drafting, simulations, literature reviews

3. What scholarly activities within my graduate research/research should not involve the use of generative AI?
    a. *Possible discussion prompts:*
        i. *What might be some of the risks of using generative AI to complete [this task] or [this part]?*
        ii. *What could be some of the negative impacts on my work, colleagues or my disciplinary community if generative AI was used for [this part]?*
        iii. *For graduate student researchers: What impact might using generative AI for [this task] have on my core learning experience as a graduate student researcher?*

b. *Examples:* translation, drafting, data analysis, data visualization, interpretation and analysis, synthesis, literature reviews

4. What benefit or risk does the use of generative AI pose for me as a graduate researcher/researcher?
    a. *Examples*: accessibility features, data sovereignty, implicit bias, data protection, privacy, data contamination and international data agreements.

5. How should I document and disclose when I have used generative AI in my work? What level of use (e.g. brainstorming, drafting, copy editing, coding) warrants disclosure of use? How do I ensure everyone involved in the work I am doing understands how we will use (or not use) generative AI?
    b. *Possible supervisor strategies*
        i. Citation and disclosure practices vary by context. Check with colleagues, journals and funding agencies in your area to consider what emerging norms for citation or disclosure may be.
        ii. Sample acknowledgement could read: "[Name of generative AI tool] was used in the creation/drafting/editing of this [scholarly output]. I have evaluated this document for accuracy."
    c. *Possible discussion prompts*
        i. What research ethics implications and obligations do we have to consider?
        ii. What might be some reasons our [key consulted groups] might need or want to be aware that generative AI was used in this [type of work]?
        iii. How do we ensure that everyone involved in a project or process that uses generative AI is aware and agrees to the use?
        iv. What possible risks to our credibility or expertise are present if we do not disclose use of generative AI in this [type of work]?
        v. What professional obligations do we have to be transparent with our use of generative AI in our area?