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 December 7th at 9:30 am via Zoom.**

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. Minutes of the meeting of October 19th, 2021

II. Business arising

III. Report from the Vice-Provost and Dean of Graduate Studies

IV. Report from the Graduate Associate Deans

V. Report from the Associate Registrar and Graduate Secretary

VI. Revisions to Policy on Academic Program Development and Review

VII. Faculty of Engineering Graduate Curriculum and Policy Committee Report

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

IX. Faculty of Business Graduate Curriculum and Policy Committee Report

X. Changes to Scholarships

XI. Microcredential Report

McMaster University **School of Graduate Studies**

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Graduate Council
Tuesday October 19th at 9:30 am via Zoom

Present: D. Welch (Chair), M. Thompson, S. Hanna, M. Horn, G. Mulvale, B. Gupta, M. Dion, M. Stroinska, N. Tan, M. Abouei, T. McDonald, M. Parlar, Z. Samaan, R. Wu, J. Kish, A. Roddick, N. Kuthathasan, T. Chamberlain, W. Farmer, S. Medeiros, A. Shi, S. Raha, A. Cole, K. Tsang, S. Baschiera (Associate Registrar and Graduate Secretary), C. Bryce, (Assistant Graduate Secretary)

Regrets: S. Dickson, G. Krishna, S. Brophy

I. Minutes of the meeting of September 14th, 2021

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

The motion was **carried**.

II. Business arising

There was no business arising

III. Report from the Vice-Provost and Dean of Graduate Studies

Dr. Welch reported on the following items:

- The Covid context at McMaster, noting no outbreaks
- The implementation of McMaster's vaccine mandate, noting that the graduate expectations arising from this had now been fully approved and that students who were at risk of being withdrawn would be receiving communication;
- The success of the implementation of the School of Graduates Studies new chat system;
- A very smooth thesis defence season, with thanks to everyone involved;
- The upcoming convocation.

Council members discussed the possibility of access to the library for students who are to be withdrawn.

IV. Report from the Graduate Associate Deans

Dr. Horn (Faculty of Humanities) reported on the following items:

- A relatively smooth start of term, despite the challenges;
- SSHRC work within the Faculty.

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

- SSHRC applications;
- The MBA program is working on expanding in-person offerings;
- The early stages of planning curriculum changes, including bringing more indigenous content forward;
- Updating the Ph.D. program website.

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

- The Canadian Graduate Engineering Consortium graduate fair, with over 1000 students from across Canada attending.
- The Engineering Gradaute Student Society metric conference, noting that they are reaching out beyond campus to other universities to see if they want to present.

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

- The M.Sc. in Midwifery, recently approved by Graduate Council, is now heading to University Planning Committee;
- Working through CGS awards, focusing primarily in CIHR and NSERC;
- The Graduate Open House;
- Defence season proceeded very smoothly.

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

- Funding international Ph.D. students;
- Continued work on a new masters of mental health;
- Getting ready for new recruitment cycle and enrollment management across different programs in the faculty.

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

- The CGS doctoral competition.

V. Report from the Associate Registrar and Graduate Secretary

Ms. Baschiera reported on the following items:

- Highlighted that it is a busy time in the School of Graduate Studies and thanked everyone in SGS and the programs for their continued effort and support;
- Noted that the fronkt desk is going well and that they're offering a series of one hour drop ins to whoever needs support or help understanding records.

VI. Fall 2021 Graduands (to be distributed)

It was duly moved and seconded, **'that Graduate Council approve the list of the 2021 Fall Graduands, with amendments/corrections to be made as necessary by the Associate Graduate Registrar.'**
The motion was **carried**.

VII. New Scholarships

It was duly moved and seconded, 'that Graduate Council approve the new scholarships as set out in the document.'

The motion was **carried**.

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

For information items only.

Complete Policy Title:
Academic Program Development and Review – Policy on

Policy Number (if applicable):

Approved by:
Senate

Date of Most Recent Approval:
December 9, 2020

Date of Original Approval(s):
May 11, 2011 ***(effective July 1, 2011)***

Supersedes/Amends Policy dated:
May 17, 2017
February 13, 2013 ***(effective July 1, 2013)***
May 11, 2011 ***(effective July 1, 2011)***
Procedures for Undergraduate Program Reviews, 2004,
New and Revised Undergraduate Programs Policy, 2009
Policy on Steps for Creation of New Graduate Programs or New Fields in Existing Doctoral Programs, 2009

Responsible Executive:
Vice-Provost (Faculty)

Enquiries:

Equity and Inclusion Office

General Policy Enquiries

Policy (University Secretariat)

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POLICY ON ACADEMIC PROGRAM DEVELOPMENT AND REVIEW

Table of Contents

1. PREAMBLE

McMaster University is widely recognized for innovation in teaching and learning and for the quality of its programs. Nevertheless, knowledge of our disciplines and the scholarship of teaching and learning are constantly evolving. Our reputation can only be maintained and improved if we, as academics and educators, critically review what we do in our programs and seek opinions and advice from colleagues at McMaster and at other institutions.

Although the primary objective for these reviews is the improvement of our academic programs, the processes that we adopt is also designed to meet our responsibility to the government on quality assurance: Every publicly assisted Ontario university that grants degrees and diplomas is responsible for ensuring the quality of all of its programs of study, including modes of delivering programs and those academic and student services that affect the quality of the respective programs under review, whether or not the program is eligible for government funding.

The process by which institutions meet this accountability to the government is outlined in the Quality Assurance Framework (QAF), developed by the Ontario Council of Academic Vice- Presidents (OCAV) and approved by Executive Heads in April 2010. Institutions' compliance with the QAF is monitored by the Ontario Universities Council on Quality Assurance, also known as the Quality Council, which reports to OCAV and the Council of Ontario Universities (COU).

As part of the Quality Assurance Framework, McMaster was required to develop an Institutional Quality Assurance Process (IQAP), which is contained within this Policy. In addition to the 15 guiding principles contained within the QAF, McMaster determined the following internal principles to guide the development of the IQAP Policy:~~The guiding principles used for developing McMaster's IQAP were:~~

- curriculum development and improvement is~~are~~ an ongoing, iterative process that is ~~normally~~ initiated, developed and controlled at the departmental level~~;~~
- McMaster's IQAP incorporates input from all principal stakeholders~~; and,~~
- McMaster's IQAP is designed primarily to help improve programs and shape them to have characteristics that are most valued at our University, while also meeting the responsibility for quality assurance~~.~~

Thus, the goal of McMaster's IQAP is to facilitate the development and continued improvement of our undergraduate and graduate academic programs, and to ensure that McMaster continues to lead internationally in its reputation for innovation in teaching and learning and for the quality of its programs. McMaster's IQAP is intended to complement existing mechanisms for critical assessment and enhancement, including departmental reviews and accreditation reviews. The uniqueness of each program at McMaster will emerge in the IQAP self-study.

The IQAP is subject to approval by the Quality Council when it is initiated and thereafter, when it is revised. The Quality Council will audit the University on an 8-year cycle under the terms outlined in the Quality Assurance Framework.

1.1 Cyclical Audit

~~the principal stakeholders of Ontario's education system. '~~sOne-year prior to the scheduled Cyclical Audit, McMaster's key contact to the Quality Council (or their delegate) will participate in a half-day briefing by the Quality Council Secretariat and an Audit Team member.

In advance of the cyclical audit, the Vice-Provost (Faculty) and Vice-Provost and Dean of Graduate Studies, or their delegates, will prepare a self-study of McMaster's Institutional Quality Assurance Process, highlighting its strengths as well as areas for improvement and enhancement. The self-study will also identify the institutional response to any issues ~~identfied~~identified in the previous audit. To prepare this self-study, consultation with Faculty representatives as well as key stakeholders from central university supports, such as the Registrar's Office, the MacPherson Institute, Institutional Research and Analysis and the Library will take place, as appropriate. The self-study will be submitted to the Quality Council's Secretariat as part of the Cyclical Audit process.

The Cyclical Audit provides accountability to the principal stakeholders of Ontario's university education system. The purpose of the Cyclical Audit is to evaluate the alignment of past and current practice with policy as well as the university's approach to continuous improvement. Cyclical Program Reviews that were undertaken within the period since the previous Cyclical Audit are eligible for selection for the university's next Cyclical Audit. Any new undergraduate and graduate programs that have been approved since the previous Cyclical Audit are eligible for selection in the next university's cyclical audit. Graduate Diplomas that were approved through the expediated approvals process as well as major modifications to existing academic programs are not subjected to the institution's cyclical audit.

Excluding any confidential information, the Audit Report and any follow up response report will be posted on McMaster's Quality Assurance webpage. If an area of concern is identified during the Cyclical Audit, the Quality Council may determine that a focused audit of a specific process is necessary. Reports related to a Focused Audit will be posted on ~~the~~ McMaster's Quality Assurance webpage.

2. CONTACT

The authority responsible for the IQAP is the Vice-Provost (Faculty). The authorities responsible for its application will be the Vice-Provost (Faculty) for undergraduate programs and the Vice-Provost and Dean of Graduate Studies for graduate programs. When undergraduate and graduate programs are reviewed concurrently, the Vice-Provost (Faculty) and the Vice-Provost and Dean of Graduate Studies will be jointly responsible for its application.

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The person responsible for all contact between the University and the Quality Council is the Vice-Provost (Faculty).

Throughout this Policy, the Chair refers to the head of the academic unit (usually a Department, sometimes a School or an interdisciplinary group) that is proposing a new program or is responsible for an existing program, although we recognize that the official title of such person varies across programs and Faculties. Similarly, the Dean refers to the head of the Faculty or equivalent individual responsible for the program, again recognizing that official titles vary.

In the case of joint academic programs (e.g., a combined honours program or a collaborative program with another educational institution), the relevant Chair and Dean shall be those at McMaster University who have the administrative responsibility for the program.

3. PURPOSE

This Policy on Academic Program Development and Review guides the development of new undergraduate and graduate programs (including for-credit graduate diploma programs) and aids in the ongoing improvement of existing programs. It has also been designed to meet the University's responsibility of ensuring the quality of such programs. It applies to all undergraduate and graduate programs offered at McMaster University, as well as programs offered in collaboration with other institutions that lead to McMaster University degrees or graduate diplomas.

4. DEFINITION OF NEW PROGRAMS

A new program is ~~normally~~ considered to be any new degree or degree program that has not been previously offered at McMaster University. In contrast to the normal evolution of academic programs, a new program will generally involve some combination of new courses, new learning outcomes, and new or re-allocated resources, and will be meant to provide students with an academic path that was previously not available to them.

Although not new, a program that has been offered at McMaster University without funding from the Ministry of Colleges and Universities and for which a request for funding is to be made, will follow the procedures for new programs that are outlined in Section 5.

~~Examples of what constitutes a 'new program' are included at: http://oucqa.ca/guide/examples-of-new-programs/~~

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5. NEW GRADUATE AND UNDERGRADUATE PROGRAMS

The steps required for the approval of any new program include:

5.1 Beginning a New Program Proposal

Proponents of a new program may begin by preparing a Statement of Intent and acquiring endorsement from the relevant Dean(s) and Vice-Provost (Faculty) or, in the case of graduate programs, the Vice-Provost and Dean of Graduate Studies.

5.2 Broad Consultation

The Chair, in consultation with the Dean, is responsible for ensuring that there is broad consultation. It will also be essential to have appropriate discussions with other institutions when the proposed programs are to be offered in collaboration with those institutions.

Whenever faculty members from several departments will be involved in a proposed program, these proponents must have the opportunity to discuss the proposal with their respective Dean(s) and Chair(s). Similarly, if there is a proposal to cross-list a course, or to recommend or require students in the new program to take existing courses, the teaching Department(s) must be consulted and agreement obtained, in writing, from the appropriate Chair/Dean. Approvals of the relevant Curriculum Committees are required.

Discussions are to be held with central support units such as, but not limited to, the Library, the Registrar, the MacPherson Institute for Leadership, Innovation and Excellence in Teaching and Learning, and other relevant units, to assess the impact of the introduction of the new program. Input also should be sought from relevant groups of students for whom there is a potential impact of the proposal.

Broad consultation is especially important when proposing interdisciplinary programs particularly when the initiators of the proposed plan are unfamiliar with all ~~various~~ disciplines involved in the proposed program or individual faculty members who might potentially be interested or have expertise. A proposal for a new interdisciplinary program must be presented to any related Faculty/Program to ensure that there is widespread awareness of the program and of its potential impact. If a new interdisciplinary program utilizes or cross-lists one or several new courses from other Departments, the Department(s) offering the course(s), rather than the new interdisciplinary group, must submit those courses for approval. Prior written agreement also must be obtained from Chairs of participating Departments for teaching, graduate supervision and other resources required for interdisciplinary programs. Departments ~~–~~must be given adequate time to consider these requests. The program proponents, in consultation with the appropriate Dean(s), or their delegate(s), will consult and obtain proposed administrative and governance structures from the Faculties involved in interdisciplinary program proposals for inclusion in the new program proposal. ~~must include the proposed administrative and governance structures in interdisciplinary program proposals.~~

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5.3 New Program Proposal

The Chair is responsible, in collaboration with relevant groups and/or individuals, for the preparation of a New Program Proposal. Both the Chair and the Dean, or Dean's delegate, ensure that the proposal has met all of the New Program Proposal criteria outlined below and both will sign off on the completeness of the proposal. For an interdisciplinary program, all affiliated program Chairs and appropriate Deans, or the Deans' delegates, sign off on the completeness of the proposal. Program proponents are to complete McMaster's New Program Proposal template and address the criteria for the New Program Proposal as outlined below:

5.3.1 Program Overview

- Description of the extent and method of the consultation process undertaken during the development of the proposal, including the diversity of groups and /or individuals who were engaged in and informed the preparation of the proposal ~~including the groups and /or individuals who helped to prepare the proposal.~~
- Consistency of the program's goals with the University's tripartite research, teaching, and service excellence mission, its values and purpose, and its academic priorities and plans ~~mission and academic plans.~~
- Ways in which the program addresses the institution's current Strategic Mandate Agreement

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- Ways in which the program addresses the institution's current strategies, frameworks and/or principles regarding equity, diversity and inclusion, and how the

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program advances EDI-related academic goals (e.g., Indigenous perspectives, international relevance, interdisciplinarity, intercultural competencies, social and environmental equity and sustainability)

- Clarity and appropriateness of the program's requirements and the Program Learning Outcomes in meeting the University's Undergraduate Degree Level Expectations (UDLEs) or Graduate Degree Level Expectations (GDLEs), as outlined in Appendix A.

- Appropriateness of degree nomenclature ~~and program's goals~~ and program's goals.

5.3.2 Admission requirements

- Appropriateness of the program's admission requirements for meeting its goals and the Program Learning Outcomes established for completion of the program.

- Alternative requirements, if any, for admission into the program, such as minimum grade point average, additional languages or portfolios, along with how the program recognizes prior work or learning experience.

- Consideration of the demographics of the student market for the program, and accessible and equitable admissions processes and practices

5.3.3 Structure

- Appropriateness of the administrative, governance, and communication processes proposed in support of the program.

- Appropriateness of the program's structure and regulations to meet specified Program Learning Outcomes and Degree Level Expectations.

- For graduate programs, a clear rationale for program length, which ensures that the program requirements can be reasonably completed within the proposed time period.

5.3.4 Program content, curriculum, and teaching

- Ways in which the curriculum addresses the current state of the discipline or area of study, and extent to which a comparative review of the state of the discipline informs the curriculum.

- Identification of any unique curriculum or program innovations or creative components with attention to experiential and community-engaged pedagogy.

- Appropriateness of the proposed mode(s) of delivery to meet the intended Program Learning Outcomes and Degree Level Expectations and availability of the necessary physical resources, including infrastructure and technologies for accessible education.

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- Ways in which the program will address current institutional, faculty, or departmental priorities (e.g. experiential learning; equity, diversity and inclusion; accessibility; community engagement; and entrepreneurship)
- For research-focused graduate programs, clear indication of the nature and suitability of the major research requirements for degree completion.

- For graduate programs, verification that the courses included meet university requirements in terms of the minimum number of courses required, the level of courses required, and the appropriate inclusion of other required elements appropriate for the degree level (e.g., transfer exams, comprehensive exams). At least two thirds of the course requirements must be at the 700-level.

5.3.5 Assessment of teaching and learning

- Plans to monitor and assess the overall quality of the program and whether the program is achieving its proposed goals, ensuring evaluation methods are accessible and inclusive and audiences are diverse.
- Appropriateness of the proposed methods for the instruction and assessment of student achievement of the intended Program Learning Outcomes. The Program Learning Outcomes must meet the Degree Level Expectations.

- Completeness of plans for documenting and demonstrating the level of performance of students, consistent with the Degree Level Expectations.

- Description of how the resulting information from level of student performance will be documented and used to inform continuous program improvement.

5.3.6 Resources

For all programs:

- Adequacy of the administrative unit's planned utilization of existing human, physical and financial resources, and any institutional commitment to supplement those resources, to support the program.

- Participation of a sufficient number and quality of faculty who are competent to teach and/or supervise in the program.

- Evidence that there are adequate resources to sustain the quality of scholarship produced by undergraduate students, as well as graduate students' scholarship and research activities, including library support, information technology support, and laboratory access.

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- If applicable, discussion/explanation of the role and approximate percentage of adjunct and part-time faculty/limited term appointments used in the delivery of the program and the associated plans to ensure the sustainability of the program and quality of the student experience.

- If applicable, provision of supervision of experiential learning opportunities

- If applicable, additional institutional resource commitments to support the program in step with its ongoing implementation.

For undergraduate programs:

- Evidence of plans for adequate numbers of faculty and staff to achieve the goals of the program.

- Evidence of plans to provide the necessary resources in step with the implementation of the program.

- Planned/anticipated class sizes.

- Provision of supervision of experiential learning opportunities, if applicable

For graduate programs:

- Evidence that full-time tenured/tenure-track/CAWAR faculty have the recent research and/or professional/clinical expertise needed to sustain the program, promote innovation, foster an appropriate intellectual climate, and provide excellent supervision of students in academic and research components of the program.

- Where appropriate to the program, evidence that financial assistance for students will be sufficient to ensure adequate quality and numbers of students.

- For programs with a research component, evidence that faculty research supervisors have current and ongoing research programs and funding, and space and relevant research infrastructure appropriate to support students' research in the program.

- Evidence of how supervisory loads will be distributed, and the qualifications and appointment status of faculty who will provide instruction and supervision.

- Evidence of prior experience in graduate teaching and research supervision for faculty participating in the program.

~~For undergraduate programs:~~

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- ~~Evidence of plans for adequate numbers of faculty and staff to achieve the goals of the program;~~
- ~~Evidence of plans to provide the necessary resources in step with the implementation of the program;~~
- ~~Planned/anticipated class sizes;~~
- ~~Provision of supervision of experiential learning opportunities (if required); andRole of adjunct and sessional faculty.~~

5.3.7 Quality and other indicators

- Definition and use of indicators that provide evidence of quality of the faculty (e.g., qualifications, research, innovation and scholarly record; appropriateness of collective faculty expertise to contribute substantively to the proposed program).
- Evidence of a program structure and faculty research that will ensure the intellectual quality of the student experience.
- If applicable, any other evidence that the program and faculty will ensure the intellectual quality of the student experience.

~~5.3~~5.4 External Evaluation: Review Team

The Vice-Provost (Faculty) or, in the case of graduate programs, the Vice-Provost and Dean of Graduate Studies, in consultation with the Dean will select a diverse team of reviewers to assess the proposal. The Review t~~T~~Team~~review team~~ will ~~shall~~ consist of ~~at least one external reviewer for new undergraduate programs and~~ two external reviewers~~. for new graduate programs. The team will will also include~~ and one internal reviewer~~., selected by the Vice-Provost (Faculty) or, in the case of graduate programs, the Vice-Provost and Dean of Graduate Studies, in consultation with the Dean (or the Dean's designate).~~ Additional members may be added to the team, if appropriate, for instance when evaluating professional programs or interdisciplinary programs.

External reviews of new undergraduate, Master's and PhD program proposals must incorporate a site visit. Site visits are ~~normally~~ conducted on-site. ~~, however,~~ There may be circumstances that require ~~e~~exceptions to on-site visits. Exceptions to on-site visits for new undergraduate program reviews are determined by the Vice-Provost (Faculty) or, in the case of new graduate programs, the Vice-Provost and Dean of Graduate Studies, in consultation with the appropriate Dean or Dean's delegate and agreed to by the Review Team prior to the commencement of the review. The Vice-Provost (Faculty) or, in the case of new graduate programs, the Vice Provost and Dean of Graduate Studies, will provide clear justification for the decision for an exception to an on-site visit.

If it is determined that a site visit can take place virtually, the virtual site visit will require all

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elements of the Review Team's site visit using videoconferencing software and/or other suitable platforms. A virtual site visit will still include elements such as virtual meetings with students, faculty, and other stakeholders. It may also include remote attendance at performances or events, and virtual facilities tours. A virtual site visit may replace an in-person site visit with agreement from both the external reviewers and the Vice Provost (Faculty) or, in the case of graduate programs, the Vice Provost and Dean of Graduate Studies.

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As appropriate, the Review Team shall meet with the following:

- Chair or Director~~;~~
- Full-time faculty members (a broad cross section~~-~~, in groups)~~;~~
- Part-time faculty members (a broad cross section, in groups)~~;~~
- Program students (a broad cross section of students is~~are~~ to be invited by the program to participate in a meeting with the review team)~~.~~)
- Departmental/Program support staff~~;~~
- Associate Dean~~;~~
- Dean~~;~~
- for graduate programs, the Vice-Provost and Dean of Graduate Studies~~;~~
- for undergraduate programs, the Vice-Provost (Faculty)~~; and,~~
- Provost and Vice-President (Academic), if available~~.~~

External members of the Review Team will~~ normally~~ be individuals who are in the same discipline as the program under review (or across disciplines for interdisciplinary programs) and who are distinguished senior academics of broad experience, with an established commitment to higher education. External reviewers will not be faculty members from McMaster University. Internal reviewers are faculty members from McMaster but from outside of the discipline (or interdisciplinary group) engaged in the proposed program. Non-academics with relevant expertise and experience are permitted to serve as reviewers when~~Where~~ it would enhance the diversity of relevant disciplinary or interdisciplinary perspectives, or in community-engaged or professional programs. ~~Non-traditional programs are permitted to have non-academics with relevant expertise and experience are permitted to serve as reviewers.~~ Reviewers must have an impartial, arms-length relationship to the program (for clarity, arms-length reviewers should not have been a research supervisor or student of members of the proposed program; and should not have collaborated with members of the proposed program within the past six years~~,~~ or have made plans to collaborate with those individuals in the immediate future. There also should be no other potential conflicts of interest (e.g., personal or financial). Wherever possible the review team will represent broad institutional categories and/or

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geographic regions.

External reviewers will be selected from a list of at least six suggested individuals compiled by the Department and endorsed by the Dean. An internal reviewer will be selected from a list of at least three suggested individuals compiled by the Department and endorsed by the Dean.

The lists shall include, for each proposed ~~external~~ reviewer:

- name~~;~~
- rank and position~~;~~
- institution or company and current address, telephone ~~and fax numbers~~, e-mail address, and URL if available~~;~~
- professional (including administrative) experience or expertise relevant to the Program under review~~;~~
- details of any previous or current affiliation with the University, and any association with individual members of the Program under review (e.g., co-author, previous student/supervisor, close relationship)~~; and,~~
- for graduate programs, a description of research expertise, and a partial listing of recent scholarly publications~~.~~

The New Program Proposal, all relevant faculty CVs, the McMaster's Review Team Guidelines and other materials specific to the review will be provided to all members of the review team no less than two weeks prior to their visit.

~~5.4~~5.5 Reviewers' report

Excepting when contrary circumstances apply, the Review Team will submit a co-authored report, including an Executive Summary, for the program(s) under review within four weeks of the visit to the Vice-Provost (Faculty), or, in the case of graduate programs, the Vice-Provost and Dean of Graduate Studies. The report will be written primarily by the external reviewer(s), and then sent to the internal reviewer for their review and comment. The report will ~~the reviewers normally will provide, within four weeks of the review, a joint report that~~ appraise~~es~~ the standards and quality of the proposed program, and address~~es~~ the criteria set out in Section 5.3, including the associated faculty and the adequacy of existing physical, human and financial ~~materia l~~ resources. Reviewers also will be invited to acknowledge any clearly innovative aspects of the proposed program, together with recommendations on any essential or otherwise desirable modifications to the program. The report may include a confidential section (e.g., where personnel issues can be addressed). The Vice-Provost (Faculty) or, in the case of graduate programs, the Vice-Provost and Dean of Graduate Studies, will review the reviewers' report for completeness. If s~~t~~atisfactory, the ~~the~~ Vice-Provost (Faculty) or, in the case of graduate programs, the Vice-Provost and Dean of Graduate Studies, will approve the reviewers'

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report and ~~desseminate~~disseminate it to the Chair. If there are concerns with the completeness of the report, the ~~r~~Review Team ~~ers~~will be asked to provide more clarity.

~~5.5~~5.6 Internal response

Responses to the reviewers' report from both the Chair and the Dean, or their delegates, should be prepared, as per the New Program Response template, and attached to the reviewers' report. Any substantive revisions (e.g. revisions to Program Learning Outcomes; modes of delivery; curriculum and/or assessment practices) to the New Program Proposal required by the Reviewers' Report and agreed to by the Chair and Dean must be made to the proposal prior to submission for approval at Undergraduate Council or Graduate Council.

~~5.6~~5.7 Institutional approval

In addition to the completion of the external review, approval of new program proposals by the following University bodies, ~~normally~~ in the order listed below, is required:

- The Vice-Provost (Faculty) or, in the case of graduate programs, the Vice-Provost and Dean of Graduate Studies, will review the New Program Proposal to ensure that the program is consistent with McMaster's principles and priorities and existing strengths of the University, the program is of high academic quality; there is convincing evidence of student demand and societal need for the program; and, sufficient financial support, infrastructure, and human resources can be made available to initiate and support the program either within the Faculty budget or based on the program being a full revenue generating program.

- The Faculty Curriculum Committee(s), representing a diversity of faculty members and equipped to consider EDI principles reviews the New Program Proposal to ensure that the new program adds sufficient value to the programs already offered in the Faculty.~~;~~

  - the Faculty(ies) reviews the New Program Proposal to ensure that the program is consistent with the Faculty's strategic plans and that the necessary resources are available if these are to be provided from within the Faculty's envelope~~;~~

  - the Executive Director of Finance and Planning reviews the Resource Implications and Financial Viability document to ensure that all potential University resource requirements are captured, and the program is properly costed. In addition, for interdisciplinary or partnership programs, ensures that an MOU is properly completed~~.~~

  - for Undergraduate programs, the Undergraduate ~~Council~~ Curriculum and Admissions Committee reviews the New Program Proposal to assess the impact of the new program on students enrolled in other Faculties~~;~~

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- the University Student Fees Committee reviews the proposed Resource Implications and Financial Viability document~~Program and Supplementary Fees~~ and ensures that Ministry and University fee policies are adhered to, are reasonable relative to market and that fee collection can be properly administered within existing systems~~.~~

- Undergraduate Council or Graduate Council reviews the New Program Proposal to provide a venue for a broad discussion on the new program by elected faculty and student members with specific knowledge of and expertise in undergraduate or graduate programming, and ensure that the program is consistent with University-wide goals and criteria specifically related to undergraduate or graduate programming~~;~~

- University Planning Committee reviews the New Program Proposal and the Resource Implications and Financial Viability documents to understand the financial implications of the new program, evaluate the impact University-wide, and assess value-for-money for the intended student~~; and,~~

- Senate reviews the New Program Proposal and Resource Implications and Financial Viability documents to ensure that the program is consistent with the University's general strategic plans with respect to academic programs~~.~~

These bodies should consider the criteria outlined in Section 5.3 when evaluating the proposal.

The site visit with external reviewers will be held after The Faculty Curriculum Committee(s) and prior to approval at Undergraduate Council or Graduate Council and Senate.

Special considerations, such as collaboration agreements or non-standard distribution and full revenue generating programs are to refer to the Academic Revenue Generating Activity Policy and other relevant University policies, as applicable. ~~If any one of the bodies requires changes to the proposal, those changes may have to be subsequently provided to the other approving bodies for approval, depending on the nature of the changes.~~

~~5.7~~5.8 Quality Council Secretariat

Once all approvals outlined in Section 5.7 are obtained, the institution will submit the New Program Proposal, together with the Reviewers' Report and the internal response to the Report, to the Quality Council Secretariat. The submission template will require information on whether or not the proposed program will be a cost-recovery program. The same standards and protocols apply regardless of the source of funding. The Quality Council Appraisal's Committee will review the new program proposal submission and determine if additional information is required. If sufficient, the Quality Council will review the new program proposal submission and will make one of the following decisions:

- Approved to commence~~;~~

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- Approved to commence, with report~~;~~
- Deferred for up to one year during which time the university may address identified issues and report back
- Not approved
- or such other action as the Quality Council considers reasonable and appropriate in the circumstances.

Within 30 days of being notified, the university may appeal Quality Council's decision.

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~~5.8~~5.9 Announcement of new programs

Following its submission to the Quality Council, the University may announce, per guidelines within the New Program Proposal Guidebook, its intention to offer the program, provided that clear indication is given that approval by the Quality Council is pending, and that no offers of admission will be made until the program has been approved by the Quality Council. Ministry approval may also be required. When such announcements are made at this stage, they must contain the following statement: "Prospective students are advised that the program is still subject to formal approval."

~~5.9~~5.10 Approved new programs

After a new program is submitted to the Quality Council, the University may seek Provincial funding for the program, which must begin within thirty-six months of the date of approval; otherwise, the approval will lapse. If program approval lapses, the program must begin the new program proposal process again.

~~The first cyclical review for any new program must be conducted no more than eight years after the date of the program's initial enrolment.~~

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Between eighteen and twenty-four months after onset of the program, the Chair will provide the Dean and Vice-Provost (Faculty) or, in the case of graduate programs, the Vice- Provost and Dean of Graduate studies, with a brief ~~update on~~ progress report on~~n~~ the program, that assesses the program's success in realizing its goals; addresses~~addressing~~ any concerns from the ~~initial~~ program reviewers' report and notes from the Appraisal Committee;~~,~~ and highlights~~highlighting~~ any unanticipated changes in curriculum, resources, enrollment, funding mechanisms, or governance structure. If, after consultation with the Dean, the Vice-Provost (Faculty) or, in the case of graduate programs, the Vice-Provost and Dean of Graduate Studies, deems ~~deems~~

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it appropriate, an informal internal assessment of the program may be undertaken, including interviews with current faculty, students, and staff, to determine if a more complete, early cyclical review is warranted.

The first cyclical review for any new program must be conducted no more than eight years after the date of the program's initial enrolment. Outcomes identified in the program progress report, described above, must be included in the programs first cyclical review.

New undergraduate and graduate programs that have been approved are eligible for selection in the university's next cyclical audit.

6. EXPEDITED APPROVALS OF NEW PROGRAMS

The Protocol for Expedited Approvals applies when one or more of the following applies:

- an institution requests endorsement of the Quality Council to declare a new Field or to revise Fields in a graduate program (note: there is no requirement to declare fields in either master's or doctoral programs);
-
- there is a proposal for a new Ccollaborative Sspecialization; -a Collaborative Specialization must have:
  - At least one core one-semester course that is foundational to the specialization and does not form part of the course offerings of any of the partner programs. This course must be completed by all students from partner programs registered in the specialization and provides an opportunity for students to appreciate the different disciplinary perspectives that can be brought to bear on the area of specialization. This course may serve as an elective in the student's home program.
  - Clear and explicit requirements for each Collaborative Specialization. In programs requiring a major research paper, essay, or thesis, the topic must be in the area of the collaborative specialization. In course-only master's programs, at least 30% of the courses must be in the area of specialization including the core course described above. Courses in the area of specialization may be considered electives in the home program.
  - Only core faculty that are those faculty members in the participating home programs who have an interest and expertise in the area of the collaborative specialization
  - Appropriate administrative and academic oversight/governance to ensure requirements associated with the specialization are being met.
- there are proposals for new for-credit graduate diplomas; including new graduate diplomas (Type 2) offered in conjunction with a Master's or Doctoral degree program and usually represents an additional interdisciplinary qualification
- new graduate diplomas (Type 3) a stand-alone, direct-entry program, generally developed by a unit already offering a related master's or doctoral degree

The Expedited Proposal will describe the new graduate field, collaborative specialization, or graduate diploma (including, as appropriate, reference to Program Learning Outcomes, Degree Level Expectations, faculty and resource implications), provide a brief account of the rationale for the changes, and address the evaluation criteria for the program.

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The Expedited Approvals process requires all the approvals listed in Section 5.7 and the submission to the Quality Council of a New Program Proposal of the proposed new program and the rationale for it. Expedited approvals of new program do not require external reviewers be involved in the approval process and provides for a faster turn-around on decisions by the Quality Council. Common decisions by Quality Council are: a) approved to commence b) approved to commence, with a report or C) not approved.

Type 3 graduate diplomas are included in the schedule for cyclical reviews and will be subject to external review during the cyclical program review process. Graduate Diplomas not associated with a parent program are reviewed by desk audit. A desk audit is conducted independently of the university (i.e., does not typically include interviews or in-person or virtual site visits).

~~6.1. Expedited Proposal~~

~~The Expedited Proposal will describe the new graduate field, collaborative specialization, or graduate diploma or the significant changes being proposed (including, as appropriate, reference to Program Learning Outcomes, Degree Level Expectations, faculty and resource implications), provide a brief account of the rationale for the changes, and address the evaluation criteria~~

7. CYCLICAL PROGRAM REVIEWS

All academic programs are scheduled to be reviewed on a seven-year cycle and must be reviewed no more than eight years from the previous review. New programs must be reviewed no more than eight years after the date of the program's first enrolment. The steps taken to address any issues that have been identified in monitoring reports of the new program or in follow up by Quality Council are to be identified in first cyclical review self-study.

The primary purpose for cyclical program reviews is continuous improvement of existing academic programs. ~~An academic program is~~An academic program is defined as a complete set and sequence of courses, combinations of courses and/or other units of study, research and practice as outlined by the university for the fulfillment of the requirements for either undergraduate or graduate degrees. Combined programs do not require review if their constituting programs are reviewed separately. Undergraduate diplomas, Emphases, Options and Minors are~~do~~ not require to undergo the cyclical program review process outlined in this policy, however, Chairs are to consult with the Vice Provost (Faculty) to determine if other review processes are required. The list of programs that require review including those that are joint/inter-institutional, multi-disciplinary, interdisciplinary, and at multiple sites, as well as~~and~~ the schedule of such reviews, will be maintained by the Vice-Provost (Faculty) in consultation with the Vice-Provost and Dean of Graduate Studies. Programs that are closed or that have suspended admissions are not subject to cyclical program review. Program Chairs will be notified of a scheduled review by the Vice-Provost (Faculty) or their delegate. Each of the specific

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programs to be reviewed will be listed in the notification.

Departments can choose to review undergraduate and graduate programs jointly or separately. If the reviews are done jointly, the evaluation criteria and quality indicators described below must be applied to each program included in the self-study and there must be sections within the report to address different situations that apply to each program. ~~.~~ Program reviews can also be done jointly with accreditation reviews, at the discretion of the Chair, in consultation with the Dean (see Section 7~~8~~.5). Where programs seek to combine previously separate undergraduate and graduate ~~reviews~~reviews, they shall adopt the timeline of the earliest scheduled program review. For academic programs delivered in partnership with other educational institutions, the Chair must ensure that representatives from all educational institutions in the partnership are consulted during all key stages of the cyclical review process, including self-study, site visit, implementation and monitoring. For professional programs, the Chair must ensure the views of employers and professional associations are solicited and included in the self-study and site visit.

The key outcome of a cyclical program review is the Final Assessment Report and its associated Implementation Plan which forms the basis of the continuous improvement process. It is the primary responsibility of the program Chair to ensure that the implementation plan is achieved.

The review consists of the following steps:

7.1 Self-study: Internal program perspective

The Chair is responsible, in collaboration with relevant groups and/or individuals such as faculty, students and staff, for preparing a self-study document that is broad-based, reflective, forward-looking and inclusive of critical analysis. The self-study must address and document the consistency of the program's learning outcomes with the University's mission and Degree Level Expectations, and how its graduates achieve those outcomes. Both the Chair and the Dean, or the Dean's delegates, ensure that the self-study has met all of the self-study criteria and sign off on the completeness of the self-study. For interdisciplinary programs, all affiliated program Chairs and appropriate Deans, or the Deans' delegates, sign off on the completeness of the self-study.

The self-study criteria and quality indicators are as follows

7.1.1 Program Description and Overview

- Program goals are consistent with the University's tripartite research, teaching, and service excellence mission, its values and purpose, and its academic priorities and plans~~mission and academic plans.~~
- Ways in which the program addresses the institution's current strategies, frameworks and/or principles regarding equity, diversity and inclusion, and how the program advances EDI-related academic goals (e.g., Indigenous perspectives, international relevance, interdisciplinarity, intercultural competencies, social and environmental equity and sustainability, etc.),

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- Program structure and requirements are appropriate to meet the Program Learning Outcomes
- Program Learning Outcomes are clear, appropriate and align with the Degree Level Expectations.

7.1.2 Admission requirements

- Admission requirements are appropriately aligned with the Program Learning Outcomes established for completion of the program.
- Sufficient explanation of alternative requirements, if applicable, for admission into a graduate, second-entry or undergraduate program, e.g., minimum grade point average, additional languages or portfolios, and how the program recognizes prior work or learning experience
- Consideration of the demographics of the student market for the program, and accessible and equitable admissions processes and practices

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7.1.3 Curriculum

- How the curriculum reflects the current state of the discipline or area of study, and extent to which a comparative review of the state of the discipline informs the curriculum.
- Evidence of any significant innovation or creativity in the content and/or delivery of the program relative to other such programs, with attention to experiential and community-engaged pedagogy.

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- How the mode(s) of delivery are appropriate and effective at meeting the Program Learning ~~Outcomes~~Outcomes, including infrastructure and technologies for accessible education.

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- Ways in which the program addresses current institutional, faculty, or departmental priorities (e.g. experiential learning, equity, diversity and inclusion, accessibility, community engagement, entrepreneurship~~, et cetera~~) and the current Strategic Mandate Agreement.

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7.1.4 Teaching and assessment

- Methods for assessing the overall effectiveness of the program quality are appropriate and effective, ensuring evaluation methods are accessible and inclusive, and audiences are diverse.
- Methods for assessing student achievement of the defined Program Learning Outcomes and Degree Level Expectations are appropriate and effective.
- Appropriateness and effectiveness of the means of assessment, especially

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in the students' final year of the program, in clearly demonstrating achievement of the Program Learning Outcomes and the Degree Level Expectations and the program's goals.

- Description of how information on assessment effectiveness is documented and used to inform continuous program improvement

7.1.5 Resources

- Appropriateness and effectiveness of the academic unit's use of existing human, physical and financial resources in delivering and maintaining the quality of its program(s), in relation to the University's priorities for and constraints on funding, space, and faculty allocation.
- Given the program's class sizes and cohorts, as well as its program level learning outcomes, describe the participation of a sufficient number of qualified core faculty who are competent to teach and/or supervise in and achieve the goals of the program and foster the appropriate academic environment
- If applicable, discuss the role and approximate percentage of adjunct and part-time faculty/limited term appointments used in the delivery of the program and the associated plans to ensure the sustainability of the program and quality of the student experience
- If applicable, outline the supervision of experiential learning opportunities

Graduate Programs Only

- Given the program's class sizes and cohorts as well as its program-level learning outcomes, provide evidence that faculty have the recent research or professional/clinical expertise needed to foster an appropriate intellectual climate, sustain the program, and promote innovation
- Evidence of how supervisory loads are distributed, in light of qualifications and appointment status of the faculty
- If appropriate, evidence that financial assistance for students is sufficient to ensure adequate quality and numbers of students

7.1.6 Quality indicators

- Information on the quality of the program under review. Standard quality indicators, outlined in the McMaster's Self-Study Guidebook, are available to Chairs from the Office of Institutional Research and Analysis, the Office of the Registrar, the School of Graduate Studies, or from the departments themselves. Chairs will be expected to provide context and commentary on the data. When possible and appropriate, Chairs will also refer to applicable professional standards.
- Evidence of the quality of the faculty (e.g., qualifications, funding, honours, awards, research, innovation and scholarly record; appropriateness of

collective faculty expertise to contribute substantively to the program and commitment to student mentoring)

- For students: grade-level for admission, scholarly output, success rates in provincial and national scholarships, competitions, awards and commitment to professional and transferable skills, and times-to-completion and retention rates
- Any other evidence that the program and faculty ensure the intellectual quality of the student experience

Additional graduate program criteria:

- Evidence that students' time-to-completion is both monitored and managed in relation to the program's defined length and program requirements.
- Quality and availability of graduate supervision.
- Evidence that each graduate student in the program is required to take a minimum of two-thirds of the course requirements from among graduate level courses
- For research-focused graduate programs, clear indication of the nature and suitability of the major research requirements for degree completion
- Definition and application of indicators that provide evidence of faculty, student and program quality, for example:
    - Faculty: funding, honours and awards, and commitment to student mentoring~~;~~
    - Students: grade-level for admission, scholarly output, success rates in provincial and national scholarships, competitions, awards~~;~~
    - Program: evidence of a program structure and faculty research that will ensure the intellectual quality of the student experience, and commitment to development of professional and transferable skills; evidence of sufficient and regular graduate level course offerings to ensure that students will be able to meet university requirements in terms of the minimum number of courses required, the level of courses required, and the timely completion of other required elements appropriate for the degree level (e.g., transfer exams, comprehensive exams)~~.~~

7.1.7 Quality enhancement

- Concerns and recommendations raised in previous reviews especially those detailed in the Final Assessment Report, Implementation Plan and subsequent monitoring reports from the previous Cyclical Review of the program~~;~~

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- Initiatives that have been undertaken to enhance the teaching, learning and/or research environments thus far, the quality of the program, and how these will be sustained.

- Areas identified through the conduct of the self-study as requiring improvement;

- Areas that hold promise for continued enhancement.

7.1.8 System of governance

- Evidence that a consultative and inclusive system of governance has been used on an ongoing basis to assess the program and implement changes as appropriate.

7.1.9 Academic Services

Academic services that directly contribute to the academic quality of each program under review.

7.1.10 Self-Study Participation

Participation of program faculty, staff, and students in the self-study and how their views were obtained and taken into account, and who contributed to the development and writing of the self-study. For professional programs, the Chair must ensure the views of employers and professional associations are solicited and included in the self-study and site visit.

7.1.11 External Participation

The input of others deemed by the Chair to be relevant and useful, such as graduates of the program, representatives of industry, the professions, practical training programs, and employers is to be included in the self-study.

7.2 External evaluation: Review Team

The Vice-Provost (Faculty) or, in the case of graduate programs, the Vice-Provost and Dean of Graduate Studies, in consultation with the Dean (or the Dean's designate), will select a diverse team of reviewers to evaluate the program. The Review Team shall consist of ~~of at least one external reviewer for undergraduate programs and~~ two external reviewers. ~~for either graduate programs or for concurrent reviews of undergraduate and graduate programs~~ If appropriate, additional members are to be added to the review team, such as when evaluating professional programs or interdisciplinary programs. The team will also include one internal reviewer selected by the Vice-Provost (Faculty) or, in the case of graduate programs, the Vice-Provost and Dean of Graduate Studies, in consultation with the Dean (or the Dean's designate).

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External members of the Rreview Tteam ~~normally~~ shall be individuals in the same discipline as the Program under review (or across disciplines for interdisciplinary programs) who are distinguished senior academics of broad experience, with an established commitment to higher education. Where it would enhance the diversity of relevant disciplinary or interdisciplinary perspectives, or in community-engaged or professional programs, ~~Non-traditional programs are permitted to have~~ non-academics with relevant expertise and experience are permitted to serve as reviewers with the approval of the Vice-Provost (Faculty) or, in the case of graduate programs, the Vice-Provost and Dean of Graduate Studies. Reviewers ~~They~~ must have an impartial, arms-length relationship to the Program (as defined in Section 5.4). Wherever possible the Rreview Tteam shall represent broad institutional categories and/or geographic regions.

External reviewers~~They~~ will be selected from a list of at least six suggested individuals compiled by the Program/Department under review and endorsed by the Dean. An internal reviewer will be selected from a list of at least three suggested individuals compiled by the Department Chair and endorsed by the Dean. The lists shall include, for each proposed ~~external~~ reviewer:

- name~~;~~
- rank and position~~;~~
- institution or company and current address, telephone ~~and fax numbers~~, and e-mail address, and URL if available~~;~~
- professional (including administrative) experience or expertise relevant to the Program under review~~;~~
- details of any previous or current affiliation with the University, and any association with individual members of the Program under review (e.g., co-author, previous student/supervisor, close relationship)~~; and,~~
- for graduate program or combined reviews, a description of research expertise, and a partial listing of recent scholarly publications~~.~~

Cyclical Program Reviews must incorporate a site visit. Site visits are ~~normally~~ conducted on-site, however, exceptions to on-site visits for undergraduate program reviews are determined by the Vice-Provost (Faculty) or, in the case of graduate programs, the Vice-Provost and Dean of Graduate Studies, in consultation with the Dean or Dean's delegate prior to the commencement of the review and agreed to by the Review Team prior to the commencement of the review. The Vice-Provost (Faculty) or, in the case of graduate programs, the Vice Provost and Dean of Graduate Studies, will provide clear justification for the decision for an exception to an on-site visit.

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If it is determined that a site visit can take place virtually, the virtual site visit requires all elements of the external reviewers' site visit using videoconferencing software and/or other suitable platforms. A virtual site visit will still include elements such as virtual meetings with students, faculty, and other stakeholders. It may also include remote attendance at performances or events, and virtual facilities tours. A virtual site visit may replace an in-person site visit with agreement from both the external reviewers and the Vice-Provost (Faculty) or in the case of graduate programs, the Vice Provost and Dean of Graduate Studies.

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The Self-Study, the Guidelines for Review Team, and other materials specific to the current review will be provided to all members of the Review Team no less than two weeks prior to their visit. If applicable, the results of the previous accreditation review also will be made available to the Review Team to provide them with the views of the relevant professional association(s). The Guidelines for Review Team describes the review process and the roles and obligations of the Review Team, which include:

- to identify and comment on the program's notably strong and creative attributes~~;~~
- to describe the program's respective strengths, areas for improvement, and opportunities for enhancement~~;~~
- to recommend specific steps to be taken to improve the program, distinguishing between those the program can itself take with existing resources and those that require external action~~;~~
- to recognize the University's autonomy to determine priorities for funding, space, and faculty allocation~~; and,~~
- to respect the confidentiality required for all aspects of the review process

As appropriate, the Review Team shall meet with the following:

- Chair or Director~~;~~
- Full-time faculty members (a broad cross section, in groups)
- Part-time faculty members (a broad cross section, in groups)
- ~~Full-time faculty members (in groups);~~
- ~~Part-time faculty members (in groups);~~
- Program students (a broad cross section of students is to be invited by the program to participate in a meeting with the review team)~~;~~
- Departmental/Program support staff~~;~~
- Associate Dean~~;~~
- Dean~~;~~
- for graduate programs, the Vice-Provost and Dean of Graduate Studies~~;~~

- for undergraduate programs, the Vice-Provost (Faculty~~); and,~~
- Provost and Vice-President (Academic), if available~~.~~

The Review Team will submit a co-authored report, including an Executive Summary, for the program(s) under review within four weeks of the visit to the Vice-Provost (Faculty), or, in the case of graduate programs, the Vice-Provost and Dean of Graduate Studies. The report will be written primarily by the external reviewer(s), and then sent to the internal reviewer for their review and comment. The Review Team's report is to address the substance of both the self-study report and the evaluation criteria set out in Section 7.1. The report may include a confidential section (e.g., where personnel issues can be addressed). In the case that the self-study addresses more than one program, for example when a self-study describes both an undergraduate and graduate program or multiple undergraduate programs, reviewers in their report must make specific reference to each program described in the self-study. The intent of these reports is to be formative and constructive. Reviewers are required to make at least three recommendations for specific steps to be taken that will lead to the continuous improvement of the program, distinguishing between those the program can itself take and those that require external action. Any commentary on issues such as faculty complement and/or space requirements made by the reviewers must be directly tied to issues of program quality and/or sustainability. The reports are intended to provide counsel rather than prescriptive courses of action. The Vice-Provost (Faculty) or, in the case of graduate programs, the Vice-Provost and Dean of Graduate Studies, will review the Review Team's report for completeness. If satisfactory, the Vice-Provost (Faculty) or, in the case of graduate programs, the Vice-Provost and Dean of Graduate Studies, will approve the reviewers' report and disseminate it to the Chair. If there are concerns with the completeness of the report, the Review Team will be asked to provide more clarity

Responses to the reviewers' report from both the Chair and the Dean, or the Dean's delegate, is prepared, as per the Program Response template, and attached to the reviewers' report.

7.3 Institutional perspective and Final Assessment Report (FAR)

The self-study, reviewer's report excluding the confidential section, and responses from the Chair and Dean, will be submitted as a package to McMaster's Quality Assurance Committee, a joint committee of Undergraduate and Graduate Councils. The Quality Assurance Committee will assess the review and will submit a Final Assessment Report (FAR) to Undergraduate Council or Graduate Council that:

- provides an Executive Summary
- identifies significant strengths of the program~~;~~
- addresses the appropriateness of resources for the success of the program~~;~~
- identifies opportunities for program improvement and enhancement~~;~~

- identifies and prioritizes the recommendations; may include additional recommendations or comments to the Provost and Vice- President (Academic). Recommendations could include, for example, requiring a detailed progress report that will describe progress towards addressing major concerns or scheduling an additional cyclical review sooner than specified by the normal 8-year cycle.

- includes an Implementation Plan that: prioritizes recommendations that will be implemented; identifies who is responsible for acting on each recommendation; specifies timelines related to each recommendation; and, as necessary, identifies the unit or individual responsible for providing resources needed to address each recommendation.

The Final Assessment Report from the Quality Assurance Committee along with any recommendations or comments is sent to the Chair and presented to Undergraduate Council or Graduate Council, as appropriate, for approval and then to Senate for information. These governing bodies will consider if additional recommendations or comments are necessary. If so, these recommendations or comments will be presented to the Provost and Vice-President (Academic). These will be communicated to the Chair, the Dean and the Vice-Provost (Faculty) or, in the case of graduate programs, to the Vice-Provost and Dean of Graduate Studies. Once approved, the FAR including an Executive Summary and the associated Implementation Plan is posted on the institution's Quality Assurance webpage. Programs are strongly encouraged to post their FAR and Implementation Plans on their program's webpage as well. The Final Assessment Report is the synthesis of the cyclical review process and as such is an important tool for a program's continuous improvement.

Eighteen months after receiving the report from Undergraduate Council or Graduate Council, the Chair will submit a ~~process~~process report on the program to the Dean. The Dean will provide commentary and response to the progress report and submit the progress report along with their commentary to the Quality Assurance Committee summarizing the status of any actions taken or being taken. The Quality Assurance Committee, in some circumstances, will request follow up reporting on specific components if not satisfactorily addressed in the 18-month report. These reports are posted on the institution's Quality Assurance webpage as an addendum to the program's FAR and Implementation Plan. The Quality Assurance Committee will present progress reports to Undergraduate Council or Graduate Council, if deemed necessary by the Chairs of the Quality Assurance Committee.

7.4 Reporting requirements

The Final Assessment Reports, which include the Implementation Plans, and subsequent Progress Reports are posted on the Provost and Vice-President (Academic) section of the University's website. The Vice-Provost (Faculty) provides an annual report to Quality Council that lists the past year's completed Final Assessment Reports and attests that all IQAP-required Cyclical Program Review processes have been followed. This report will

also provide the link to the institution's Quality Assurance webpage. The annual report of Final Assessment Reports and their related Cyclical Program Review processes will occasionally be reviewed for compliance by the Quality Council and that if issues are found, the Quality Council may decide to initiate a Focused Audit.

7.5 Use of accreditation and other external reviews in the Institutional Quality Assurance Process

Programs that periodically undergo accreditation reviews are permitted to request that the associated accreditation documentation serve to meet some of the elements required of the IQAP cyclical review self-study when these elements are fully consistent with the requirements outlined within this policy~~-~~. The program chair with support from the Dean of the program will submit a request form and all required supporting documentation to the Vice Provost (Faculty) for undergraduate programs or the Vice Provost and Dean of Graduate Studies for graduate programs. ~~McMaster's Quality Assurance Committee.~~

When requested by the Dean, or the Dean's delegate, and permitted by the accreditation authorities, the site visit by the Review Team is permitted to be performed at the same time ~~or by the same people~~ as the accreditation review~~ers~~, however there must be at least two external reviewers ~~(~~and one internal reviewer~~?)~~ dedicated to the Cyclical Program Review.

The Vice Provost (Faculty) for undergraduate programs or the Vice Provost and Dean of Graduate Studies for graduate programs ~~The Quality Assurance Committee,~~ will review the request and decide if an accreditation review can be substituted in ~~in whole or in~~ part for a cyclical review. The program will be notified in writing of the ~~committee's~~ decision. A record of substitutions or additions, and the grounds on which they were made, will be eligible for audit by the Quality Council.

Approval for substitution ~~The Quality Assurance Committee's decision~~ is only applicable for the cyclical review year related to the request. The remaining steps in the cyclical review will then take place. Programs must participate in all reporting related to the cyclical review. If desired by the program, a request to substitute some ~~for~~ accreditation documentation in order to meet partial requirements of their program's Quality Assurance ~~review~~review~~substitution~~ must be submitted for every subsequent cyclical review.

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8. INSTITUTIONAL IDENTIFICATION OF MAJOR MODIFICATIONS TO EXISTING PROGRAMS

As part of the continuous improvement of McMaster's academic programs, existing~~Existing~~ programs ~~are~~are ~~can be~~ expected to routinely undergo revisions ~~with the aim of~~ with the aim of improving student experience and quality enhancement. This includes, for example, the introduction or deletion of courses, major exam structures, change in emphases, options, minors, or mode of delivery. Such revisions provide an opportunity for improving the student experience and staying current with the discipline.

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The revisions must be submitted through the university's ~~normal~~ curriculum approval ~~process~~process. This is the same approval process as outlined for New Program Proposals ~~outlined~~ in Section 5.7 (excluding the University Planning Committee and University Fees, unless there are significant resource implications). ~~These revisions will be assessed during the course of the next cyclical review of the program.~~

Program revisions are described as minor or major modifications. In both cases, any changes to the program will be subject to the regular cyclical program review process as outlined in Section 7. Once per year, the MacPherson Institute and School of Graduate Studies consults with the Registrar's Office and prepares a report of major modifications to existing programs including program closures and submits the report to the Quality Council.

In situations where it is unclear or where disagreement exists on whether a planned change constitutes a minor modification, a major modification, or a new program, the determination will be made by the Vice-Provost (Faculty) for undergraduate programs or the Vice-Provost and Dean of Graduate Studies for graduate programs, in consultation with McMaster's Quality Assurance Committee, where appropriate. Quality Council has the final authority to decide if a major modification constitutes a new program and, therefore, must follow the Protocol for New Program Approvals. A record of any decision will be kept with McMaster's Quality Assurance Committee.

Minor modifications include: changes to course titles or codes; the addition or deletion of a single course; weighting of courses; creating or closing a minor; and creating or closing an undergraduate certificate.

Major modifications include the following program changes:

a) Requirements that differ significantly from those existing at the time of the previous cyclical program review or, if a program review has not taken place yet, from the new program proposal. For undergraduate programs, it would be considered a major modification when more than 30% of the program requirements are being changed from one academic year to the next. For graduate programs, it would be considered a major modification when more than 50% of the program requirements (including requirements such as courses, major exams, and research) are being changed from one year to the next.

b) Significant changes lasting more than one academic year and that differ from what was outlined in the last cyclical program review or, if a program review has not taken place yet, from the new program proposal to the faculty engaged in delivering the program and/or to the essential physical resources, for example, where there have been changes to the existing mode(s) of delivery (such as different campus, online delivery and inter-institutional collaboration)

c) Significant changes to the Program Learning Outcomes that are made outside of the cyclical program review process. Significant changes are defined as: changes to the majority of the Program Learning Outcomes such that they differ from those

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existing at the time of the previous cyclical program review (or, if a program review has not taken place yet, from the new program proposal) but do not, however, meet the threshold of a new program

d) Change in program name and/or degree nomenclature, when this results in a change in program learning outcomes

e) Program closure

f) The inclusion of a new program of specialization where another with the same degree designation already exists

g) The addition of a single new field to an existing graduate program. The creation of more than one field at one time or over consecutive years may be required to complete the Expedited Approvals process. This process is outlined in Section 6.

Chairs are responsible for ensuring any major modifications align with the Program Learning Outcomes and that the impact of the modification on students has been assessed, where appropriate.

Changes to an existing Emphasis, Option, or Minor Program; the creation of a new micro-credential(s); undergraduate certificate(s); and laddering, stacking or similar options, or comparable elements do not require Quality Council appraisal or approval. Micro-credentials are approved using the same internal approval process outlined in Section 5.7. This approval process is subject to change and proponents of micro-credentials are encouraged to consult with the Vice Provost (Faculty) or the Vice Provost and Dean of Graduate Studies prior to seeking institutional approval for a micro-credential.
~~Revisions to an existing program will be classified as either a minor or a major modification to the program. In both cases, the program will continue to be subject to a cyclical program review as outlined in Section 7.~~

~~Major modifications include the following program changes:~~

~~a) Requirements that differ significantly from those existing at the time of the previous cyclical program review. For undergraduate programs, it would be considered a major modification when more than 30% of the program requirements are being changed from one academic year to the next. For graduate programs, it would be considered a major modification when more than 50% of the program requirements (including requirements such as courses, major exams, and research) are being changed from one year to the next.~~

~~b)~~

~~Significant changes to the program learning outcomes:~~
~~Significant changes lasting more than one academic year to the faculty engaged in~~

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~~delivering the program and/or to the essential physical resources, for example, where there have been changes to the existing mode(s) of delivery (such as different campus, online delivery and inter-institutional collaboration);~~program.

~~The inclusion of a new program of specialization where another with the same degree designation already exists~~The addition of a new field to an existing graduate program, is considered to be a major modification, but is subject to an Expedited Approval process. the~~The Expedited Approvals process requires all the approvals listed in Section 5.7 and the submission to the Quality Council of major modification report. It does not require that external reviewers be involved in the approval process and provides for a faster turn-around on decisions by the Quality Council.~~

~~Additional examples of what constitutes major modifications are included at: http://oucqa.ca/guide/5-major-modifications-to-existing-programs/~~

~~Once per year, the MacPherson Institute and School of Graduate Studies consults with the Registrar's Office and prepares a report of major modifications to existing programs and submits the report to the Quality Council.~~

~~institutional~~

There may be situations where although the changes to the program meet the definition of a major modification~~modiciation~~, the changes are of such significance that a more immediate review is desirable. This situation may occur, for example, when the fundamental goals ~~objectives~~ of the program change; ~~or,~~or there are significant changes to the faculty engaged in delivering the program and/or to the essential physical ~~resources. resourc~~resources. ~~es.~~

In such cases, the Department, the Faculty, Undergraduate Council or Graduate Council may, if it deems it advisable after consultation with the relevant Dean(s) and Vice-Provost (Faculty) and/or Vice-Provost and Dean of Graduate Studies, initiate a program review and request that the Quality Council review the major modification proposal. The proposal must include a description and rationale for the proposed changes and how they will improve the student experience. The proposal will include input from current students and recent graduates of the program. When requested, this process will occur through Quality Council's Expedited Approval Process.

~~. Normally, such review will occur through an Expedited Approval Process.~~

~~In situations where it is unclear or where disagreement exists on whether a planned change constitutes a minor modification, a major modification, or a new program, the determination will be made by the Vice-Provost (Faculty) for undergraduate programs or the Vice-Provost and Dean of Graduate Studies for graduate programs, in consultation with McMaster's Quality Assurance Committee, where appropriate. A record of any decision will be kept with McMaster's Quality Assurance Committee.~~

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APPENDIX A
McMASTER UNIVERSITY'S STATEMENT ON DEGREE LEVEL EXPECTATIONS

A McMaster education enables students to develop sets of life and learning skills that promote a continuing ability and desire to learn, and a set of technical and professional skills that permit a range of career choices. Degree level expectations elaborate the intellectual and creative development of students and the acquisition of relevant skills that are usually widely, yet implicitly, understood.

McMaster University has adopted the following Undergraduate Degree Level Expectations (UDLEs) or Graduate Degree Level Expectations (GDLEs) that were developed by the Ontario Council of Academic Vice-Presidents and endorsed by the Council of Ontario Universities in December 2005. These degree level expectations are to be viewed as a minimum threshold for all degree programs at McMaster.

UNDERGRADUATE

	Baccalaureate/bachelor's degree This degree is awarded to students who have demonstrated the following:	**Baccalaureate/bachelor's degree: honours** This degree is awarded to students who have demonstrated the following:
1. Depth and breadth of knowledge	a) General knowledge and understanding of many key concepts, methodologies, theoretical approaches and assumptions in a discipline b) Broad understanding of some of the major fields in a discipline, including, where appropriate, from an interdisciplinary perspective, and how the fields may intersect with fields in related disciplines c) Ability to gather, review, evaluate and interpret information relevant to one or	a) Developed knowledge and critical understanding of the key concepts, methodologies, current advances, theoretical approaches and assumptions in a discipline overall, as well as in a specialized area of a discipline b) Developed understanding of many of the major fields in a discipline, including, where appropriate, from an interdisciplinary perspective, and how the fields may intersect with fields in related disciplines c) Developed ability to: i) gather, review, evaluate and interpret information;

	more of the major fields in a discipline	and ii) compare the merits of alternate

	d) Some detailed knowledge in an area of the discipline e) Critical thinking and analytical skills inside and outside the discipline f) Ability to apply learning from one or more areas outside the discipline	hypotheses or creative options, relevant to one or more of the major fields in a discipline d) Developed, detailed knowledge of and experience in research in an area of the discipline e) Developed critical thinking and analytical skills inside and outside the discipline f) Ability to apply learning from one or more areas outside the discipline

2. Knowledge of methodologies	An understanding of methods of enquiry or creative activity, or both, in their primary area of study that enables the student to: a) evaluate the appropriateness of different approaches to solving problems using well established ideas and techniques; and b) devise and sustain arguments or solve problems using these methods.	An understanding of methods of enquiry or creative activity, or both, in their primary area of study that enables the student to: a) evaluate the appropriateness of different approaches to solving problems using well established ideas and techniques; b) devise and sustain arguments or solve problems using these methods; and c) describe and comment upon particular aspects of current research or equivalent advanced scholarship.
3. Application of knowledge	The ability to review, present, and interpret quantitative and qualitative information to: a) develop lines of argument; b) make sound judgments in accordance with the major theories, concepts and methods of the subject(s) of study; and	The ability to review, present and critically evaluate qualitative and quantitative information to: a) develop lines of argument; b) make sound judgments in accordance with the major theories, concepts and methods of the subject(s) of study;

	The ability to use a basic range of established techniques to: a) analyze information; b) evaluate the appropriateness of different approaches to solving problems related to their area(s) of study; c) propose solutions; and d) make use of scholarly reviews and primary sources.	c) apply underlying concepts, principles, and techniques of analysis, both within and outside the discipline; d) where appropriate use this knowledge in the creative process; and The ability to use a range of established techniques to: a) initiate and undertake critical evaluation of arguments, assumptions, abstract concepts and information; b) propose solutions; c) frame appropriate questions for the purpose of solving a problem; d) solve a problem or create a new work; and e) to make critical use of scholarly reviews and primary sources.
4. Communication skills	The ability to communicate accurately and reliably, orally and in writing to a range of audiences.	The ability to communicate information, arguments, and analyses accurately and reliably, orally and in writing to a range of audiences.

5. Awareness of limits of knowledge	An understanding of the limits to their own knowledge and how this might influence their analyses and interpretations.	An understanding of the limits to their own knowledge and ability, and an appreciation of the uncertainty, ambiguity and limits to knowledge and how this might influence analyses and interpretations.
6. Autonomy and professional capacity	Qualities and transferable skills necessary for further study, employment, community involvement and other activities requiring: a) the exercise of personal responsibility and decision- making; b) working effectively with others; c) the ability to identify and address their own learning needs in changing circumstances and to select an appropriate program of further study; and d) behaviour consistent with academic integrity and social responsibility.	Qualities and transferable skills necessary for further study, employment, community involvement and other activities requiring: a) the exercise of initiative, personal responsibility and accountability in both personal and group contexts; b) working effectively with others; c) decision-making in complex contexts; d) the ability to manage their own learning in changing circumstances, both within and outside the discipline and to select an appropriate program of further study; e) and behaviour consistent with academic integrity and social responsibility.

GRADUATE

	Master's degree This degree is awarded to students who have demonstrated the following:	**Doctoral degree** This degree extends the skills associated with the Master's degree and is awarded to students who have demonstrated the following:
1. Depth and breadth of knowledge	A systematic understanding of knowledge, including, where appropriate, relevant knowledge outside the field and/or discipline, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of their academic discipline, field of study, or area of professional practice;	A thorough understanding of a substantial body of knowledge that is at the forefront of their academic discipline or area of professional practice including, where appropriate, relevant knowledge outside the field and/or discipline.
2. Research and scholarship	A conceptual understanding and methodological competence that: a) Enables a working comprehension of how established techniques of research and inquiry are used to create and interpret knowledge in the discipline; b) Enables a critical evaluation of current research and advanced research and scholarship in the discipline or area of professional competence; and c) Enables a treatment of complex issues and judgments based on established principles and techniques; and, On the basis of that competence, has shown at	a) The ability to conceptualize, design, and implement research for the generation of new knowledge, applications, or understanding at the forefront of the discipline, and to adjust the research design or methodology in the light of unforeseen problems; b) The ability to make informed judgments on complex issues in specialist fields, sometimes requiring new methods; and c) The ability to produce original research, or other advanced scholarship, of a quality to satisfy peer review, and to merit publication.

	least one of the following:	

	a) The development and support of a sustained argument in written form; or b) Originality in the application of knowledge.	
3. Level of application of knowledge	Competence in the research process by applying an existing body of knowledge in the critical analysis of a new question or of a specific problem or issue in a new setting.	The capacity to: a) Undertake pure and/or applied research at an advanced level; and b) Contribute to the development of academic or professional skills, techniques, tools, practices, ideas,

		theories, approaches, and/or materials.
4. Professional capacity/autonomy	a) The qualities and transferable skills necessary for employment requiring: i) The exercise of initiative and of personal responsibility and accountability; and ii) Decision-making in complex situations; b) The intellectual independence required for continuing professional development; c) The ethical behavior consistent with academic integrity and the use of appropriate guidelines and procedures for responsible conduct of research; and d) The ability to appreciate the broader implications of applying knowledge to particular contexts.	a) The qualities and transferable skills necessary for employment requiring the exercise of personal responsibility and largely autonomous initiative in complex situations; b) The intellectual independence to be academically and professionally engaged and current; c) The ethical behavior consistent with academic integrity and the use of appropriate guidelines and procedures for responsible conduct of research; and d) The ability to evaluate the broader implications of applying knowledge to particular contexts.
5. Level of communications skills	The ability to communicate ideas, issues and conclusions clearly, orally and in writing, to a range of audiences.	The ability to communicate complex and/or ambiguous ideas, issues and conclusions clearly and effectively, orally and in writing, to a range of audiences.

6. Awareness of limits of knowledge	Cognizance of the complexity of knowledge and of the potential contributions of other interpretations, methods, and disciplines.	An appreciation of the limitations of one's own work and discipline, of the complexity of knowledge, and of the potential contributions of other interpretations, methods, and disciplines.

McMaster University **School of Graduate Studies** 1280 Main Street West Phone 905.525.9140
Hamilton, Ontario, Canada Ext. 23679
L8S 4L8 http://graduate.mcmaster.ca

To : Graduate Council

From : Christina Bryce
Assistant Graduate Secretary

At its meetings on October 18th and November 15th the Faculty of Engineering Graduate Curriculum and Policy Committee approved the following graduate curriculum recommendations.

Please note that these recommendations were approved by the Faculty of Engineering.

FOR APPROVAL OF GRADUATE COUNCIL:

- **Mechanical Engineering**
  - **Accelerated Option**

- **School of Engineering Practice and Technology**
  - **Change to Calendar Copy (MEEI, MTEI)**
  - **Change to Course Requirements (MED and MEST)**
  - **Change to Calendar Copy and New Stream (MEME)**

FOR INFORMATION OF GRADUATE COUNCIL:

- **Biomedical Engineering ***
  - **New Cross-listed Courses**
    - 711 Introduction to Biofabrication
    - 752 Advanced Microfabrication and Microfluidics

- **Chemical Engineering**
  - **Change to Course Description and Unit Count**
    - 740 Advanced PSE Tools and Methods

- **Computing and Software**
  - **New Course**
    - 775 Theoretical Foundations of Unsupervised Learning
  - **Change to Mode of Delivery and Course Description**
    - 781 Advanced Topics in Computing and Software

- **Civil Engineering**
  - **New Courses**
    - 711 Travel Demand Analysis
    - 712 Computational Poromechanics

- **Electrical and Computer Engineering**
  - **Change to Mode of Delivery**
    - 724 Modeling, Control and Design of Electrified Vehicles
    - 790 Graduate Poster Seminars in Electrical and Computer Engineering

- **Mechanical Engineering**
  - **Change to Mode of Delivery**
    - 710 Machine Tool Analysis
  - **New Courses**
    - 727 Surface Engineering
    - 757 Advanced Topics in Computational Fluid Dynamics

- **School of Engineering Practice and Technology**
  - **New Courses**
    - 740 Deep Learning
    - 741 Project Management for High Tech Projects
    - 742 Visual Perception for Autonomous Vehicles
    - 743 Animal Cell Culture Engineering
    - 744 Biomanufacturing
    - 745 Fermentation of Recombinant Microorganisms
    - 764 Current Good Manufacturing Practice Upstream Operations
    - 765 Current Good Manufacturing Practice Downstream Operations
    - 775 Introduction to Computational Natural Language Processing
  - **Change to Course Name**
    - 761 Human-Centred Design
  - **Change to Requisite**
    - 769 Cyber Physical Systems

*Also approved by the Faculty of Health Sciences

McMaster University **SCHOOL OF GRADUATE STUDIES**

RECOMMENDATION FOR CHANGE IN GRADUATE CURRICULUM - FOR CHANGE(S) INVOLVING DEGREE PROGRAM REQUIREMENTS / PROCEDURES / MILESTONES

IMPORTANT: PLEASE READ THE FOLLOWING NOTES BEFORE COMPLETING THIS FORM:

1. This form must be completed for **ALL** changes involving degree program requirements/procedures. **All** sections of this form **must** be completed.

2. An electronic version of this form (must be in MS WORD **not** PDF) should be emailed to the Assistant Secretary, School of Graduate Studies (cbryce@mcmaster.ca).

3. A representative from the department is **required to attend** the Faculty Curriculum and Policy Committee meeting during which this recommendation for change in graduate curriculum will be discussed.

DEPARTMENT	Mechanical Engineering
NAME OF PROGRAM and PLAN	Mechanical Engineering
DEGREE	Masters of Applied Science (M.A.Sc.)

NATURE OF RECOMMENDATION *(PLEASE CHECK APPROPRIATE BOX)*

Is this change a result of an IQAP review? ☒ Yes ☐ No

CREATION OF NEW MILESTONE ☐

CHANGE IN ADMISSION REQUIREMENTS		**CHANGE IN COMPREHENSIVE EXAMINATION PROCEDURE**		**CHANGE IN COURSE REQUIREMENTS**	

CHANGE IN THE DESCRIPTION OF A SECTION IN THE GRADUATE CALENDAR	X	**EXPLAIN:** Addition of an accelerated option to the description of: Mechanical Engineering – M.A.Sc. – Requirements
OTHER CHANGES		**EXPLAIN:**

DESCRIBE THE <u>EXISTING</u> REQUIREMENT/PROCEDURE:

The existing calendar description for the Mechanical Engineering – M.A.Sc. Degree – Requirements is:

"The requirements for the M.A.Sc. degree in Mechanical Engineering can be satisfied through full- or part-time study. The minimum course requirement is four half courses, at least three of which should be at the 700-level. Students are required to present a thesis which embodies the results of independent work that the candidate has completed, and which demonstrates competence in Mechanical Engineering. An oral defense of the thesis is required.

In addition, all full-time graduate students are required to successfully complete MECH ENG 758 "Graduate Seminars in Mechanical Engineering". For further details see the MECH ENG 758 course description."

PROVIDE A DETAILED DESCRIPTION OF THE RECOMMENDED CHANGE ***(Attach additional pages if space is not sufficient.)***

The proposed calendar description for the Mechanical Engineering – M.A.Sc. Degree – Requirements includes a new 3rd paragraph describing an Accelerated Option, as follows:

The requirements for the M.A.Sc. degree in Mechanical Engineering can be satisfied through full- or part-time study. The minimum course requirement is four half courses, at least three of which should be at the 700-level. Students are required to present a thesis which embodies the results of independent work that the candidate has completed, and which demonstrates competence in Mechanical Engineering. An oral defense of the thesis is required.

In addition, all full-time graduate students are required to successfully complete MECH ENG 758 "Graduate Seminars in Mechanical Engineering". For further details see the MECH ENG 758 course description.

An Accelerated Option is also available to students currently enrolled at McMaster as undergraduate students in the Mechanical Engineering Department whereby the M.A.Sc. degree may be completed in 16-20 months of full-time study. In exceptional circumstances, students from other Engineering departments in McMaster may apply for entry into the accelerated option by contacting the Mechanical Engineering Department's Associate Chair (Graduate). Application for entry into the Accelerated Option through the Associate Chair (Graduate) occurs in the penultimate year of undergraduate studies. Applicants must have maintained a minimum CGPA of 9.5 for their undergraduate course work with a sessional average of 9.5 at the time they are applying for the option. The Accelerated Option requires students to complete at least one term of their research project with a supervisor from the department prior to completion of their undergraduate degree. A one-term 600-level course is required under the Accelerated Option in the final undergraduate year for graduate credit provided it is listed within the department. For students enrolled in the Accelerated Option, research conducted in MECHENG 4X04 may count towards the Accelerated Option and therefore towards partial fulfillment of the graduate M.A.Sc. thesis work. Entry into the M.A.Sc. program under the Accelerated Option must occur less than one year after completing one's undergraduate degree and must meet the same requirements for admission as other candidates.

RATIONALE FOR THE RECOMMENDED CHANGE (How does the requirement fit into the department's program and/or tie to existing Program Learning Outcomes from the program's IQAP cyclical review?):

The addition of an accelerated option for the M.A.Sc. degree was recommended by the most recent IQAP cyclical review of the Mechanical Engineering program.

PROVIDE IMPLEMENTATION DATE: ***(Implementation date should be at the beginning of the academic year)***

Fall 2022.

ARE THERE ANY OTHER DETAILS OF THE RECOMMENDED CHANGE THAT THE CURRICULUM AND POLICY COMMITTEE SHOULD BE AWARE OF? IF YES, EXPLAIN.

No.

PROVIDE A DESCRIPTION OF THE RECOMMENDED CHANGE TO BE INCLUDED IN THE CALENDAR (please include a tracked changes version of the calendar section affected if applicable):

The requirements for the M.A.Sc. degree in Mechanical Engineering can be satisfied through full- or part-time study. The minimum course requirement is four half courses, at least three of which should be at the 700-level. Students are required to present a thesis which embodies the results of independent work that the candidate has completed, and which demonstrates competence in Mechanical Engineering. An oral defense of the thesis is required.

In addition, all full-time graduate students are required to successfully complete MECH ENG 758 “Graduate Seminars in Mechanical Engineering”. For further details see the MECH ENG 758 course description.

An Accelerated Option is also available to students currently enrolled at McMaster as undergraduate students in the Mechanical Engineering Department whereby the M.A.Sc. degree may be completed in 16-20 months of full-time study. In exceptional circumstances, students from other Engineering departments in McMaster may apply for entry into the accelerated option by contacting the Mechanical Engineering Department’s Associate Chair (Graduate). Application for entry into the Accelerated Option through the Associate Chair (Graduate) occurs in the penultimate year of undergraduate studies. Applicants must have maintained a minimum CGPA of 9.5 for their undergraduate course work with a sessional average of 9.5 at the time they are applying for the option. The Accelerated Option requires students to complete at least one term of their research project with a supervisor from the department prior to completion of their undergraduate degree. A one-term 600-level course is required under the Accelerated Option in the final undergraduate year for graduate credit provided it is listed within the department. For students enrolled in the Accelerated Option, research conducted in MECHENG 4X04 may count towards the Accelerated Option and therefore towards partial fulfillment of the graduate M.A.Sc. thesis work. Entry into the M.A.Sc. program under the Accelerated Option must occur less than one year after completing one’s undergraduate degree and must meet the same requirements for admission as other candidates.

CONTACT INFORMATION FOR THE RECOMMENDED CHANGE:

Name: Chan Y. Ching Email: chingcy@mcmaster.ca Extension:24998 Date submitted: Oct 08, 2021

If you have any questions regarding this form, please contact the Assistant Secretary, School of Graduate Studies, cbryce@mcmaster.ca

SGS/2013

McMaster University

SCHOOL OF GRADUATE STUDIES

RECOMMENDATION FOR CHANGE IN GRADUATE CURRICULUM - FOR CHANGE(S) INVOLVING DEGREE PROGRAM REQUIREMENTS / PROCEDURES / MILESTONES

IMPORTANT: PLEASE READ THE FOLLOWING NOTES BEFORE COMPLETING THIS FORM:

1. This form must be completed for **ALL** changes involving degree program requirements/procedures. **All** sections of this form **must** be completed.

2. An electronic version of this form (must be in MS WORD **not** PDF) should be emailed to the Assistant Secretary, School of Graduate Studies (cbryce@mcmaster.ca).

3. A representative from the department is **required to attend** the Faculty Curriculum and Policy Committee meeting during which this recommendation for change in graduate curriculum will be discussed.

DEPARTMENT	SEPT
NAME OF PROGRAM and PLAN	Master of Engineering in Entrepreneurship and Innovation
DEGREE	**MEEI**

NATURE OF RECOMMENDATION *(PLEASE CHECK APPROPRIATE BOX)*

Is this change a result of an IQAP review? ☐ Yes ☐ No

CREATION OF NEW MILESTONE ☐					
CHANGE IN ADMISSION REQUIREMENTS		**CHANGE IN COMPREHENSIVE EXAMINATION PROCEDURE**		**CHANGE IN COURSE REQUIREMENTS**	
CHANGE IN THE DESCRIPTION OF A SECTION IN THE GRADUATE CALENDAR	X	**EXPLAIN:** Clerical updates to existing calendar.			
OTHER CHANGES		**EXPLAIN:**			

DESCRIBE THE EXISTING REQUIREMENT/PROCEDURE:

Currently there is an error in the existing calendar where SEP 772 is listed as 0 units but it is a 3-unit course.

PROVIDE A DETAILED DESCRIPTION OF THE RECOMMENDED CHANGE ***(Attach additional pages if space is not sufficient.)***

Currently there is an error in the existing calendar where SEP 772 is listed as 0 units but it is a 3-unit course.

RATIONALE FOR THE RECOMMENDED CHANGE (How does the requirement fit into the department's program and/or tie to existing Program Learning Outcomes from the program's IQAP cyclical review?):

Cleaning up of clerical errors

PROVIDE IMPLEMENTATION DATE: ***(Implementation date should be at the beginning of the academic year)***

Fall 2022

ARE THERE ANY OTHER DETAILS OF THE RECOMMENDED CHANGE THAT THE CURRICULUM AND POLICY COMMITTEE SHOULD BE AWARE OF? IF YES, EXPLAIN.

N/A

PROVIDE A DESCRIPTION OF THE RECOMMENDED CHANGE TO BE INCLUDED IN THE CALENDAR (please include a tracked changes version of the calendar section affected if applicable):

The Master of Engineering Entrepreneurship and Innovation program is a fast paced program aimed at highly motivated students.

Admission

Applications for admission will be made directly through the W Booth School of Engineering Practice and Technology. In addition to the general requirements for entry into a graduate program in Engineering, candidates applying to the Master of Engineering Entrepreneurship and Innovation program must hold an Honours Bachelor's degree in engineering or closely related

discipline (i.e. science, technology, math), with at least a B- average (equivalent to a McMaster 7.0 GPA out of 12) in the final year in all courses.

Strong letters of recommendation are also required. The delivery of the program relies heavily on the synergy created between members of student teams, and successful operation of the program requires that each cohort have an appropriate blend of skills and experience. Applicants will be required to complete an online interview.

The program will accept full-time students. The full program is expected to take 20 months full-time study. Candidates are admitted for September only. No part-time option is available.

Prospective applicants who did not attain the required standing in their undergraduate degree, but who have at least four (4) years of relevant work experience, should discuss their situation with the appropriate Program Lead. If the experience is deemed sufficient, the Program Lead may then recommend a live interview. Evidence of ability to do graduate work will still be required. (See the Admission Requirements section and Admission of Students with Related Work Experience or Course Work Beyond the Bachelor's Degree section of the Graduate Calendar).~~(See Sections 2.1.1 Admission Requirements for Master's Degree and 2.1.5 Admission of Students with Related Work Experience or Course Work Beyond the Bachelor's Degree in the Graduate Calendar.)~~

A candidate is required to complete successfully two one-term advanced courses and the ~~six~~ seven compulsory Engineering Entrepreneurship and Innovation module courses. Additionally, full-time students must successfully complete SEP 771 Part I and II and SEP 772. A faculty advisor will assist the student in selecting relevant engineering courses. Students will normally be required to complete two graduate level engineering courses. The objective is to acquire leading-edge engineering skills and apply them to the enterprise project.

McMaster students may receive advanced standing for only one additional courses with the approval of the Associate Dean of Graduate Studies (note that a maximum of two 600-level courses, including mandatory 600 level courses can count towards a SEPT graduate program).

Innovation and Entrepreneurial Skills Development

Six compulsory enterprise modules will focus on providing the Master's degree candidate basic skills to select an idea with good potential, manage the innovation process, then create and manage the business outcome. The skills will broadly cover all the business life cycle from start, growth and sustainability. The modules will develop an understanding of both the innovation

and the entrepreneurial processes through lectures, workshops and hands-on work as well as embed sustainability into their enterprise project as a source of competitive advantage.

Each module is considered the equivalent of a half-course as defined by the School of Graduate Studies, but will contain elements of lecture, group work, presentation and other activities as defined in the course outline. The module courses will be delivered in an intensive format. The module courses are:

- SEP 6E03 / Entrepreneurial Opportunity Identification
- SEP 773 / Leadership for Innovation
- SEP 753 / Enterprise Opportunity Development
- SEP 755 / Business Launch and Development
- SEP 770 / Total Sustainability Management
- SEP 790 / Proof-of-Concept Studio
- SEP 772 / Innovation Studio

All full-time candidates are required to successfully complete:

- SEP 771 / W Booth School of Engineering Practice and Technology Practitioner's Forum Part I
- SEP 771 / W Booth School of Engineering Practice and Technology Practitioner's Forum Part II
- ~~SEP 772 / Innovation Studio (0 units)~~

Engineering Enterprise Project

The Engineering Enterprise Project will run throughout the entire study period and will result in both a business and a viable Proof-of-Concept defined as the combination of (i) a technical plan for an engineering prototype product (ideally with an actual prototype device or software produced) plus (ii) an identified customer base and a plan outlining the way to commercialization. The project will bring together the two complementary streams of activities, one technical and the other commercial, to bring an idea to the proof of concept phase. The Entrepreneurial course stream, which will run coincidentally with the advanced engineering studies, will guide the technological work performed in the research laboratory so that the concept becomes, by the end of the degree, the nucleus of a business proposition. The Engineering Enterprise Project will have three phases, which will end with project gate assessments to determine the project's readiness to proceed to the next phase:

Phase 1 - Project Preparation

Market research to arrive at a proposed product or service with clear value proposition; define the market for the intended product or service revealing competitive threat, opportunities, and margins and volumes projections; draw up development plans for the product or service indicating the required resources and estimated investment cost; seek the resources within the university and without; build a team of support that might include a partner.

Phase 2 - Technical Research and the Development of the Engineering Prototype

Develop an engineering research plan, identifying key issues and opportunities (with the assistance of academic technical and business supervisors); conduct technical research and development; implement the engineering research plan within the research group in the host-engineering department; build a development network within the engineering research community; ready the technology for transfer to market; conduct initial market engagement to get customer feedback and reactions.

Phase 3 - Technology Transfer to Market:

Apply for IP protection if applicable; develop a path-to-market strategy; develop a business case; seek out financing and explore business arrangements; plan for business start-up. Each phase has two equally important components, one technical and the other business:

The Phase 3 evaluation will be a defense of your project in an oral examination to your board (technical mentor, enterprise advisor, business advisor and your business mentor). Candidates are required to complete and pass through each phase in order to graduate.

Leadership Skill Development and the Enterprise Project

The ability to effectively work in a team environment is an important learning outcome of team-based project work on the Enterprise project. The MEEI and MTEI programs use a confidential service to provide each individual with personalized performance feedback from their peers on a period basis. Approaches to improving ones own performance include mentoring and guidance by their Enterprise Advisor.

CONTACT INFORMATION FOR THE RECOMMENDED CHANGE:

Name: Vladimir Mahalec Email: mahalec@mcmaster.ca Extension: N/A Date submitted: October 4, 2021

If you have any questions regarding this form, please contact the Assistant Secretary, School of Graduate Studies, cbryce@mcmaster.ca

SGS/2013

McMaster University

SCHOOL OF GRADUATE STUDIES

RECOMMENDATION FOR CHANGE IN GRADUATE CURRICULUM - FOR CHANGE(S) INVOLVING DEGREE PROGRAM REQUIREMENTS / PROCEDURES / MILESTONES

IMPORTANT: PLEASE READ THE FOLLOWING NOTES BEFORE COMPLETING THIS FORM:

1. This form must be completed for **ALL** changes involving degree program requirements/procedures. **All** sections of this form **must** be completed.

2. An electronic version of this form (must be in MS WORD **not** PDF) should be emailed to the Assistant Secretary, School of Graduate Studies (cbryce@mcmaster.ca).

3. A representative from the department is **required to attend** the Faculty Curriculum and Policy Committee meeting during which this recommendation for change in graduate curriculum will be discussed.

DEPARTMENT	SEPT
NAME OF PROGRAM and PLAN	Master of Technology in Entrepreneurship and Innovation
DEGREE	**MTEI**

NATURE OF RECOMMENDATION *(PLEASE CHECK APPROPRIATE BOX)*

Is this change a result of an IQAP review? ☐ Yes ☐ No

CREATION OF NEW MILESTONE ☐					
CHANGE IN ADMISSION REQUIREMENTS		**CHANGE IN COMPREHENSIVE EXAMINATION PROCEDURE**		**CHANGE IN COURSE REQUIREMENTS**	
CHANGE IN THE DESCRIPTION OF A SECTION IN THE GRADUATE CALENDAR	X	**EXPLAIN:** Clerical updates to existing calendar.			
OTHER CHANGES		**EXPLAIN:**			

DESCRIBE THE EXISTING REQUIREMENT/PROCEDURE:

Currently there is an error in the existing calendar where SEP 772 is listed as 0 units but it is a 3-unit course.

PROVIDE A DETAILED DESCRIPTION OF THE RECOMMENDED CHANGE ***(Attach additional pages if space is not sufficient.)***

Currently there is an error in the existing calendar where SEP 772 is listed as 0 units but it is a 3-unit course. There are also a few spelling errors within the existing description being updated.

RATIONALE FOR THE RECOMMENDED CHANGE (How does the requirement fit into the department's program and/or tie to existing Program Learning Outcomes from the program's IQAP cyclical review?):

Cleaning up of clerical errors

PROVIDE IMPLEMENTATION DATE: ***(Implementation date should be at the beginning of the academic year)***

Fall 2022

ARE THERE ANY OTHER DETAILS OF THE RECOMMENDED CHANGE THAT THE CURRICULUM AND POLICY COMMITTEE SHOULD BE AWARE OF? IF YES, EXPLAIN.

N/A

Admission

While students in the Technology Entrepreneurship and Innovation program are not expected to have any engineering or scientific background, they are expected to embrace creativity and innovation. Some basic familiarity with technology is expected, but the required technological depth will depend on the project itself and will be evaluated on a case-by-case basis. Considerable emphasis will be placed on team-based experiential learning in which all members of the team will learn from each other as they complete the project.

Applications for admission will be made directly through the W Booth School of Engineering Practice and Technology. In addition to the general requirements for entry into a graduate program in Engineering, candidates applying to the Master of Technology Entrepreneurship

and Innovation program must hold an Honours Bachelor's degree from any discipline, with at least a B- average (equivalent to a McMaster 7.0 GPA out of 12) students in the final year in all courses in the discipline, or relating to the discipline, in which the applicant proposes to do graduate work.

Strong letters of recommendation are also required. The delivery of the program relies heavily on the synergy created between members of student teams, and successful operation of the program requires that each cohort have an appropriate blend of skills and experience. Applicants will be required to complete an online interview.

The program will accept full-time students. The full program is expected to take 20 months full-time study. Candidates are admitted for September only. No part-time option is available

Prospective applicants who did not attain the required standing in their undergraduate degree, but who have at least four (4) years of relevant work experience, should discuss their situation with the Program Lead. If the experience is deemed sufficient, the Program Lead may then recommend a live interview. Evidence of ability to do graduate work will still be required. (See the Admission Requirements section and Admission of Students with Related Work Experience or Course Work Beyond the Bachelor's Degree section of the Graduate Calendar).~~(see sections 2.1.1 Admission Requirements for Master's Degree and 2.1.5 Admission of Students with Related Work Experience or Course Work Beyond the Bachelor's Degree in the Graduate Calendar.)~~

A candidate is required to complete successfully two one-term advanced graduate courses and the six compulsory Entrepreneurship and Innovation module courses. Additionally, full-time students must successfully complete SEP 771 part I and II and SEP 772. A faculty advisor will assist the student in selecting relevant graduate courses. Students will normally be required to complete two graduate level courses. The objective is to acquire leading-edge skills and apply them to the enterprise project.

McMaster students may receive advanced standing for only one additional course (note that a maximum of two 600-level courses can count towards a SEPT graduate program including mandatory 600-level courses) with approval of the Associate Dean of Graduate Studies.

Innovation and Entrepreneurial Skills Development

Six compulsory enterprise modules will focus on providing the Master's degree candidate with basic skills to select an idea with good potential, manage the innovation process, then create and manage the business outcome. The skills will broadly cover all the business cycle from start, growth and sustainability. The modules will develop an understanding of both the innovation and the entrepreneurial processes through lectures, workshops and hands-on work,

as well as embed sustainability into their enterprise project as a source of competitive advantage.

Each module is considered the equivalent of a half-course as defined by the School of Graduate Studies, but will contain elements of lecture, group work, presentation and other activities as defined in the course outline. The module courses will be delivered in an intensive format. The module courses are:

- SEP 6E03 / Entrepreneurial Opportunity Identification (Module 1)
- SEP 773 / Leadership for Innovation
- SEP 753 / Enterprise Opportunity Development
- SEP 755 / Business Launch and Development
- SEP 770 / Total Sustainability Management
- SEP 790 / Proof-of-Concept Studio
- SEP 772 / Innovation Studio

All full-time candidates are required to successfully complete:

- SEP 771 / W Booth School of Engineering Practice and Technology Practitioner's Forum Part I
- SEP 771 / W Booth School of Engineering Practice and Technology Practitioner's Forum Part II
- ~~SEP 772 / Innovation Studio (0 units)~~

Enterprise Project

The Enterprise Project will run throughout the entire study period and will result in both a business and a viable Proof-of-Concept defined as the combination of (i) a technical plan for an engineering prototype product (ideally with an actual prototype device or software produced) plus (ii) an identified customer base and a plan outlining the way to commercialization. The project will bring together complementary streams of activities, one technical and the other ~~commerical~~commercial to bring an idea to the proof of concept phase. The Entrepreneurial course stream, which will run ~~coninicidentally~~coincidentally with the advanced engineering studies will guide the technological work performed in the research laboratory so that the concept becomes, by the end of the degree, the nucleus of a business proposition.

The Enterprise Project will have three phases, which will end with project gate assessments to determine the project's readiness to proceed to the next phase:

Phase 1 - Project Preparation

Market research to arrive at a proposed product or service with clear value proposition; define the market for the intended product or service revealing competitive threat, opportunities, and margins and volumes projections; draw up development plans for the product or service indicating the required resources and estimated investment cost; seek the resources within the university and without; build a team of support that might include a partner.

Phase 2 - Technical Research and the Development of the Prototype

Develop a research plan, identifying key issues and opportunities (with the assistance of academic technical and business supervisors); conduct technical research and development; implement the engineering research plan within the research group in the host-engineering department; build a development network within the engineering research community; ready the technology for transfer to market; conduct initial market engagement to get customer feedback and reactions.

Phase 3 - Technology Transfer to Market

Apply for IP protection if applicable; develop a path-to-market strategy; develop a business case; seek out financing and explore business arrangements; plan for business start-up. Each phase has two equally important components, one technical and the other business:

Phase I

Concept initiation proposal; Technology development plan presentation and documentation

Phase II

Technical Proof-of-concept; Draft financial plan presentation and documentation

Phase III

Business Strategy and Go-to-market plan or a Venture feasibility presentation and documentation

The Phase III evaluation will be a defence of your project in an oral examination to your board (technical mentor, enterprise advisor, business advisor and your business mentor). Candidates are required to complete and pass through each phase in order to graduate.

Leadership Skill Development and the Enterprise Project

The ability to effectively work in a team environment is an important learning outcome of team-based project work on the Enterprise project. The MEEI and MTEI programs use a confidential service to provide each individual with personalized performance feedback from their peers on a period basis. Approaches to improving ones own performance include mentoring and guidance by their Enterprise Advisor.

CONTACT INFORMATION FOR THE RECOMMENDED CHANGE:

Name: Vladimir Mahalec Email: mahalec@mcmaster.ca Extension: N/A Date submitted: October 4, 2021

If you have any questions regarding this form, please contact the Assistant Secretary, School of Graduate Studies, cbryce@mcmaster.ca

SGS/2013

McMaster University **SCHOOL OF GRADUATE STUDIES**

RECOMMENDATION FOR CHANGE IN GRADUATE CURRICULUM - FOR CHANGE(S) INVOLVING DEGREE PROGRAM REQUIREMENTS / PROCEDURES / MILESTONES

IMPORTANT: PLEASE READ THE FOLLOWING NOTES BEFORE COMPLETING THIS FORM:

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2. An electronic version of this form (must be in MS WORD **not** PDF) should be emailed to the Assistant Secretary, School of Graduate Studies (cbryce@mcmaster.ca).

3. A representative from the department is **required to attend** the Faculty Curriculum and Policy Committee meeting during which this recommendation for change in graduate curriculum will be discussed.

DEPARTMENT	W Booth SEPT
NAME OF PROGRAM and PLAN	Engineering Design
DEGREE	**M.Eng. Design – Product Design Stream**

NATURE OF RECOMMENDATION *(PLEASE CHECK APPROPRIATE BOX)*

Is this change a result of an IQAP review? ☐ Yes ☐ No

CREATION OF NEW MILESTONE ☐

CHANGE IN ADMISSION REQUIREMENTS		**CHANGE IN COMPREHENSIVE EXAMINATION PROCEDURE**		**CHANGE IN COURSE REQUIREMENTS**	X

CHANGE IN THE DESCRIPTION OF A SECTION IN THE GRADUATE CALENDAR		**EXPLAIN:**
OTHER CHANGES		**EXPLAIN:**

DESCRIBE THE EXISTING REQUIREMENT/PROCEDURE:

Currently SEP 761 is an elective course and we would like to switch it to a mandatory course.

PROVIDE A DETAILED DESCRIPTION OF THE RECOMMENDED CHANGE *(Attach additional pages if space is not sufficient.)*

It was determined that SEP 761, which is being renamed Design Thinking II, should be made mandatory for all Engineering Design students.

RATIONALE FOR THE RECOMMENDED CHANGE (How does the requirement fit into the department's program and/or tie to existing Program Learning Outcomes from the program's IQAP cyclical review?):

The requested changes to the course do not impact the current methods or pedagogy of the course. SEP 761 up until this time has been an elective although most MED students enrol in the course. As the MED program has recently increased the emphasis on the training of creative competencies, this course has become vital to the students' training and therefore is needed as a core and mandatory course for all MED students. SEP 761 builds on the learning in SEP 760.

From the latest IQAP Self-Study, the MED PLO's are provided as a reference here:

Upon completion of the Master of Engineering Design program, graduates will be able to:

1) learn from existing solutions, people, and contexts.
2) lead stakeholders and other designers in the co-creation of solutions to complex problems in product design.
3) select, apply, and adapt design processes, design tools, design methods and prototyping technologies as appropriate.
4) test desirability, viability, and feasibility by experimenting rapidly and intentionally with prototypes of varying fidelity to navigate a broad set of solutions and technologies.
5) embrace ambiguity and be mindful of staying in a user-centred or human-centred mindset while designing; and learn through feedback and critical self-reflection.

PROVIDE IMPLEMENTATION DATE: *(Implementation date should be at the beginning of the academic year)*

September 2022

ARE THERE ANY OTHER DETAILS OF THE RECOMMENDED CHANGE THAT THE CURRICULUM AND POLICY COMMITTEE SHOULD BE AWARE OF? IF YES, EXPLAIN.

An additional requirement is being added that SEP 760 becomes a prerequisite for SEP 761.

PROVIDE A DESCRIPTION OF THE RECOMMENDED CHANGE TO BE INCLUDED IN THE CALENDAR (please include a tracked changes version of the calendar section affected if applicable):

Innovative new designs and the ability to improve performance of existing systems have become a basis for a competitive advantage in the marketplace. Innovativeness, performance, environmental sustainability, safety, usability, desirability, viability and efficiency are integral parts of the requirements in the design of industrial products, healthcare products, large-scale systems, or software solutions. Within this complex set of constraints, successful engineers and engineering managers must be able to lead transformation of an idea to a complete design by working in interdisciplinary teams and with stakeholders. The Master of Engineering Design program provides its participants with technical expertise and leadership capabilities required to innovate and to lead technically-oriented organizations. The M.Eng. Design program emphasizes development of competencies in Design Thinking and innovations methodologies, as well as leadership, collaboration, and management skills to lead diverse teams. These competencies are combined with advanced technologies to enable design and implementation of solutions which integrate digital reality with the physical world to deliver solutions for daily living or for complex IT or industrial systems.

The following streams are currently offered in the Program:

- Product Design: Design Thinking approach to development of products and services.
- Digital Reality: Design of augmented-, virtual-, and mixed-reality immersive experiences.

Admission

In addition to the general requirements for entry into a graduate program in Engineering, students must hold a four-year engineering undergraduate degree or equivalent, with at least a B- average (equivalent to a McMaster 7.0 GPA out of 12) in the final year in all courses in the discipline, or relating to the discipline, in which the applicant proposes to do graduate work. Students with a degree in Science, Technology or Mathematics will also be considered.

Strong letters of recommendation are also required. Applicants will be required to complete an online interview.

Professional work experience will be desirable, but not essential.

Candidates may be enrolled on a full- or part-time basis. Full-time students will complete the degree in 24 months with an accelerated path to complete in twelve consecutive months.

Students are admitted for September. Part-time students will normally be expected to complete the program in three years and one term (40 months).

Prospective applicants who did not attain the required standing in their undergraduate degree, but who have at least four (4) years of relevant work experience, should discuss their situation with the Program Lead. If the experience is deemed sufficient, the Program Lead may then recommend a live interview. Evidence of ability to do graduate work will still be required. (See Sections 2.1.1 Admission Requirements for Master's Degree and 2.1.5 Admission of Students with Related Work Experience or Course Work beyond the Bachelor's Degree in the Graduate Calendar.)

McMaster Students may receive advanced standing for up to two courses (note that a maximum of two 600-level courses can count towards a SEPT graduate program) with the approval of the Associate Dean of Graduate Studies.

Curriculum

The curriculum has three main components:

1. Professional Development courses that will enable M.Eng. Design graduates to deal with complex situations in the work environment, to lead teams, and to manage projects.

2. Courses Relevant to the selected stream: some courses are mandatory for a given stream while others are elective.

3. An M.Eng. project that requires synthesis of knowledge from various disciplines.

Product Design Stream

Innovative and creative systems, solutions, and product designs are emphasized through design in a collaborative design studio environment. The interdisciplinary nature of the program enables its participants to work on a variety of design work, such as industrial machinery, consumer products, automotive, etc.

The following course requirements need to be fulfilled by the candidates:

Mandatory Courses

Candidates are required to take the following five half courses (15 units):

- SEP 700 / M.Eng. Project in Engineering Design Part I
- SEP 700 / M.Eng. Project in Engineering Design Part II
- SEP 760 / Design Thinking
- SEP 761 / Human-Centred Design
- SEP 772 / Innovation Studio (3 units)
- SEP 773 / Leadership for Innovation
- OR
- SEP 6EL3 / Leading Innovation
-

All full-time students must register for the seminar series courses (attendance is mandatory), which are:

- SEP 771 / W Booth School of Engineering Practice and Technology Practitioner's Forum Part I
- (full time students only)
- SEP 771 / W Booth School of Engineering Practice and Technology Practitioner's Forum Part II
- (full-time students only)

SEP 771 is a seminar series presented by guest speakers, invited by the School, of relevance to all M. Eng. programs at the School. All full-time students are required to take these courses. Course grades are either 'pass' or 'fail'. In order to pass the course, the student must attend a minimum of 80% of the seminars.

Electives

Candidates are required to take five half courses (15 units) which should be selected from graduate courses offered by departments within the Faculty of Engineering. Candidates are required to have their elective course selection approved by the Associate Director of Graduate Studies in SEPT.

Strongly recommended:

- SEP 757 / Rapid Prototyping
- OR
- SEP 758 / Prototyping Tools (Mobile Applications)
- ~~SEP 761 / Human-Centred Design~~

Other recommended electives include:

- SEP 6CG3 / Fundamentals of computer graphics and animation development
- SEP 6VE3 / Visual effects and animation production technology
- SEP 714 / Workflow Management for Animated Prototypes
- SEP 715 / Rendering techniques
- SEP 791 / Augmented Reality, Virtual Reality and Mixed Reality
- SEP 792 / GPU Intensive applications for real-time projects

Digital Reality Stream

Graduates from Digital Reality stream develop competencies required to work on MR/AR/VR applications in e.g. autonomous vehicles, games design, entertainment, architecture, medicine, etc.,. All candidates will complete a project and an optional co-op with an organization which develops products in the digital reality space.

Mandatory Courses

Candidates are required to take the following four half courses (12 units):

- SEP 700 / M.Eng. Project in Engineering Design Part I
- SEP 700 / M.Eng. Project in Engineering Design Part II
- SEP 760 / Design Thinking
- SEP 772 / Innovation Studio (3 units)
-

All full-time students must register for the seminar series courses (attendance is mandatory), which are:

- SEP 771 / W Booth School of Engineering Practice and Technology Practitioner's Forum Part I
- (full-time students only)

- SEP 771 / W Booth School of Engineering Practice and Technology Practitioner's Forum Part II
- (full time students only)

SEP 771 is a seminar series presented by guest speakers, invited by the School, of relevance to all M. Eng. programs at the School. All full-time students are required to take these courses. Course grades are either 'pass' or 'fail'. In order to pass the course, the student must attend a minimum of 80% of the seminars.

Electives

Six courses (18 units) from the following list must be completed by the candidates:

- SEP 6CG3 / Fundamentals of computer graphics and animation development
- SEP 6VE3 / Visual effects and animation production technology
- SEP 714 / Workflow Management for Animated Prototypes
- SEP 715 / Rendering techniques
- SEP 791 / Augmented Reality, Virtual Reality and Mixed Reality
- SEP 792 / GPU Intensive applications for real-time projects

CONTACT INFORMATION FOR THE RECOMMENDED CHANGE:

Name: Robert Fleisig Email: robert@mcmaster.ca Extension: N/A Date submitted: October 5, 2021

If you have any questions regarding this form, please contact the Assistant Secretary, School of Graduate Studies, cbryce@mcmaster.ca

SGS/2013

McMaster University **SCHOOL OF GRADUATE STUDIES**

RECOMMENDATION FOR CHANGE IN GRADUATE CURRICULUM - FOR CHANGE(S) INVOLVING DEGREE PROGRAM REQUIREMENTS / PROCEDURES / MILESTONES

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1. This form must be completed for **ALL** changes involving degree program requirements/procedures. **All** sections of this form **must** be completed.

2. An electronic version of this form (must be in MS WORD **not** PDF) should be emailed to the Assistant Secretary, School of Graduate Studies (cbryce@mcmaster.ca).

3. A representative from the department is **required to attend** the Faculty Curriculum and Policy Committee meeting during which this recommendation for change in graduate curriculum will be discussed.

DEPARTMENT	SEPT
NAME OF PROGRAM and PLAN	Master of Engineering in Systems and Technology
DEGREE	**MEST**

NATURE OF RECOMMENDATION *(PLEASE CHECK APPROPRIATE BOX)*

Is this change a result of an IQAP review? ☐ Yes ☐ No

CREATION OF NEW MILESTONE ☐					
CHANGE IN ADMISSION REQUIREMENTS		**CHANGE IN COMPREHENSIVE EXAMINATION PROCEDURE**		**CHANGE IN COURSE REQUIREMENTS**	
CHANGE IN THE DESCRIPTION OF A SECTION IN THE GRADUATE CALENDAR	X	**EXPLAIN:** Updating of recommended elective lists			
OTHER CHANGES		**EXPLAIN:**			

DESCRIBE THE EXISTING REQUIREMENT/PROCEDURE:

Updates to core course and elective lists for each stream. It was determined that these edited lists would be more representative of the needs of each specific stream.

PROVIDE A DETAILED DESCRIPTION OF THE RECOMMENDED CHANGE *(Attach additional pages if space is not sufficient.)*

Updates to core course and elective lists for each stream. It was determined that these edited lists would be more representative of the needs of each specific stream.

RATIONALE FOR THE RECOMMENDED CHANGE (How does the requirement fit into the department's program and/or tie to existing Program Learning Outcomes from the program's IQAP cyclical review?):

Addition of new courses to these lists will assist students in selecting the core courses and electives that most benefit their program knowledge.

PROVIDE IMPLEMENTATION DATE: *(Implementation date should be at the beginning of the academic year)*

Fall 2022

ARE THERE ANY OTHER DETAILS OF THE RECOMMENDED CHANGE THAT THE CURRICULUM AND POLICY COMMITTEE SHOULD BE AWARE OF? IF YES, EXPLAIN.

N/A

PROVIDE A DESCRIPTION OF THE RECOMMENDED CHANGE TO BE INCLUDED IN THE CALENDAR (please include a tracked changes version of the calendar section affected if applicable):

The Master of Engineering in Systems and Technology is a 24 month program for full time students with an accelerated path to complete the program in 12 months of study. Part time students will normally be expected to complete the program in 3 years, one term (40 months). The program attracts t highly motivated students seeking advanced training in area of cyber-physical systems. Students design their own program of studies by selecting (with approval of their academic advisor) courses of interest to them in one of the following streams: (i) Automation and Smart Systems, (ii) Automotive, and (iii) Digital Manufacturing. Application for admission to the program are made through the W Booth

School of Engineering Practice and Technology. The program accepts full-time and part-time students.

In addition to the general requirements for entry into a graduate program in Engineering, students must hold a degree in Engineering, Technology, Sciences, or Software with at least a B average (equivalent to a McMaster 8.0/12 GPA) in the penultimate and final years.

Delivery of the program includes a strong emphasis on project-based experience within the Manufacturing Industry, which is obtained through an industry-based project during the coursework portion of the program. Requirements for these are outlined below. Due to the strong practical orientation of the project components of the program, successful completion requires that students have strong interpersonal and communication skills. Applicants will be required to complete an online interview.

Students completing the Program on a course-only basis will be required to complete 10 courses from the approved list of courses. Course selection must be done in consultation with the program lead.

Students completing the Program through course and project work will be required to complete eight courses from the approved list of courses, plus successful completion of the project. Course and project selection must be done in consultation with the program lead.

McMaster students may receive advanced standing for up to two courses (note that a maximum of two 600-level courses can count towards a SEPT graduate program) with the approval of the Associate Dean of Graduate Studies.

Project

Students wishing to pursue the project-based option must submit a project proposal for approval by both the faculty lead as well as the Associate Director of Graduate Studies in SEPT. If the project is not approved by either individual, students will be reverted to course based stream. Students are encouraged to develop their own ideas and find industrial sponsors. Projects are ideally undertaken at local companies but may be conducted at locations inside Canada or abroad with the Program Lead's approval and provided that none of the work on the project was done prior to admission into the program. Project groups or individuals will have an industry-based supervisor (stakeholder) with whom the student team can discuss progress, arrange trials etc. Students will also have an academic supervisor who will normally have some expertise in the subject area. It is expected that the teams will meet with their supervisors on a regular basis to discuss their progress.

The project team will orally defend their final project report to an examination committee comprised of their academic supervisor and the second reader (faculty member).

Curriculum

Students enrolling in the program choose their courses in one of the following streams:

- Automation and Smart Systems,
- Automotive, and
- Digital Manufacturing
- Process Systems

Each stream has a set of core courses and a set of recommended elective courses. Students can take maximum of 2 half courses (one term courses) at 600 level.

Students wishing to take an elective course outside of the recommended electives need to obtain a written permission from their graduate advisor.

Students have to complete the minimum required number of core courses in order to complete the program. There are 2 pathways towards the degree:

- 8 courses (24 units) + project (6 units)
  - 2 required courses
  - 2 professional development courses
  - 3 to 4 core courses
  - 0 to 1 elective courses

  Students pursuing this option, in addition to taking 8 courses specified above, must register for the project courses:

- SEP 799 / M.Eng. Project in Systems and Technology Part 1
- SEP 799 / M.Eng. Project in Systems and Technology Part 2

- 10 courses (30 units)
  - 2 required courses
  - 2 professional development courses
  - 4 to 6 core courses
  - 0 to 2 elective courses

All full-time students must register for the seminar series courses (attendance is mandatory), which are:

- SEP 771 / W Booth School of Engineering Practice and Technology Practitioner's Forum Part I (seminar series, full-time students only)

- SEP 771 / W Booth School of Engineering Practice and Technology Practitioner's Forum Part II (seminar series, full-time students only)

SEP 771 is a seminar series presented by guest speakers, invited by the School, of relevance to all M. Eng. programs at the School. All full-time students are required to take these courses. Course grades are either 'pass' or 'fail'. In order to pass the course, the student must attend a minimum of 80% of the seminars.

Students should note that not all courses are offered every year.

Required core courses for all streams:

- SEP 769 / Cyber Physical Systems
- SEP 772 / Innovation Studio (3 units)

Professional Development Courses

Professional Development courses, common to all streams in MEng S&T, are listed below:

- SEP 6TC3 / Technical Communications
- SEP 725 / Practical Project Management for Today's Business Environment
- SEP 773 / Leadership for Innovation
- SEP 760 / Design Thinking

Technical Courses- Automotive Stream

Other Core Courses

- SEP 6AE3 / Internal Combustion Engines
- SEP 6DV3 / Vehicle Dynamics
- SEP 711 / Electric Powertrain Components Design
- SEP 716 / Automotive Safety Design
- SEP 722 / Electric Drive Vehicles / MECH ENG 760 / Electric Drive Vehicles
- SEP 724 / Intelligent Transportation Systems
- SEP 734 / Issues in Vehicle Productions
- SEP 7XX / Deep Learning

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- SEP 7XX / Visual Perception for Autonomous Vehicles
- SEP 7XX / Introduction to Computational Natural Language Processing

Recommended Electives

- MECH ENG 6Z03 / CAD/CAM/CAE
- SEP 780 / Advanced Robotics and Automation
- SEP 783 / Sensors and Actuators
- SEP 791 / Augmented Reality, Virtual Reality and Mixed Reality

Technical Courses- Automation and Smart Systems

Other Core Courses

- SEP 6CS3 / Computer Security
- SEP 6DA3 / Data Analytics and Big Data
- SEP 6DM3 / Data Mining
- SEP 720 / Cloud Computing
- SEP 721 / Data Analytics, Machine Learning and AI on Cloud Platforms
- SEP 728 / Internet of Things (ioT) and industrial Internet of Things (ioT) Systems
- SEP 767 / Multivariate Statistical Methods for Big Data Analysis and Process Improvement / CHEM ENG 765 / Multivariate Statistical Methods for Big Data Analysis and Process Improvement
- SEP 780 / Advanced Robotics and Automation
- SEP 786 / Artificial Intelligence and Machine Learning Fundamentals / CHEM ENG 786 / Artificial Intelligence and Machine Learning Fundamentals
- SEP 787 / Machine Learning : Classification Models / CHEM ENG 787 / Machine Learning : Classification Models
- SEP 788 / Neural Networks and Development Tools / CHEM ENG 788 / Neural Networks and Development Tools
- SEP 789 / Deep Learning and Its Applications / CHEM ENG 789 / Deep Learning and Its Applications
- SEP 791 / Augmented Reality, Virtual Reality and Mixed Reality
- CAS 771 / Introduction to Big Data Systems and Applications
- SEP 7XX / Deep Learning
- SEP 7XX / Introduction to Computational Natural Language Processing
- SEP 7XX / Visual Perception for Autonomous Vehicles

Recommended Electives

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- SEP 718 / Industrial Automation
- ~~SEP 720 / Cloud Computing~~
- ~~SEP 721 / Data Analytics, Machine Learning and AI on Cloud Platforms~~
- SEP 723 / Industrial Components, Networks, and Interoperability / MECH ENG 761 / Industrial Components, Networks, and Interoperability
- SEP 783 / Sensors and Actuators
- ~~SEP 791 / Augmented Reality, Virtual Reality and Mixed Reality~~

Technical Courses- Digital Manufacturing

Other Core Courses

- SEP 718 / Industrial Automation
- SEP 723 / Industrial Components, Networks, and Interoperability / MECH ENG 761 / Industrial Components, Networks, and Interoperability
- SEP 728 / Internet of Things (ioT) and industrial Internet of Things (ioT) Systems
- SEP 735 / ADDITIVE MANUFACTURING / MECH ENG 735 / Additive Manufacturing
- SEP 738 / AI Methods in Advanced Manufacturing
- SEP 780 / Advanced Robotics and Automation
- SEP 783 / Sensors and Actuators
- SEP 791 / Augmented Reality, Virtual Reality and Mixed Reality
- SEP 7XX / Deep Learning

Recommended Electives

- SEP 6FM3 / Computer Integrated Manufacturing (CIM) and Flexible Manufacturing
- SEP 767 / Multivariate Statistical Methods for Big Data Analysis and Process Improvement / CHEM ENG 765 / Multivariate Statistical Methods for Big Data Analysis and Process Improvement
- SEP 786 / Artificial Intelligence and Machine Learning Fundamentals / CHEM ENG 786 / Artificial Intelligence and Machine Learning Fundamentals
- SEP 787 / Machine Learning : Classification Models / CHEM ENG 787 / Machine Learning : Classification Models
- SEP 788 / Neural Networks and Development Tools / CHEM ENG 788 / Neural Networks and Development Tools
- SEP 789 / Deep Learning and Its Applications / CHEM ENG 789 / Deep Learning and Its Applications

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- SEP 7XX / Introduction to Computational Natural Language Processing
- SEP 7XX / Visual Perception for Autonomous Vehicles

Technical Courses - Process Systems Stream

Other Core Courses

- SEP 750 / Model Predictive Control Design and Implementation
- SEP 751 / Process Design and Control for Operability CHEM ENG 764 / Process Control and Design for Operability
- SEP 752 / Systems Modeling and Optimization
- SEP 767 / Multivariate Statistical Methods for Big Data Analysis and Process Improvement
- SEP 718 / Industrial Automation
- SEP 783 / Sensors and Actuators
- SEP 739 / Distributed Computing for Process Control
- SEP 754 / Process Design and Integration for Minimal Environmental Impact
- SEP 7XX / Deep Learning

Recommended Electives

- SEP 730 / Reliability and Risk Management
- CHEM ENG 773 / Advanced Concepts of Polymer Extrusion
- CHEM ENG 740 / Advanced PSE Tools and Methods
- SEP 6IT3 / Internet Technologies and Databases

- Students can take other elective courses with permission of their program lead.

Moreover, a maximum of two courses can be selected from the following list

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Electrical Engineering

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- ECE 710 / Engineering Optimization
- ECE 732 / Non-linear Control Systems
- ECE 736 / 3D Image Processing and Computer Vision
- ECE 744 / System-on-a-Chip (SOC) Design and Test: Part I - Methods
- ECE 772 / Neural Networks and Learning Machines
- ECE 778 / Introduction to Nanotechnology

Software Engineering

- SFWR ENG 6HC3 / The Human Computer Interface

Computer Science

- COMP SCI 6F03 / Distributed Computer Systems
- COMP SCI 6TE3 / Continuous Optimization

Computing and Software

- CAS 767 / Information Privacy and Security
- CAS 771 / Introduction to Big Data Systems and Applications

CONTACT INFORMATION FOR THE RECOMMENDED CHANGE:

Name: Vladimir Mahalec Email: mahalec@mcmaster.ca Extension: N/A Date submitted: October 4, 2021

If you have any questions regarding this form, please contact the Assistant Secretary, School of Graduate Studies, cbryce@mcmaster.ca

SGS/2013

McMaster University **SCHOOL OF GRADUATE STUDIES**

RECOMMENDATION FOR CHANGE IN GRADUATE CURRICULUM - FOR CHANGE(S) INVOLVING DEGREE PROGRAM REQUIREMENTS / PROCEDURES / MILESTONES

IMPORTANT: PLEASE READ THE FOLLOWING NOTES BEFORE COMPLETING THIS FORM:

1. This form must be completed for **ALL** changes involving degree program requirements/procedures. **All** sections of this form **must** be completed.

2. An electronic version of this form (must be in MS WORD **not** PDF) should be emailed to the Assistant Secretary, School of Graduate Studies (cbryce@mcmaster.ca).

3. A representative from the department is **required to attend** the Faculty Curriculum and Policy Committee meeting during which this recommendation for change in graduate curriculum will be discussed.

DEPARTMENT	SEPT
NAME OF PROGRAM and PLAN	Master of Engineering in Manufacturing Engineering
DEGREE	**MEME**

NATURE OF RECOMMENDATION *(PLEASE CHECK APPROPRIATE BOX)*

Is this change a result of an IQAP review? ☐ Yes ☐ No

CREATION OF NEW MILESTONE ☐

CHANGE IN ADMISSION REQUIREMENTS		**CHANGE IN COMPREHENSIVE EXAMINATION PROCEDURE**		**CHANGE IN COURSE REQUIREMENTS**	
CHANGE IN THE DESCRIPTION OF A SECTION IN THE GRADUATE CALENDAR	X	**EXPLAIN:** Addition of Biomanufacturing stream, and clerical changes.			
OTHER CHANGES		**EXPLAIN:**			

DESCRIBE THE EXISTING REQUIREMENT/PROCEDURE:

Currently there is only one MEME stream, Discrete Manufacturing, and we are adding a 2nd stream in Biomanufacturing. In addition, currently there is an error in the existing calendar where the program requirements are listed under the 'Courses' page of the calendar instead of the program page. This submission will rectify this error.

PROVIDE A DETAILED DESCRIPTION OF THE RECOMMENDED CHANGE ***(Attach additional pages if space is not sufficient.)***

Currently there is only one MEME stream, Discrete Manufacturing, and we are adding a 2nd stream in Biomanufacturing and Industrial Biotechnology.

In addition, currently there is an error in the existing calendar where the program requirements are listed under the 'Courses' page of the calendar instead of the program page. This submission will rectify this issue. Pages showing errors noted below.

Program page:
https://academiccalendars.romcmaster.ca/preview_program.php?catoid=45&poid=23671&returnto=9166
Course page:
https://academiccalendars.romcmaster.ca/preview_program.php?catoid=45&poid=23672&returnto=9166

RATIONALE FOR THE RECOMMENDED CHANGE (How does the requirement fit into the department's program and/or tie to existing Program Learning Outcomes from the program's IQAP cyclical review?):

Introduction of streams in MEME will make it easier for the students to select the courses in their area of interest. The two streams correspond to two major types of manufacturing industries: discrete manufacturing and biomanufacturing.

Biomanufacturing is an interdisciplinary field using aspects of chemical engineering, biochemistry, and microbiology to create biological products used for human consumption. It's a rapidly expanding field whose products influence industries from pharmaceuticals to biofuels to food. Through this program, students gain hands-on experience using industry-standard equipment along with a comprehensive education in the principles and theory of bioprocessing and biomanufacturing.

PROVIDE IMPLEMENTATION DATE: ***(Implementation date should be at the beginning of the academic year)***

Fall 2022

ARE THERE ANY OTHER DETAILS OF THE RECOMMENDED CHANGE THAT THE CURRICULUM AND POLICY COMMITTEE SHOULD BE AWARE OF? IF YES, EXPLAIN.

N/A

PROVIDE A DESCRIPTION OF THE RECOMMENDED CHANGE TO BE INCLUDED IN THE CALENDAR (please include a tracked changes version of the calendar section affected if applicable):

Program Description

The Master of Engineering in Manufacturing Engineering is a 24 month program for full time students with an accelerated path to complete the program in 12 months of study. Part time students will normally be expected to complete the program in 3 years, one term, (40 months). The program attracts highly motivated students seeking advanced training in the discrete manufacturing. Students design their own program of studies by selecting (with approval of their academic advisor) courses of interest to them. Applications for admission to the program are made through the W Booth School of Engineering Practice and Technology. Applicants will be required to complete an online interview.

The program accepts full-time and part-time students.

In addition to the general requirements for entry into a graduate program in Engineering, students must hold a degree in Engineering or Technology with at least a B average (equivalent to a McMaster 8.0/12 GPA) in the penultimate and final years.

Delivery of the program includes a strong emphasis on project-based experience within the Manufacturing Industry, which is obtained through an industry-based project and through projects defined within courses. Requirements for these are outlined below. Due to the strong practical orientation of the project components of the program, successful completion requires that students have strong interpersonal and communication skills. Students completing the Program on a course-only basis will be required to complete 10 courses from the approved list of courses. Course selection must be done in consultation with the program lead.

Students completing the Program via course and project work will be required to complete eight courses from the approved list of courses and also successfully complete the M.Eng. project. Course and project selection must be done in consultation with the program lead.

McMaster students may receive advanced standing for up to two courses (note that a maximum of two 600-level courses can count towards a SEPT graduate program) with the approval of the Associate Dean of Graduate Studies.

Project

Students wishing to pursue the course plus project-based option must submit a project proposal for approval by both the faculty lead as well as the Associate Director of Graduate Studies in SEPT. If the project is not approved by either individual, students will be reverted to the course based option. Students are encouraged to develop their own ideas and find industrial sponsors. Projects are ideally undertaken at local companies but may be conducted

at locations inside Canada or abroad with the Program Lead's approval and provided that none of the work on the project was done prior to admission into the program. Project groups or individuals will have an industry-based supervisor (stakeholder) with whom the student team can discuss progress, arrange trials, etc. Students will also have an academic supervisor who will normally have expertise in the subject area. It is expected that the teams will meet with their supervisors on a regular basis to discuss their progress.

The project team will orally defend their final project report to an examination committee comprised of their academic supervisor and the second reader (faculty member).

Streams

Students enrolling in the MEME program can tailor their program of studies according to their career interests. Students can choose from the following streams:

• Discrete Manufacturing

• Biomanufacturing and Industrial Biotechnology

Each stream has a set of core courses and a set of recommended elective courses. Students can take maximum of 2 half courses (one term courses) at 600 level. Courses can be selected from WBooth SEPT, Chemical, Materials or Mechanical Engineering departments.

Students wishing to take an elective course outside of the recommended electives need to obtain a permission from their graduate advisor.

Students should note that not all courses are offered every year.

Discrete Manufacturing Courses

Students enrolling in the program can tailor their program of studies according to their career interests. Students can take maximum of 2 half courses (one term courses) at 600 level. Courses can be selected from WBooth SEPT, Chemical, Materials or Mechanical Engineering departments. Students wishing to take an elective course outside of the recommended electives need to obtain a permission from their program lead.

Students should note that not all courses are offered every year.

There are 2 pathways towards the degree:

- 8 courses (24 units) + project (6 units)
  - 1 mandatory course
  - 2 professional development courses
  - 3 to 4 core courses
  - 1 to 2 elective courses

Students pursuing this option, in addition to taking 8 courses specified above, must register for the project-courses:

- MANUF 701 / Project, Part I
- MANUF 701 / Project, Part II

10 courses (30 units)

  - 1 mandatory course
  - 2 professional development courses
  - 4 to 6 core courses
  - 1 to 3 elective courses

All full-time students must register for the seminar series courses (attendance is mandatory), which are:

- SEP 771 / W Booth School of Engineering Practice and Technology Practitioner's Forum Part I
- SEP 771 / W Booth School of Engineering Practice and Technology Practitioner's Forum Part II

(seminar series, full-time students only)

SEP 771 is a seminar series presented by guest speakers, invited by the School, of relevance to all M.Eng. programs at the School. All full-time students are required to take these courses. Course grades are either 'pass' or 'fail'. In order to pass the course the student must attend a minimum of 80% of the seminars.

Required Course

SEP 772 / Innovation Studio (3 units)

Professional Development Courses

Professional Development courses in MEng of Manufacturing Engineering, are listed below:

- SEP 6TC3 / Technical Communications
- SEP 725 / Practical Project Management for Today's Business Environment
- SEP 760 / Design Thinking
- SEP 773 / Leadership for Innovation

Technical Courses

The following are core courses:

- SEP 6I03 / Sustainable Manufacturing Processes MATLS 6I03 / Sustainable Manufacturing Processes
- SEP 726 / Discrete Manufacturing Processes I
- SEP 727 / Discrete Manufacturing Processes II
- MECH ENG 729 / Manufacturing Systems / SEP 729 / Manufacturing Systems
- CHEM ENG 720 / Lean Six Sigma for Engineers / SEP 731 / Lean Six Sigma for Engineering
- SEP 757 / Rapid Prototyping MECH ENG 759
- SEP 780 / Advanced Robotics and Automation

Recommended elective courses are:

- MATLS 6T03 / Properties and Processing of Composites SEP 6T03 / Properties and Processing of Composites
- SEP 767 / Multivariate Statistical Methods for Big Data Analysis and Process Improvement
- SEP 718 / Industrial Automation
- **Other Elective Courses Available**

Biomanufacturing and Industrial Biotechnology Courses

Students enrolling in the program can tailor their program of studies according to their career interests. Students can take maximum of 2 half courses (one term courses) at 600 level. Courses can be selected from WBooth SEPT, Chemical, Materials or Mechanical Engineering departments. Students wishing to take an elective course outside of the recommended electives need to obtain a permission from their program lead.

Students should note that not all courses are offered every year.

There are 2 pathways towards the degree:

- 8 courses (24 units) + project (6 units)
  - 1 mandatory course
  - 2 professional development courses
  - 3 to 4 core courses
  - 1 to 2 elective courses

Students pursuing this option, in addition to taking 8 courses specified above, must register for the project-courses:

- MANUF 701 / Project, Part I
- MANUF 701 / Project, Part II

- 10 courses (30 units)
  - 1 mandatory course
  - 2 professional development courses
  - 4 to 6 core courses
  - 1 to 3 elective courses

All full-time students must register for the seminar series courses (attendance is mandatory), which are:

- SEP 771 / W Booth School of Engineering Practice and Technology Practitioner's Forum Part I
- SEP 771 / W Booth School of Engineering Practice and Technology Practitioner's Forum Part II

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Required Course

SEP 772 / Innovation Studio (3 units)

Professional Development Courses

Professional Development courses in MEng of Manufacturing Engineering, are listed below:

- SEP 6TC3 / Technical Communications
- SEP 725 / Practical Project Management for Today's Business Environment
- SEP 760 / Design Thinking
- SEP 773 / Leadership for Innovation

Technical Courses

The following are core courses:

2 required core courses:

- SEP 7XX / Biomanufacturing
- SEP 767 Multivariate Statistical Methods for Big Data Analysis and Process Improvement

Other core courses:

- SEP 7XX / cGMP Upstream Operations
- SEP 7XX / Fermentation of Recombinant Microorganisms
- SEP 7XX / Animal Cell Culture Engineering
- SEP 7XX / cGMP Downstream Operations

Recommended elective courses are:

- BIOMED-701 / Biomedical Engineering
- BIOMED-799 / Independent Study in Biomedical Engineering
- CHEMENG 742 / Membrane based bioseparation
- SEP 6BI3 / Bioinformatics
- SEP 6BS3 / Biotechnology Regulations

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Other Elective Courses Available to all Streams

These courses require a written permission of the student's graduate advisor.

Courses from Chemical Engineering, Materials Science Engineering, and from Mechanical Engineering.

In addition to the recommended elective courses listed above, students can take up to two 600 and an unrestricted number of 700 level courses as electives from Chemical Engineering, Materials Science Engineering, and from Mechanical Engineering.

Additional Elective Courses

Students can select additional elective courses from the following list, provided that the approval has been received prior from their program lead:

Note that not all courses are offered every year.

Chemical Engineering

- CHEM ENG 6B03 / Polymer Reaction Engineering
- CHEM ENG 6E03 / Digital Computer Process Control
- CHEM ENG 6X03 / Polymer Processing
- CHEM ENG 6Z03 / Interfacial Engineering
- CHEM ENG 742 / Membrane Based Bioseparations
- CHEM ENG 752 / Optimization of Chemical Processes
- CHEM ENG 753 / Systems Modeling and Optimization
- CHEM ENG 761 / Multivariable, Stochastic and Adaptive Control of Chemical Processes
- CHEM ENG 764 / Process Control and Design for Operability
- CHEM ENG 765 / Multivariate Statistical Methods for Big Data Analysis and Process Improvement
- CHEM ENG 770 / Selected Topics in Polymer Science and Engineering
- CHEM ENG 773 / Advanced Concepts of Polymer Extrusion
- CHEM ENG 774 / Advances in Polymeric Materials
- CHEM ENG 782 / Biopharmaceuticals
- CHEM ENG 786 / Artificial Intelligence and Machine Learning Fundamentals
- CHEM ENG 787 / Machine Learning: Classification Models
- CHEM ENG 788 / Neural Networks and Development Tools
- CHEM ENG 789 / Deep Learning and Its Applications

- CHEM ENG 791 / Nanotechnology in Chemical Engineering

Materials Science and Engineering

- MATLS 6C03 / Modern Iron and Steelmaking
- MATLS 6H03 / Thin Film Science and Engineering
- MATLS 6I03 / Sustainable Manufacturing Processes
- MATLS 6P03 / Properties of Polymeric Materials
- MATLS 6T03 / Properties and Processing of Composites
- MATLS 6MS4 / Materials Selection in Design and Manufacturing
- MATLS 754 / Fracture Mechanics
- MATLS 771 / Principles of Heterogeneous Kinetics
- MATLS 780 / Metallic and Non-metallic Coatings

Mechanical Engineering

- MECH ENG 6B03 / Topics in Product Development
- MECH ENG 6K03 / Robotics
- MECH ENG 6L03 / Industrial Design
- MECH ENG 6Q03 / Mechanical Vibrations
- MECH ENG 6T03 / Finite Element Applications
- MECH ENG 6Z03 / CAD/CAM/CAE
- MECH ENG 702 / Advanced Dynamics of Machines
- MECH ENG 705 / Advanced Finite Element Analysis
- MECH ENG 710 / Machine Tool Analysis
- MECH ENG 714 / Solidification Processing
- MECH ENG 724 / Solid and Surface Modeling Techniques
- MECH ENG 728 / Manufacturing Processes I
- MECH ENG 729 / Manufacturing Systems
- MECH ENG 734 / Theory of Plasticity
- MECH ENG 735 / Additive Manufacturing
- MECH ENG 738 / Manufacturing Processes II
- MECH ENG 743 / Advanced Mechatronics
- MECH ENG 751 / Advanced Mechanical Engineering Control Systems
- MECH ENG 752 / Advanced MEMS Fabrication and Microfluidics
- MECH ENG 759 / Rapid Prototyping
- MECH ENG 760 / Electric Drive Vehicles

A maximum of two courses can be selected from the following list:

Electrical Engineering

- ECE 710 / Engineering Optimization
- ECE 732 / Non-linear Control Systems
- ECE 736 / 3D Image Processing and Computer Vision
- ECE 744 / System-on-a-Chip (SOC) Design and Test: Part I - Methods
- ECE 772 / Neural Networks and Learning Machines
- ECE 778 / Introduction to Nanotechnology

Software Engineering

- SFWR ENG 6HC3 / The Human Computer Interface

Computer Science

- COMP SCI 6F03 / Distributed Computer Systems
- COMP SCI 6TE3 / Continuous Optimization

Computing and Software

- CAS 767 / Information Privacy and Security
- CAS 771 / Introduction to Big Data Systems and Applications

School of Engineering Practice and Technology

- SEP 6AS3 / Advanced System Components and Integration
- SEP 6AT3 / Conceptual Design of Electric and Hybrid Electric Vehicles
- SEP 6DM3 / Data Mining
- SEP 735 / ADDITIVE MANUFACTURING
- SEP 748 / Development of Sustainable Communities
- SEP 751 / Process Design and Control for Operability
- SEP 752 / Systems Modeling and Optimization
- SEP 754 / Process Design and Integration for Minimal Environmental Impact

Manufacturing Engineering

- MANUF 6RM3 / Robot Mechanics and Mechatronics
- MANUF 710 / SYSTEM ANALYSIS SIMULATION

~~Courses~~

~~Discrete Manufacturing Courses~~

~~Students enrolling in the program can tailor their program of studies according to their career interests. Students can take maximum of 2 half courses (one term courses) at 600 level. Courses can be selected from WBooth SEPT, Chemical, Materials or Mechanical Engineering departments. Students wishing to take an elective course outside of the recommended electives need to obtain a permission from their program lead.~~

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  - ~~3 to 4 core courses~~
  - ~~1 to 2 elective courses~~

~~Students pursuing this option, in addition to taking 8 courses specified above, must register for the project courses:~~

- ~~MANUF 701 / Project, Part I~~
- ~~MANUF 701 / Project, Part II~~

Commented [SS1]: Please note that this section of changes refers to the 'Course' page specifically which currently incorrectly references program requirements: https://academiccalendars.romcmaster.ca/preview_program.php?catoid=45&poid=23672&returnto=9166

-

- 10 courses (30 units)
  - 1 mandatory course
  - 2 professional development courses
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- SEP 773 / Leadership for Innovation

Technical Courses

~~The following are core courses:~~

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- ~~SEP 726 / Discrete Manufacturing Processes I~~
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- ~~CHEM ENG 720 / Lean Six Sigma for Engineers / SEP 731 / Lean Six Sigma for Engineering~~
- ~~SEP 757 / Rapid Prototyping MECH ENG 759~~
- ~~SEP 780 / Advanced Robotics and Automation~~
- ~~Recommended elective courses are:~~
- ~~MATLS 6T03 / Properties and Processing of Composites SEP 6T03 / Properties and Processing of Composites~~
- ~~SEP 767 / Multivariate Statistical Methods for Big Data Analysis and Process Improvement~~
- ~~SEP 718 / Industrial Automation~~
- ~~**Other Elective Courses Available**~~

  -

  ~~These courses require a written permission of the student's graduate advisor.~~

  -

  ~~**Courses from Chemical Engineering, Materials Science Engineering, and from Mechanical Engineering.**~~

  ~~In addition to the recommended elective courses listed above, students can take up to two 600 and an unrestricted number of 700 level courses as electives from Chemical Engineering, Materials Science Engineering, and from Mechanical Engineering.~~

Additional Elective Courses

Students can select additional elective courses from the following list, provided that the approval has been received prior from their program lead:

Note that not all courses are offered every year.

Chemical Engineering

- CHEM ENG 6B03 / Polymer Reaction Engineering
- CHEM ENG 6E03 / Digital Computer Process Control
- CHEM ENG 6X03 / Polymer Processing
- CHEM ENG 6Z03 / Interfacial Engineering
- CHEM ENG 742 / Membrane Based Bioseparations
- CHEM ENG 752 / Optimization of Chemical Processes
- CHEM ENG 753 / Systems Modeling and Optimization
- CHEM ENG 761 / Multivariable, Stochastic and Adaptive Control of Chemical Processes
- CHEM ENG 764 / Process Control and Design for Operability
- CHEM ENG 765 / Multivariate Statistical Methods for Big Data Analysis and Process Improvement
- CHEM ENG 770 / Selected Topics in Polymer Science and Engineering
- CHEM ENG 773 / Advanced Concepts of Polymer Extrusion
- CHEM ENG 774 / Advances in Polymeric Materials
- CHEM ENG 782 / Biopharmaceuticals
- CHEM ENG 786 / Artificial Intelligence and Machine Learning Fundamentals
- CHEM ENG 787 / Machine Learning : Classification Models
- CHEM ENG 788 / Neural Networks and Development Tools
- CHEM ENG 789 / Deep Learning and Its Applications
- CHEM ENG 791 / Nanotechnology in Chemical Engineering

Materials Science and Engineering

- MATLS 6C03 / Modern Iron and Steelmaking
- MATLS 6H03 / Thin Film Science and Engineering
- MATLS 6I03 / Sustainable Manufacturing Processes
- MATLS 6P03 / Properties of Polymeric Materials
- MATLS 6T03 / Properties and Processing of Composites
- MATLS 6MS4 / Materials Selection in Design and Manufacturing
- MATLS 754 / Fracture Mechanics
- MATLS 771 / Principles of Heterogeneous Kinetics

- MATLS 780 / Metallic and Non-metallic Coatings

Mechanical Engineering

- MECH ENG 6B03 / Topics in Product Development
- MECH ENG 6K03 / Robotics
- MECH ENG 6L03 / Industrial Design
- MECH ENG 6Q03 / Mechanical Vibrations
- MECH ENG 6T03 / Finite Element Applications
- MECH ENG 6Z03 / CAD/CAM/CAE
- MECH ENG 702 / Advanced Dynamics of Machines
- MECH ENG 705 / Advanced Finite Element Analysis
- MECH ENG 710 / Machine Tool Analysis
- MECH ENG 714 / Solidification Processing
- MECH ENG 724 / Solid and Surface Modeling Techniques
- MECH ENG 728 / Manufacturing Processes I
- MECH ENG 729 / Manufacturing Systems
- MECH ENG 734 / Theory of Plasticity
- MECH ENG 735 / Additive Manufacturing
- MECH ENG 738 / Manufacturing Processes II
- MECH ENG 743 / Advanced Mechatronics
- MECH ENG 751 / Advanced Mechanical Engineering Control Systems
- MECH ENG 752 / Advanced MEMS Fabrication and Microfluidics
- MECH ENG 759 / Rapid Prototyping
- MECH ENG 760 / Electric Drive Vehicles

A maximum of two courses can be selected from the following list:

Electrical Engineering

- ECE 710 / Engineering Optimization
- ECE 732 / Non-linear Control Systems
- ECE 736 / 3D Image Processing and Computer Vision
- ECE 744 / System-on-a-Chip (SOC) Design and Test: Part I - Methods
- ECE 772 / Neural Networks and Learning Machines
- ECE 778 / Introduction to Nanotechnology

Software Engineering

- SFWR ENG 6HC3 / The Human Computer Interface

Computer Science

- COMP SCI 6F03 / Distributed Computer Systems
- COMP SCI 6TE3 / Continuous Optimization

Computing and Software

- CAS 767 / Information Privacy and Security
- CAS 771 / Introduction to Big Data Systems and Applications

School of Engineering Practice and Technology

- SEP 6AS3 / Advanced System Components and Integration
- SEP 6AT3 / Conceptual Design of Electric and Hybrid Electric Vehicles
- SEP 6DM3 / Data Mining
- SEP 735 / ADDITIVE MANUFACTURING
- SEP 748 / Development of Sustainable Communities
- SEP 751 / Process Design and Control for Operability
- SEP 752 / Systems Modeling and Optimization
- SEP 754 / Process Design and Integration for Minimal Environmental Impact
- ~~SEP 780 / Advanced Robotics and Automation~~
- ~~SEP 772 / Innovation Studio (3 units)~~
- ~~SEP 771 / W Booth School of Engineering Practice and Technology Practitioner's Forum Part I~~
- ~~SEP 771 / W Booth School of Engineering Practice and Technology Practitioner's Forum Part II~~

Manufacturing Engineering

- MANUF 6RM3 / Robot Mechanics and Mechatronics
- MANUF 710 / SYSTEM ANALYSIS SIMULATION

•

CONTACT INFORMATION FOR THE RECOMMENDED CHANGE:

Name: Vladimir Mahalec Email: mahalec@mcmaster.ca Date submitted: October 26, 2021

If you have any questions regarding this form, please contact the Assistant Secretary, School of Graduate Studies, cbryce@mcmaster.ca

SGS/2013

Formatted: acalog-course, Space Before: 0 pt, After: 0 pt, Line spacing: Multiple 1.15 li, Outline numbered + Level: 1 + Numbering Style: Bullet + Aligned at: 0.25" + Tab after: 0.5" + Indent at: 0.5"

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Full Report

Evaluation for 2021 - Term 2 (Winter)

Course Code	Instructor	Response Rate (Respondants/Enrolled)
ECE 724 (C01)	Bauman, Jennifer	66.67% (8/12)

1. Overall for this course, how would you describe your learning experience?

(***Scale: 1 Very Poor to 10 Excellent***)

5 Students (62.50%) said: 10
2 Students (25.00%) said: 9
1 Students (12.50%) said: 8

Median: 10.00	Mean: 9.50	StDev: 0.76	Variance: 0.57	Not Responded: 0

2. The timing and appropriateness of feedback on your progress:

Receiving assignments back in a reasonable time frame, clear explanation of grade

(***Scale: 1 Very Poor to 5 Excellent***)

7 Students (87.50%) said: 5
1 Students (12.50%) said: 4

Median: 5.00	Mean: 4.88	StDev: 0.35	Variance: 0.13	Not Responded: 0

3. Independent critical judgement was encouraged:

(***Scale: 1 Very Poor to 5 Excellent***)

6 Students (75.00%) said: 5
2 Students (25.00%) said: 4

Median: 5.00	Mean: 4.75	StDev: 0.46	Variance: 0.21	Not Responded: 0

4. OVERALL, how do you rate the value of this course compared with others you have taken at McMaster?

(***Scale: 1 Very Poor to 5 Excellent***)

6 Students (75.00%) said: 5
2 Students (25.00%) said: 4

Median: 5.00	Mean: 4.75	StDev: 0.46	Variance: 0.21	Not Responded: 0

5. The organization of this course:

Progression of learning material, resource availability, professor was timely and prepared

(***Scale: 1 Very Poor to 5 Excellent***)

6 Students (75.00%) said: 5

2 Students (25.00%) said: 4

Median: 5.00	Mean: 4.75	StDev: 0.46	Variance: 0.21	Not Responded: 0

6. The instructor's response to students:
Approachability, attitude, availability, well-explained answers
(*Scale: 1 Very Poor to 5 Excellent*)

6 Students (75.00%) said: 5
1 Students (12.50%) said: 4

Median: 5.00	Mean: 4.86	StDev: 2.02	Variance: 4.07	Not Responded: 1

7. The coverage and fairness of tests:
Material coverage, mark distribution, difficulty level
(*Scale: 1 Very Poor to 5 Excellent*)

4 Students (50.00%) said: 5
4 Students (50.00%) said: 4

Median: 4.50	Mean: 4.50	StDev: 0.53	Variance: 0.29	Not Responded: 0

8. Please comment on the quality of the TA's in this course:
- No TAs in this course.
- N/A
- No Tas
- N/A
- No TAs in this course.
- No TAs

9. Please list aspects of this course that you found valuable and should be continued:
- Online lectures were helpful to review (recorded lectures).
- Overall this has been one of the most rewarding courses I have taken at university. The assignment was extremely good at allowing me to understand some fundamentals in simulink and left me with a working EV model I can use as a base in future projects and investigations. The knowledge I have gained in this course perfectly compliments one of my goals working towards my Masters. As a mechanical engineering student I hoped to gain knowledge of fundamentals in electrical engineering and this course has allowed me to achieve some of that.
- The way Dr. Bauman distributes the content of the course is great and should be continued.
- #NAME?
- I think assignment 1 was a valuable experience to apply whats learned in class to simulated electric vehicle performance. I appreciated the open-ended nature of the course project that encouraged students to focus on electrical vehicle aspects that they are interested in and can be focused towards their individual areas of research.
- First of all I believed the content in this lecture is great all kinds of knowledge that relates to EV and HEV are introduced and the task of completion of EV model by students is a perfect practice for us and in final project we can have some open mind to design and make research on our own interest is even a better thing
- The assessments are structured out well with the first assignment serving as a nice basis for the

final project giving students more time towards the end of the course to focus solely on their project topic. Lectures are also structured well with the first 4 lectures focusing on the necessary content to complete the vehicle model. The topics for the remaining lectures are interesting as well.
- Real-Life Examples through the presentation.

10. Please list aspects of this course that might be improved:
- I would like to see some more detailed examples of EV modeling of the topics discussed after the 4th lecture (Battery modeling) specially related to EMS control. For instance showing in more detail a MATLAB/Simulink example of a fuzzy-logic control of the EMS (providing the script / Simulink model to the students) discussing the simulation results and then changing some parameters of the control and analyzing their impact on the energy consumption.
- #NAME?
- I would believe a small introduction of project could be provided because some students are actually have no idea what topic could be a project topic.
- Some more lecture slides showing simulink examples for the vehicle model might help.

11. Additional comments:
- The instructor is extremely knowledgeable about the topics she discusses in class and is able to communicate clearly. I found her very easy to understand and have benefited from each of her lectures. She is extremely responsive with emails and responds with insightful comments. Please continue teaching this course! Thank you.
- n/a
- A very useful and interesting course. definitely learned a lot in this course

McMaster University **School of Graduate Studies**

1280 Main Street West
Hamilton, Ontario, Canada
L8S 4L8

Phone 905.525.9140
Ext. 23679
http://graduate.mcmaster.ca

To : Graduate Council

From : Christina Bryce
Assistant Graduate Secretary

At it's meeting on November 10th, 2021 the Faculty of Health Sciences Graduate Policy and Curriculum Committee approved the following recommendations.

Please note that these recommendations were approved by the Executive Committee of the Faculty of Health Sciences.

For Approval of Graduate Council

1. **Occupational Therapy**
   - **Change to Calendar Copy**

2. **Speech Language Pathology**
   - **Change to Calendar Copy**

For Information of Graduate Council

3. **Child Life and Pediatric Psychosocial Care**
   - **Change to Course Description**
     i. 704 Current Issues in Pediatric Psychosocial Care

4. **Medical Sciences**
   - **New Course**
     i. 722 Health Science Communication

5. **Biochemistry**
   - **Change to Requisite**
     i. 720 Scientific Communication

6. **Physiotherapy**
   - **Change to Course Description and Delivery Model**
     i. 773 Research and Evidence Based Practice III
   - **Change to Delivery Model**
     i. 771 Research and Evidence Based Practice I
     ii. 772 Research and Evidence Based Practice II
     iii. 774 Research and Evidence Based Practice IV

7. **Psychotherapy**

- 707 Introduction to Psychotherapy Research

8. Rehabilitation Sciences

- **Change to Prerequisite**
    i. 758 Qualitative Research Methods for Collecting, Analysing and Interpreting Data

McMaster University **SCHOOL OF GRADUATE STUDIES**

RECOMMENDATION FOR CHANGE IN GRADUATE CURRICULUM - FOR CHANGE(S) INVOLVING DEGREE PROGRAM REQUIREMENTS / PROCEDURES / MILESTONES

IMPORTANT: PLEASE READ THE FOLLOWING NOTES BEFORE COMPLETING THIS FORM:

1. This form must be completed for **ALL** changes involving degree program requirements/procedures. **All** sections of this form **must** be completed.

2. An electronic version of this form (must be in MS WORD **not** PDF) should be emailed to the Assistant Secretary, School of Graduate Studies (cbryce@mcmaster.ca).

3. A representative from the department is **required to attend** the Faculty Curriculum and Policy Committee meeting during which this recommendation for change in graduate curriculum will be discussed.

DEPARTMENT	School of Rehabilitation Science
NAME OF PROGRAM and PLAN	Occupational Therapy Program
DEGREE	Master of Science (Occupational Therapy)

NATURE OF RECOMMENDATION *(PLEASE CHECK APPROPRIATE BOX)*

Is this change a result of an IQAP review? ☐ Yes ☒ No

CREATION OF NEW MILESTONE ☐					
CHANGE IN ADMISSION REQUIREMENTS	X	**CHANGE IN COMPREHENSIVE EXAMINATION PROCEDURE**		**CHANGE IN COURSE REQUIREMENTS**	
CHANGE IN THE DESCRIPTION OF A SECTION IN THE GRADUATE CALENDAR	Y	**EXPLAIN:** Changes to graduate calendar to reflect the change in admission processes.			
OTHER CHANGES		**EXPLAIN:**			

DESCRIBE THE EXISTING REQUIREMENT/PROCEDURE:

Existing wording in the 2021-2022 Graduate Calendar:
https://academiccalendars.romcmaster.ca/preview_program.php?catoid=45&poid=23533&returnto=9169

"Admissions Requirements

To be eligible for admission to the M.Sc.(OT) program, applicants must have completed a four-year baccalaureate degree or the equivalent number of courses (120 units/credits) and have achieved a minimum grade-point average of "B+" or 77%, or 3.3/4.0 or 9.0/12.0 in their final 60 units of credit. Post-graduate coursework is also considered in this sub-GPA calculation, and calculated on a case-by-case basis.

Applicants may apply during the fourth year of their degree. In this case, the pre-admission sub-GPA for eligibility purposes is calculated using the most recent 60 units of credit towards their degree. If an applicant in this category is subsequently offered admission to the program, the offer is "conditional" upon successful completion of their four-year degree by June 30 in that year and maintenance of a B+ average in their final 60 units of credit.

Vulnerable Sector Checks are required as a condition of continued registration with a FHS Health Professional Program. An original Vulnerable Sector Check must be submitted on an annual basis and meet the directives of the current FHS Police Records Check Policy approved June 26, 2019. Click here for the full policy.

Application Procedure

Applicants are required to apply via the ORPAS online application service located at the Ontario Rehabilitation Sciences Programs Application Service (ORPAS), Guelph, Ontario website: http://www.ouac.on.ca/orpas/. Please review the ORPAS Application Guide for information about the admissions process.

Top ranked applicants (based on sub-GPA) will be invited to participate in the Multiple Mini Interview (MMI) process, which entails a series of short, interview stations and station-based written responses. Personal qualities, aptitudes and skills are assessed at these interview stations. Interview evaluators are drawn from the faculty and the community. Evaluators are provided with anti-bias and diversity training prior to evaluating applicants.

Professionalism is an important requirement of the McMaster Occupational Therapy Program. Graduates of the program that register with a regulatory college will be expected to demonstrate professional behaviours in practice. In preparation for licensure and in keeping with the standard of excellence required in our program, we expect applicants to the MSc(OT) program to conduct themselves in a professional manner throughout all phases of the application process. Any and all interactions throughout the admissions process, where applicants are engaged with Occupational Therapy program staff, faculty, students, and/or community volunteers may be taken into consideration in making admissions decisions. Admission may be denied to applicants who, amongst other critical determinants, behave in a manner that is considered below the level of professionalism expected of similarly situated candidates, regardless of their academic standing or interview performance.

Enquiries: 289-659-3787, OT Program Coordinator
Email: askOT@mcmaster.ca
Website: https://healthsci.mcmaster.ca/srs-ot

PROVIDE A DETAILED DESCRIPTION OF THE RECOMMENDED CHANGE *(Attach additional pages if space is not sufficient.)*

The Occupational Therapy Program proposes the following changes:

Application Procedure:

After applicants have applied to the Program, all applicants who meet the minimum sub-GPA criteria (to a maximum of 800 applicants) will complete an on-line, video-based interview, comprised of a series of 'mini interview' questions. (up to 8 questions) including at least one that requires a written response. Applicants will have an unlimited amount of practice time/sessions; however, once they begin the formal on-line video interview

process they will be given only one (1) opportunity to respond to each question, similar to an in-person interview. The on-line, video-based interview should take no more than 30 minutes to complete and can be completed on the applicant's own time. Applicants will be required to pay a $50.00 registration fee after which they will be sent instructions and can begin the on-line video interview process. The student will be given one (1) week to complete the video-based interview.

Applicants will require an internet connection, a computer/laptop/ with a functioning webcam and microphone to complete the on-line, video-based interview.

RATIONALE FOR THE RECOMMENDED CHANGE (How does the requirement fit into the department's program and/or tie to existing Program Learning Outcomes from the program's IQAP cyclical review?):

There are numerous reasons for the recommended changes:

- To allow more applicants the opportunity to participate in an interview process (in person MMI currently capped at 250 applicants) in order to be considered for admissions
- To address concerns that selection of those 250 candidates with the highest GPAs perpetuates inequities in education that can start to be addressed by interviewing a larger candidate pool

PROVIDE IMPLEMENTATION DATE: ***(Implementation date should be at the beginning of the academic year)***

For the 2022-2023 graduate calendar for the September 2023 admission deadline.

ARE THERE ANY OTHER DETAILS OF THE RECOMMENDED CHANGE THAT THE CURRICULUM AND POLICY COMMITTEE SHOULD BE AWARE OF? IF YES, EXPLAIN.

The McMaster PT Program uses the same on-line, video-based interview process (KIRA) and charges a fee of $50.

The McMaster MBA Program uses the same on-line, video-based interview process (KIRA) and charges a fee of $150.

The OT Program plans to implement the proposed admission changes for three years and will evaluate outcomes to determine effects of the changes.

PROVIDE A DESCRIPTION OF THE RECOMMENDED CHANGE TO BE INCLUDED IN THE CALENDAR (please include a tracked changes version of the calendar section affected if applicable):

Admissions Requirements

To be eligible for admission to the M.Sc.(OT) program, applicants must have completed a four-year baccalaureate degree or the equivalent number of courses (120 units/credits) and have achieved a minimum grade-point average of "B+" or 77%, or 3.3/4.0 or 9.0/12.0 in their final 60 units of credit. Post-graduate coursework is also considered in this sub-GPA calculation, and calculated on a case-by-case basis.

Applicants may apply during the fourth year of their degree. In this case, the pre-admission sub-GPA for eligibility purposes is calculated using the most recent 60 units of credit towards their degree. If an applicant in this category is subsequently offered admission to the program, the offer is "conditional" upon successful completion of their four-year degree by June 30 in that year and maintenance of a B+ average in their final 60 units of credit.

Vulnerable Sector Checks are required as a condition of continued registration with a FHS Health Professional Program. An original Vulnerable Sector Check must be submitted on an annual basis and meet the directives of the current FHS Police Records Check Policy approved June 26, 2019. Click here for the full policy.

Application Procedure

Applicants are required to apply via the ORPAS online application service located at the Ontario Rehabilitation Sciences Programs Application Service (ORPAS), Guelph, Ontario website: http://www.ouac.on.ca/orpas/. Please review the ORPAS Application Guide for information about the admissions process.

Applicant On-line Video Interview

All applicants who meet the minimum sub-GPA criteria (to a maximum of 800 applicants) will be invited to participate in an on-line video-based interview comprised of a series of 'mini interview' questions (includes verbal as well as written response questions). Personal qualities, aptitudes and skills are assessed at these virtual stations. Evaluators are drawn from the faculty and the community, and will be provided with anti-bias and diversity training prior to evaluating applicants.

Once applicants have submitted their online application and paid the interview fee, the Program will notify applicants of the link to the video interview questions, instructions on how to complete the interview and the due date for completion of this component of the application. Please refer to the Program website for more details. Applicants will require an internet connection, a computer/laptop with a functioning webcam and microphone to complete the live on-line video based interview.

Professionalism is an important requirement of the McMaster Occupational Therapy Program. Graduates of the program that register with a regulatory college will be expected to demonstrate professional behaviours in practice. In preparation for licensure and in keeping with the standard of excellence required in our program, we expect applicants to the MSc(OT) program to conduct themselves in a professional manner throughout all phases of the application process. Any and all interactions throughout the admissions process, where applicants are engaged with Occupational Therapy program staff, faculty, students, and/or community volunteers may be taken into consideration in making admissions decisions. Admission may be denied to applicants who, amongst other critical determinants, behave in a manner that is considered below the level of professionalism expected of similarly situated candidates, regardless of their academic standing or interview performance.

Enquiries: 289-659-3787, OT Program Coordinator
Email: askOT@mcmaster.ca
Website: https://healthsci.mcmaster.ca/srs-ot

CONTACT INFORMATION FOR THE RECOMMENDED CHANGE:

Name: Jackie Bosch Email: boschj@mcmaster.ca Extension: N/A Date submitted: Nov 8, 2021

If you have any questions regarding this form, please contact the Assistant Secretary, School of Graduate Studies, cbryce@mcmaster.ca

SGS/2013

McMaster University **SCHOOL OF GRADUATE STUDIES**

RECOMMENDATION FOR CHANGE IN GRADUATE CURRICULUM - FOR CHANGE(S) INVOLVING DEGREE PROGRAM REQUIREMENTS / PROCEDURES / MILESTONES

IMPORTANT: PLEASE READ THE FOLLOWING NOTES BEFORE COMPLETING THIS FORM:

1. This form must be completed for **ALL** changes involving degree program requirements/procedures. **All** sections of this form **must** be completed.

2. An electronic version of this form (must be in MS WORD **not** PDF) should be emailed to the Assistant Secretary, School of Graduate Studies (cbryce@mcmaster.ca).

3. A representative from the department is **required to attend** the Faculty Curriculum and Policy Committee meeting during which this recommendation for change in graduate curriculum will be discussed.

DEPARTMENT	School of Rehabilitation Sciences
NAME OF PROGRAM and PLAN	Speech-Language Pathology Program - SLPMSC
DEGREE	**Master of Science – MSc(SLP)**

NATURE OF RECOMMENDATION *(PLEASE CHECK APPROPRIATE BOX)*

Is this change a result of an IQAP review? ☐ Yes ☒ No

CREATION OF NEW MILESTONE ☐

CHANGE IN ADMISSION REQUIREMENTS		**CHANGE IN COMPREHENSIVE EXAMINATION PROCEDURE**		**CHANGE IN COURSE REQUIREMENTS**	
CHANGE IN THE DESCRIPTION OF A SECTION IN THE GRADUATE CALENDAR	X	**EXPLAIN:** Change to the admission interview procedure from **in-person** interviews to **on-line** interviews			
OTHER CHANGES		**EXPLAIN:**			

DESCRIBE THE EXISTING REQUIREMENT/PROCEDURE:

Applicants previously rotated through 5 interviewers, in-person, to be assessed for admission to the SLP program. Applicants also completed two written questions and submitted written responses, in-person.

PROVIDE A DETAILED DESCRIPTION OF THE RECOMMENDED CHANGE ***(Attach additional pages if space is not sufficient.)***

The program will use Kira Talent for completion of on-line interviews in lieu of the in-person interviews. Written questions and responses will be completed on-line using LimeSurvey. There will be no changes to the types of questions, assessment/scoring of applicants, or the number of interviews or written questions that an applicant completes.

RATIONALE FOR THE RECOMMENDED CHANGE (How does the requirement fit into the department's program and/or tie to existing Program Learning Outcomes from the program's IQAP cyclical review?):

The program is shifting to on-line interviews to allow better accessibility for applicants. The cost for travel to McMaster to complete the interviews can be a financial barrier. Additionally, on-line interviews allow the program to follow social distancing guidelines related to the pandemic.

PROVIDE IMPLEMENTATION DATE: ***(Implementation date should be at the beginning of the academic year)***

2022 admission cycle – March 2022

ARE THERE ANY OTHER DETAILS OF THE RECOMMENDED CHANGE THAT THE CURRICULUM AND POLICY COMMITTEE SHOULD BE AWARE OF? IF YES, EXPLAIN.

PROVIDE A DESCRIPTION OF THE RECOMMENDED CHANGE TO BE INCLUDED IN THE CALENDAR (please include a tracked changes version of the calendar section affected if applicable):

All applicants (domestic and international) must apply through the Ontario Rehabilitation Science Programs (ORPAS) online application service http://www.ouac.on.ca/orpas/. Application deadline is available on the ORPAS website. Applicants who are academically eligible will be ranked on the basis of their preadmission GPA. The top-ranked (approximately 125) applicants will be invited to participate in an ~~in-person mini~~ on-line multiple mini interview (MMI). Personal qualities and life experiences are assessed at these "mini" interviews, two of which are written stations. These interviews will take place ~~in-person at McMaster University Campus~~on-line. Final offers of admission will be based on a combination of pre-admission GPA and MMI score. Interview dates and Offer dates can be found on the program's website https://healthsci.mcmaster.ca/srs-slp/education/future-students ~~http://srsmcmaster.ca/slp-program-information/.~~

CONTACT INFORMATION FOR THE RECOMMENDED CHANGE:

Name: Lyn Turkstra Email: turkstrl@mcmaster.ca Extension: n/a Date submitted: November 1, 2021

If you have any questions regarding this form, please contact the Assistant Secretary, School of Graduate Studies, cbryce@mcmaster.ca

SGS/2013

McMaster University **School of Graduate Studies** 1280 Main Street West Phone 905.525.9140
Hamilton, Ontario, Canada Ext. 23679
L8S 4L8 http://graduate.mcmaster.ca

To : Graduate Council

From : Christina Bryce
Assistant Graduate Secretary

At its meeting on October 25th the Faculty of Business Graduate Curriculum and Policy Committee approved the following graduate curriculum recommendations.

Please note that these recommendations were approved by the Faculty of Business.

For Approval of Graduate Council:

- **BLPT**
  - **i. Change to Program Requirements**
- **M.B.A.**
  - ii. **Change to Program Requirements – Strategic Marketing Specialization**

For Information of Graduate Council:

- **BLPT**
  - **iii. Course Cancellations**
    1. BL751 Innovation and Design Thinking
    2. BL752 Co-Creating Strategic Foresight
  - **iv. New Course**
    1. BL750 Design Thinking and Strategic Foresight

- **M.B.A.**
  - v. **Change to Requisites**
    1. C721 Health Policy Analysis for Managers
    2. F700 Valuation for Finance Professionals
    3. F712 Applied Corporate Finance
    4. F715 Portfolio Theory and Management
    5. F716 International Financial Management
    6. F722 Market Trading and Risk Management with Options
    7. F724 Venture Capital and Private Equity
    8. F726 Behavioural Finance
    9. F736 Ethics and Professional Practice in Finance
    10. F741 Introduction to Fintech.
    11. M752 Digital Marketing

McMaster University

SCHOOL OF GRADUATE STUDIES

RECOMMENDATION FOR CHANGE IN GRADUATE CURRICULUM - FOR CHANGE(S) INVOLVING DEGREE PROGRAM REQUIREMENTS / PROCEDURES / MILESTONES

IMPORTANT: PLEASE READ THE FOLLOWING NOTES BEFORE COMPLETING THIS FORM:

1. This form must be completed for **ALL** changes involving degree program requirements/procedures. **All** sections of this form **must** be completed.

2. An electronic version of this form (must be in MS WORD **not** PDF) should be emailed to the Assistant Secretary, School of Graduate Studies (cbryce@mcmaster.ca).

3. A representative from the department is **required to attend** the Faculty Curriculum and Policy Committee meeting during which this recommendation for change in graduate curriculum will be discussed.

DEPARTMENT	Strategic Management
NAME OF PROGRAM and PLAN	Blended Learning Part Time MBA Program DeGroote School of Business
DEGREE	**MBA**

NATURE OF RECOMMENDATION *(PLEASE CHECK APPROPRIATE BOX)*

Is this change a result of an IQAP review? ☐ Yes ☒ No

CREATION OF NEW MILESTONE ☐					
CHANGE IN ADMISSION REQUIREMENTS		**CHANGE IN COMPREHENSIVE EXAMINATION PROCEDURE**		**CHANGE IN COURSE REQUIREMENTS**	
CHANGE IN THE DESCRIPTION OF A SECTION IN THE GRADUATE CALENDAR		**EXPLAIN:**			
OTHER CHANGES		**EXPLAIN:** Combination of two existing 1.5 unit courses into a single 3 unit course which is required at the same stage in the program			

DESCRIBE THE <u>EXISTING</u> REQUIREMENT/PROCEDURE:

BL751 and BL752 are required courses taken in direct sequence in the sixth semester of the Blended Learning Part Time MBA Program.

PROVIDE A DETAILED DESCRIPTION OF THE RECOMMENDED CHANGE *(Attach additional pages if space is not sufficient.)*

Please see attached pages

RATIONALE FOR THE RECOMMENDED CHANGE (How does the requirement fit into the department's program and/or tie to existing Program Learning Outcomes from the program's IQAP cyclical review?):

In BL751, students work on concepts and activities which prepare them to complete a project they do in BL752. Experience shows that, in BL751 there are frequent references to BL752 and, in BL752, there are frequent references to BL751. Having them as separate courses creates an artificial barrier between the intimately related parts. Design thinking and strategic foresight can be treated as separate topics. However, in this program, the intention is to combine them to achieve conceptual and practical synergies in the major project completed in BL752, which can better prepare students for their post graduation endeavours. The separation into two courses, in this case, creates an artificial barrier which inhibits the accomplishment of the objectives of the program.

PROVIDE IMPLEMENTATION DATE: *(Implementation date should be at the beginning of the academic year)*

Academic year 2021-22. New course would be first delivered in the summer of 2022.

ARE THERE ANY OTHER DETAILS OF THE RECOMMENDED CHANGE THAT THE CURRICULUM AND POLICY COMMITTEE SHOULD BE AWARE OF? IF YES, EXPLAIN.

The prerequisites for the new course would be the same as for BL751, which was the first course in the BL751-BL752 sequence. The new course would be offered in Term 6, as were BL751 and BL752. Students should not be inconvenienced academically or practically by this change. The new course is required, appears in the same position in their curriculum, and covers the same foundational concepts and activities as its predecessors.

PROVIDE A DESCRIPTION OF THE RECOMMENDED CHANGE TO BE INCLUDED IN THE CALENDAR (please include a tracked changes version of the calendar section affected if applicable):

BUSINESS BL7XX Design Thinking and Strategic Foresight (3 Units)
Prerequisites: BUSINESS BL653 and BUSINESS BL654. Open to students enrolled in the Blended Learning Part-time MBA Program.

Calendar description:
In this learning-by-doing course, students will address an innovation challenge from a project sponsor, applying the concepts and methodologies of design thinking and strategic foresight. In combination with lectures, readings and other activities introducing design thinking and strategic foresight in a rigorous way, students will first imagine multiple future scenarios through trend analysis to identify actionable and preferable opportunities for innovation by the project sponsor. Students apply methods and mindsets which empathize with the needs of affected end

user groups. Based on the understanding of desired and required user experiences, students generate and test solution ideas for products and services with strong future market fit.
CONTACT INFORMATION FOR THE RECOMMENDED CHANGE: Name: John Medcof & Nick Bontis Email: medcofj@mcmaster.ca nbontis@mcmaster.ca Date submitted: October, 2021.

If you have any questions regarding this form, please contact the Assistant Secretary, School of Graduate Studies, cbryce@mcmaster.ca

SGS/2013

Combine BL751 and BL752 into a Single Course
Rationale

This is a proposal to combine the two courses BL751 and BL752, both 1.5 unit courses, into a single 3 unit course.

BL751 and BL752 are required courses taken in direct sequence in the sixth semester of the Blended Learning Part Time MBA Program. They address closely related themes, as can be seen from the School of Graduate Studies Calendar descriptions below. Instructors who have taught the courses have proposed that the pedagogy could be more effective if the courses were combined into a single 3 unit course. Students have also suggested that it would make more sense to combine the courses. In BL751, students work on concepts and activities which prepare them to complete a project they do in BL752. Experience shows that, in BL751 there are frequent references to BL752 and, in BL752, there are frequent references to BL751. Having them as separate courses creates an artificial barrier between the intimately related parts. Design thinking and strategic foresight can be treated as separate topics. However, in this program, the intention is to combine them to achieve conceptual and practical synergies in the major project completed in BL752, which can better prepare students for their post graduation endeavours. The separation into two courses, in this case, creates an artificial barrier which inhibits the accomplishment of the objectives of the program.

Course Descriptions from the School of Graduate Studies Calendar

BUSINESS BL751 / Innovation & Design Thinking (1.5 units)
Prerequisite(s): BUSINESS BL653 and BUSINESS BL654. Open to students enrolled in the Blended Learning Part-time MBA Program.

This interdisciplinary course draws on human behavior, marketing, creativity and strategic management concepts to help students develop capabilities for solving problems and by identifying, supporting, and scaling up new innovative solutions. Based on a design thinking process originally popularized in Silicon Valley, students will engage in a step-by-step progression that places users (customers) at the centre of the creative solution process. Students will work in teams on a course length project that begins with identifying and understanding an initial user problem, challenge or opportunity. This will be followed by the generation of many possible solutions before narrowing into prototype solutions to be tested and iterated upon based on feedback from targeted users in BL752.

BUSINESS BL752 / Co-Creating Strategic Foresight (1.5 units)
Prerequisite(s): BUSINESS BL653n, BUSINESS BL654 and BUSINESS BL720. Open to students enrolled in the Blended Learning Part-time MBA Program.

Students will work in teams on a course length project (in continuation from BL751) and explore the future strategic implications of their work.

Proposed Combined Course

Title:
BUSINESS BL7XX Design Thinking and Strategic Foresight (3 Units)

Prerequisites:
BUSINESS BL653 and BUSINESS BL654.
Open to students enrolled in the Blended Learning Part-time MBA Program.

Calendar description:
In this learning-by-doing course, students will address an innovation challenge from a project sponsor, applying the concepts and methodologies of design thinking and strategic foresight. In combination with lectures, readings and other activities introducing design thinking and strategic foresight in a rigorous way, students will first imagine multiple future scenarios through trend analysis to identify actionable and preferable opportunities for innovation by the project sponsor. Students apply methods and mindsets which empathize with the needs of affected end user groups. Based on the understanding of desired and required user experiences, students generate and test solution ideas for products and services with strong future market fit.

McMaster University **SCHOOL OF GRADUATE STUDIES**

RECOMMENDATION FOR CHANGE IN GRADUATE CURRICULUM - FOR CHANGE(S) INVOLVING DEGREE PROGRAM REQUIREMENTS / PROCEDURES / MILESTONES

IMPORTANT: PLEASE READ THE FOLLOWING NOTES BEFORE COMPLETING THIS FORM:

1. This form must be completed for **ALL** changes involving degree program requirements/procedures. **All** sections of this form **must** be completed.

2. An electronic version of this form (must be in MS WORD **not** PDF) should be emailed to the Assistant Secretary, School of Graduate Studies (cbryce@mcmaster.ca).

3. A representative from the department is **required to attend** the Faculty Curriculum and Policy Committee meeting during which this recommendation for change in graduate curriculum will be discussed.

DEPARTMENT	DeGroote School of Business
NAME OF PROGRAM and PLAN	Program: Master of Business Administration (FT COOP ACC) Plan: Strategic Marketing; Strategic Marketing (CO-OP)
DEGREE	Master of Business Administration

NATURE OF RECOMMENDATION *(PLEASE CHECK APPROPRIATE BOX)*

Is this change a result of an IQAP review? ☐ Yes ☒ No

CREATION OF NEW MILESTONE ☐					
CHANGE IN ADMISSION REQUIREMENTS		**CHANGE IN COMPREHENSIVE EXAMINATION PROCEDURE**		**CHANGE IN COURSE REQUIREMENTS**	
CHANGE IN THE DESCRIPTION OF A SECTION IN THE GRADUATE CALENDAR		**EXPLAIN:**			
OTHER CHANGES	X	**EXPLAIN:** INCLUDE M752 IN THE LIST OF COURSES TO BE COUNTED TOWARDS THE STRATEGIC MARKETING SPECIALIZATION. IT IS A RELATIVELY NEW COURSE OFFERED LAST YEAR FOR THE FIRST TIME. THE TOPIC IS HIGHLY RELEVANT TO THE CURRENT MARKETING ECOSYSTEM AND WILL HELP STUDENTS POSITION THEMSELVES WELL IN THE JOB MARKET.			

DESCRIBE THE <u>EXISTING</u> REQUIREMENT/PROCEDURE:

M752 is not currently listed as an elective contributing towards the strategic marketing specialization.

PROVIDE A DETAILED DESCRIPTION OF THE RECOMMENDED CHANGE ***(Attach additional pages if space is not sufficient.)***

M752 will now be counted towards the strategic marketing specialization.

RATIONALE FOR THE RECOMMENDED CHANGE (How does the requirement fit into the department's program and/or tie to existing Program Learning Outcomes from the program's IQAP cyclical review?):

The course is highly relevant to Strategic Marketing

PROVIDE IMPLEMENTATION DATE: ***(Implementation date should be at the beginning of the academic year)***

September 2021

ARE THERE ANY OTHER DETAILS OF THE RECOMMENDED CHANGE THAT THE CURRICULUM AND POLICY COMMITTEE SHOULD BE AWARE OF? IF YES, EXPLAIN.

No

PROVIDE A DESCRIPTION OF THE RECOMMENDED CHANGE TO BE INCLUDED IN THE CALENDAR (please include a tracked changes version of the calendar section affected if applicable):

Add M752 to Strategic Marketing elective description – see tracked changes below

Strategic Marketing

Marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large. Professional marketers act in a forward looking manner to create, maintain, and enhance relationships among different stakeholders to facilitate such exchanges. Highly successful marketers understand both the quantitative (e.g. economics) as well as the qualitative (e.g. psychology, sociology

and politics) aspects of customer behaviour in consumer and business markets.

The Strategic Marketing Specialization provides MBA students a diverse selection of courses to develop the broad understanding of the fundamental concepts, theories and applications needed to be a successful marketer. Integrated experiential learning is an important part of this education. This is achieved via projects with local and national businesses, cases, research projects, and marketing simulations.

Graduates in this specialization are well prepared for careers in marketing management, new product marketing, brand management, services marketing, marketing analytics, marketing research, retailing, sales, advertising, promotion etc. Students are provided with the education and experience to become highly successful in both consumer and business marketing professions as well as to effectively operate in domestic and international markets.

- Required:
- BUSINESS P700 / Business, Government and the Global Environment
- BUSINESS P720 / Strategic Management
- BUSINESS M731 / Marketing Research
- *and four of the following:*
- M718/28/38/48… Selected Topics in Marketing
- BUSINESS M721 / Business Marketing
- M722/C741 Health Care Marketing
- BUSINESS M724 / Innovation and New Products
- BUSINESS M727 / Marketing Communication
- BUSINESS M732 / Consumer Behaviour
- BUSINESS M733 / Marketing Analytics
- BUSINESS M734 / Strategic Marketing Analysis
- BUSINESS M736 / Services Marketing
- BUSINESS M740 / Corporate Reputation and Brand Management
- BUSINESS M750 / Consultative Selling
- BUSINESS M751 / Sustainability and Corporate Social Responsibility
- BUSINESS M752 / Digital Marketing
- BUSINESS P715 / Entrepreneurship
- BUSINESS P731 / Crisis Management and Communications

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CONTACT INFORMATION FOR THE RECOMMENDED CHANGE:

Name: Dr. Sourav Ray, Chair, Marketing Email: sray@mcmaster.ca Extension: 22370 Date submitted: Oct 4, 2021

If you have any questions regarding this form, please contact the Assistant Secretary, School of Graduate Studies, cbryce@mcmaster.ca

SGS/2013

November 2021 Graduate Council

Trust Fund Changes for approval

Gordon Bruce Bursary

Reason for change: We have been unable to award this bursary since it was established because there have been no eligible recipients in the Financial Mathematics program. It is a small program. By getting rid of the preference for Financial Mathematics, it opens up the pool of eligible students.

Current Terms: *Established in 2018 by Gordon Bruce BSc. (Class of '86) & MBA. To be granted by the School of Graduate Studies to students enrolled in a Masters of Science program in Financial Mathematics who demonstrates financial need.*

TFOC Approved Terms Change: Established in 2018 by Gordon Bruce BSc. (Class of '86) & MBA. To be granted by the School of Graduate Studies to students enrolled in a Master's program in the department of Mathematics & Statistics who demonstrate financial need. Preference will be given to students in the Financial Mathematics program.

John Deer Graduate Scholarship in MIS

Reason for change: The Management Information Systems specialization (MIS) in DeGroote's MBA program no longer exists and has been subsumed by the Business Analytics specialization.

Current Terms: John Deere Foundation Graduate Scholarship in Management Information Systems was established in 2001 by the John Deere Foundation of Canada. It is intended to be "awarded by the School of Graduate Studies to a student enrolled in the MBA Program, interested in Management Information Systems on the recommendation of the School of Business, based on academic achievement and contribution to the program.

TFOC Approved Name and Term Change:
John Deere Foundation Graduate Scholarship in Business Analytics - Established in 2001 by the John Deere Foundation of Canada. To be awarded by the School of Graduate Studies to a student enrolled in the MBA Program in the Business Analytics specialization on the recommendation of the School of Business, based on academic achievement and contribution to the program.

Implementing Micro-credentials at McMaster University

Key findings and recommendations prepared by McMaster's Ad-Hoc Committee on Micro-credentials

JULY 2021

Executive Summary

While micro-credentials are new to the university post-secondary landscape, some of the largest global companies are using them to train current and future employees. The Province of Ontario has identified the development of micro-credentials as a priority, investing millions of dollars to increase the number and types of micro-credentials available in the province. Their goal is for micro-credentials to respond to regional labour market needs and dynamic career trajectories while increasing collaboration between the private and public sectors through formal partnerships among postsecondary institutions and employers.

Considering these developments, an Ad Hoc Committee was established by McMaster's Undergraduate and Graduate Councils with representation from McMaster Continuing Education and the University Secretariat. The Ad Hoc Committee was charged with defining and considering how micro-credentials should be used on campus. Micro-credentials could be leveraged at McMaster to:

- Create a new pathway to certificate or degree programs for a learner.
- Support students and non-traditional learners.
- Develop connections with industry and provide support for skills they need to succeed.
- Communicate and verify skills and competencies that students are gaining/learning outside of traditional modes.
- Create more flexibility/nimbleness in our learning environment while maintaining standards of rigor and quality.

This report outlines the Committee's key findings and recommendations for implementing micro-credentials at McMaster. They include:

- A proposed definition for micro-credentials at McMaster.
- Proposed revisions to the Certificates and Diplomas policy for micro-credentials to be considered Fall 2021, involving a subset of the committee to draft a new version for review, discussion and possible acceptance by Undergraduate Council and Graduate Council.
- Administration and oversight of micro-credentials should initially be handled by the new INSPIRE Office for Flexible Learning.
- A Director of Micro-credentials position should be created, reporting to the Vice-Provost (Faculty).
- Recommendations regarding the assignment, approval and administration of fees.
- Recommendations regarding the appeals process for micro-credential offerings.

Membership of the Ad-Hoc Committee on Micro-Credentials

Appointment	Title	Name
Members		
Co-Chair	Acting Vice-Provost (Faculty)	Dr. Kim Dej
Co-Chair	Vice-Provost and Dean of Graduate Studies	Dr. Doug Welch
UGC Appointed Member	Associate Dean (Academic), Faculty of Social Sciences	Dr. Tracy Prowse
UGC Appointed Member	Associate Dean (Academic), Faculty of Business	Dr. Sue McCracken
GC Appointed Member	Associate Dean of Graduate Studies (Engineering)	Dr. Michael Thompson
GC Appointed Member	Associate Dean of Graduate Studies (Health Sciences)	Dr. Steve Hanna
MCE Director	Assistant Director, Centre for Continuing Education	Mr. Dan Piedra
Undergraduate Student	Arts & Science Program	Mr. Faris Mechlai
Graduate Student	PhD Student, Medical Sciences: Physiology and Pharmacology	Ms. Caroline Seiler
University Registrar	University Registrar	Ms. Melissa Pool
MCE Adult Learner/Appointed Member	Adult Learner (MCE Appointed)	Mr. Adam Smoluk
Consultants		
	Assistant Dean (Academic), Faculty of Engineering	Ms. Maria White
	Associate Professor & Assistant Dean, Bachelor of Health Sciences (Honours) Program	Dr. Stacey Ritz
	Associate Registrar and Graduate Secretary	Ms. Stephanie Baschiera
	Associate Dean of Graduate Studies	Dr. Bhagwati Gupta
	Associate Dean (Graduate Studies and Research), Faculty of Humanities	Dr. Martin Horn
University Secretariat		
	Policy Advisor and Projects Officer	Mr. Mark Downard

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Introduction

With new credentialing approaches gaining acceptance in academic and public spaces, McMaster has an opportunity to help its students demonstrate the different forms of knowledge and skills that they are acquiring as undergraduate students, graduate students and adult learners. A more modular learning approach has emerged known as micro-credentials, sometimes referred to as open digital badges, which some of the largest global companies are using to train potential and current employees. We are also seeing an increase in micro-credential offerings at post-secondary institutions around the world.

Micro-credentials offer McMaster the ability to provide competency based, skills-focused training that aligns with the priorities of the Provincial Government and prepares our students for diverse careers. As labour markets and industries evolve, there is a need for short-duration educational offerings that promote life-long learning and skill re-development. By building and developing high-quality micro-credentials, McMaster also has the capacity to develop stronger connections with industry partners and communicate the skills that such offerings provide to learners.

An Ad Hoc Committee was established by McMaster's Undergraduate and Graduate Councils with representation from McMaster Continuing Education, the Registrar's Office and the University Secretariat. The Ad Hoc Committee was tasked with defining and considering how micro-credentials should be deployed on campus. Within this mandate, it was also asked to make recommendations on administrative structures, policy, and the impact of these different credentials on institutional quality assurance, accreditation, and governmental regulations, including financial aid implications.

Post-secondary institutions around the world, including colleges, have begun developing micro-credential offerings to meet the growing demand for competency-based training. It should be noted that the micro-credential environment is still developing, and there are distinct differences across institutions and geographies in their attributes, delivery, and terminology. In this context, the Ad Hoc Committee on Micro-credentials has undertaken to make a number of recommendations related the administrative structures and processes to develop a nimble, robust and rigorous micro-credential landscape at McMaster. As the micro-credential landscape evolves, McMaster will further refine its processes and governance.

This report outlines the key findings and recommendations from the Committee for the future of micro-credentials at McMaster.

Definition

The following definitions of micro-credentials drawn from eCampusOntario and the Higher Education Quality Council of Ontario (HEQCO) were considered by the committee:

> **eCampusOntario definition**: A micro-credential is a certification of assessed learning associated with a specific and relevant skill or competency. Micro-credentials enable rapid retraining and augment traditional education through pathways into regular postsecondary programming.
>
> **HEQCO definition**: A micro-credential is a representation of learning, awarded for completion of a short program that is focused on a discrete set of competencies (i.e., skills, knowledge, attributes), and is sometimes related to other credentials.

Following a review and discussion, the Committee's proposed definition is:

> A micro-credential is a designation of achievement of a coherent set of skills, competencies, or knowledge, specified by a statement of purpose, learning outcomes, and potential need by employers and/or in the community.
>
> A micro-credential may be academic and/or non-academic. All micro-credentials must involve an evaluation of learning. Academic micro-credentials must also meet the standards for academic coursework, but there are no minimum number of credit hours to complete the work. Micro-credentials may be within a program, separate from a program, or they could sit simultaneously in both places.
>
> A micro-credential has fewer requirements and credit hours than traditional academic qualifications and focuses on competencies that are: (1) not defined in existing programs (for non-academic micro-credentials only), (2) not accessible outside of limited enrolment programs, (3) complementary to existing programs, and/or (4) available as optionally stackable modules.

Policy Modifications

The focus of this section is concerned with the policy to accommodate the introduction of micro-credentials into McMaster's learning framework. New learning elements, such as micro-credentials, rely upon McMaster's reputation to demonstrate their value to the public. It is necessary to introduce policy that differentiates micro-credentials from other credentials. Furthermore, minimum institutional expectations for their scope, content and evaluation, and means of recognizing the final developed competency of the learner should be defined for knowledge creators. The McMaster Act limits our issuing of credentials to degrees, diplomas and certificates. Therefore, the Senate Policy on Certificates and Diplomas is the most appropriate home for micro-credentials. Below, we outline proposed modifications to this policy necessary to integrate micro-credentials into McMaster's requirements and procedures, ultimately providing oversight of these new learning activities.

Revision of Certificates and Diplomas Policy (July 8, 2020)

The committee believes that the evaluation, approval and monitoring of micro-credentials, similar to certificates and diplomas, should be the responsibility of the University's governing councils, namely Graduate Council and Undergraduate Council. Academic micro-credentials should be subject to normal academic regulations as outlined in the Undergraduate Calendar or Graduate Calendar, but both academic and non-academic micro-credentials are recommended to be approved and administered by a separate office from the Registrar. This administrative home would provide the nimbleness sought by Faculties and MCE to create micro-credentials and would be in a better position to handle these learning activities that will encompass undergraduate, graduate or general university level comprehension. The modifications to the policy for micro-credentials should describe the minimum expectations in admissions, breadth of content, and standards in evaluation. The committee was unified in its belief that any micro-credential must include an evaluation of competency with sufficient rigor corresponding to university level scholarly content.

We recommend that revisions to the Certificates and Diplomas policy for micro-credentials occur during Fall 2021, involving a subset of the committee to draft a new version for review and discussion by the two Councils. Guided by the Vice-Provost and Dean of Graduate Studies and Vice-Provost (Faculty), a small group of writers should adopt the vision of the committee. The revised policy should go to Senate for approval by December 2021.

Corresponding to the sections and layout of the Policy, the following modifications are recommended:

- Section II: *Procedural Requirements – Management of Academic Certificate and Diploma Programs* - Clarification that academic and non-academic micro-credentials will not be maintained by the Registrar but rather by a new administrative home. Micro-credentials that count towards degree completion will need to be maintained by the Registrar's Office. Subsequent sections of this

report will clarify the function of this newly-conceived home. On the academic side, this will develop akin to how MCE manages certificates and diplomas (non-degree) academic programming; the office as the administrative home but Point 7 of the current policy still applies to those students. This means the university will keep these records and attest to the issuance of credentials. At this point in time, unless it is a degree requirement, we recommend that micro-credentials do not appear on the transcript managed by the Registrar's Office but rather be recorded and available in a digital wallet. The availability of the digital infrastructure to implement this is a key condition for the success of micro-credential initiatives at McMaster.

- Section II: *Transfer between Credentials* –Stackability of academic credit for academic micro-credentials should be discussed specifically in a new section of the policy for micro-credentials (the *My OWN* degree might be used as a model). The learning activity for a micro-credential may generate its own credential (unlike certificates and diplomas which require multiple courses) and it may be combined with a corresponding diploma or certificate, as described in the appropriate section of this policy. Outside of the allowances for certificates and diplomas, academic micro-credentials may also be counted towards a degree, but should be specifically approved passing through the usual curriculum change procedures.
- Sections III to VI - Modify certificate and diploma sections, for academic credentials, to include the counting of academic micro-credentials. Typical limitations should be highlighted where an academic micro-credential may be used towards a degree and certificate simultaneously, or diploma and certificate simultaneously, but may not be counted towards two diplomas, or a degree and diploma simultaneously.
- Section VII: *Other Certificates* - Inclusion of non-academic micro-credentials into a stackable Certificate of Completion. There is no equivalency with Certificates of Attendance since micro-credentials will require an evaluation.
- New Section VIII (moving old section down to Section IX) - Include the definition for micro-credentials, as above. Academic micro-credentials should be declared as undergraduate or graduate, while non-academic micro-credentials should have no distinction, but normally involve competencies corresponding to university level studies. A description of stackability for micro-credentials towards another credential (both academic and non-academic) should be re-iterated in this section. Additional information in this section should include:
    - Setting admission requirements, ensuring it encompasses the university and MCE.
    - Defining credit units based on contact hours for academic micro-credentials. The definition should consider lower and upper limits on the duration of micro-credentials so that they are meaningful in scope but also well-differentiated from courses.
    - Inserting digital credentialing since it is not presently discussed in the policy. There should be consideration of credential mobility and the ability to give students and learners access to proof of completed requirements for specific micro-credentials (i.e., to be consistent with the

idea that micro-credentials are ‘portable’, and that students and learners can show them to potential employers to demonstrate skills and abilities). All micro-credentials should have a corresponding digital credential but only academic micro-credentials corresponding with degree requirements may appear on a university transcript. The Section II.8 clause may be expanded for micro-credentials to reflect the administrative home duty, with examples of the suggested credential appended at the end of the policy.

- New Section IX (old Section VIII): *Procedures for Approval* - Academic micro-credentials should be approved by their corresponding council, undergraduate or graduate. Non-academic micro-credentials should be approved by a Faculty standing committee, documented by the new administrative home, and should be reported to Undergraduate and Graduate Councils on an annual basis. Procedure for setting new fees may require deviation from the procedures for certificates.

Ceremonials

There is no current policy associated with digital credentials (confirmed by the Secretariat). A few universities have standardized appearances for micro-credentials but we were unable to identify an existing ceremonials policy at another institution that would provide guidance. This may be an opportunity to state some minimum expectations concerning the appearance of digital credentials so that Faculties can engage creatively in this area. We recommend that the Senate Committee on University Ceremonials and Insignia be tasked with recommending requirements for “visual” aspects of digital credentials.

Administrative "Home"

The idea of an administrative home is meant to provide a sustainable entity to oversee all micro-credential activity at McMaster. The creation of micro-credentials can happen organically in many areas of the university: within Faculties, Schools or program areas, by McMaster Continuing Education (MCE), Executive Education, the University Library, etc. Providing an administrative framework for micro-credentials facilitates program launches, supports micro-credential students and learners, and provides a strategic advantage to McMaster. Micro-credentials may be non-academic or academic, but do not generally count toward degrees or graduate diplomas. If specific micro-credentials become approved components of other credentials, the administrative oversight of such will need to be outlined more specifically as it will involve program-specific parameters. Learners will include currently enrolled undergraduate and graduate students, non-traditional learners registering through MCE, alumni engaging in up-skilling or re-skilling, and non-McMaster enrolled students and learners from other universities.

The issuance of micro-credentials requires a substantial administrative infrastructure - one capable of performing logistical functions such as:

- Setting-up and issuing micro-credentials;
- Maintaining a record of micro-credentials created and issued;
- Engaging in marketing and advocacy including recruiting individuals and employers for micro-credential service; and
- Registration of and collection of fees for all students and learners into all micro-credential offerings.

Key to the success of the micro-credential infrastructure is the choice of a single source for the creation and maintenance of the repository of micro-credentials issued so that individual micro-credential holders can claim the micro-credentials and post them where they want. This decision may be adjusted over time, but the University should reach a decision on a common platform within its first year of operation to avoid a variety of platforms issuing McMaster micro-credentials.

While McMaster may decide to develop its own infrastructure in the future, at present the issuance of micro-credentials may depend on using commercially available utilities such as BCdiploma (currently funded through eCampus Ontario). McMaster Continuing Education has already leveraged the use of BCdiploma in rolling out its Data Analytics program – an eCampus Ontario micro-credential pilot which involved a collaboration with the National Institutes of Health Informatics (NIHI). It is recommended that this platform be used in the interim.

McMaster, as part of its mission, will establish the McMaster INSPIRE Office of Flexible Learning**.** We recommend that the INSPIRE Office advocate, create, issue, maintain, market and promote the responsible issuance of micro-credentials certifying competencies in the short-term in coordination with MCE.

Logistical Functions

These functions are associated with the actual creation and issuance of a credential through a vendor platform (such as BCdiploma) that performs the essential functions of creating a credential in a secure repository. They include:

- Designing the credential on the vendor platform (including helping digital credential issuers fulfill the requirements for initiating a credential).
- Issuing a credential to the repository and to the recipient.
- Reviewing the credential design and metadata for compliance with published criteria.
- Referring issues or questions to a micro-credentials advisory committee.
- Responding to questions and concerns of students, learners and employers.
- Reviewing submitted credentials for duplication or confusion with other McMaster credentials.

Administrative Functions

These functions are those business operations associated with the logistical nature of any centre, but also include special record keeping and reporting tasks:

- Managing financial aspects of the centre, including paying for costs and receiving and accounting for income and financial support.
- Maintaining records of approval and supporting documentation regarding the establishment of individual credentials.
- Maintaining a central record of credentials issued.
- Maintaining relations with the vendor platform including contracts and payments.
- Generating and distributing reports on credential issuance, sharing, and other aspects of the operations of the center.
- Hiring the Director/Manager and support staff to assist in the operations of the INSPIRE Office of Flexible Learning (https://intersession.mcmaster.ca).
- Responding to student and learner inquiries.

Marketing and Advocacy Functions

Communicating the competitive advantage of micro-credentials to individuals as they seek jobs and promotions and the benefits of talent access to employers should be prominent features of a multi-pronged marketing approach. Marketing and advocacy functions will include:

- Publicizing McMaster's capacity for digital credentialing.
- Marketing specific digital credentials.
- Creating and responding to media coverage opportunities.
- Engaging in information campaigns to increase the general use and recognition of McMaster credentials.

Development Functions

These functions include the development of clients for digital credentials such as regional businesses that want industry-specific credentials to be created and issued, internal McMaster departments and units that see opportunities for their students and learners to gain a competitive advantage in the marketplace, and professional associations seeking to advance professional competencies. Among the activities that the centre would provide are:

- Networking and consultation to identify internal and external clients for the services of the centre.
- Responding to requests for services.
- Identifying internal McMaster units that can respond to external requests for micro-credentials.
- Seeking external funding for deserving micro-credentialing projects.

Registration of Students and Learners into all Micro-credential Offerings

These functions encompass the aspect of registering undergraduate and graduate students and learners into the various micro-credential offerings at the University:

- Enabling registration of all micro-credential courses (credit and non-credit) through a single self-serve system; currently, MCE's registration system is best positioned to provide this service with additional technical and human resources required; as MCE explores and plans to implement a new registration system in 2021-2022, how the new system can/will support registration and payment for micro-credentials will be an important consideration; costs incurred by MCE for micro-credential activity related to the larger university will require appropriate resourcing. As such, we recommend that micro-credentials appear in the student record in the new student administration and registration system.
- Collecting fees for all registrations into any micro-credential offering.
- Coordinating the production of T2202 slips with Financial Affairs, where applicable.
- Coordinating with the Aid and Awards Office for OSAP-eligible programming.

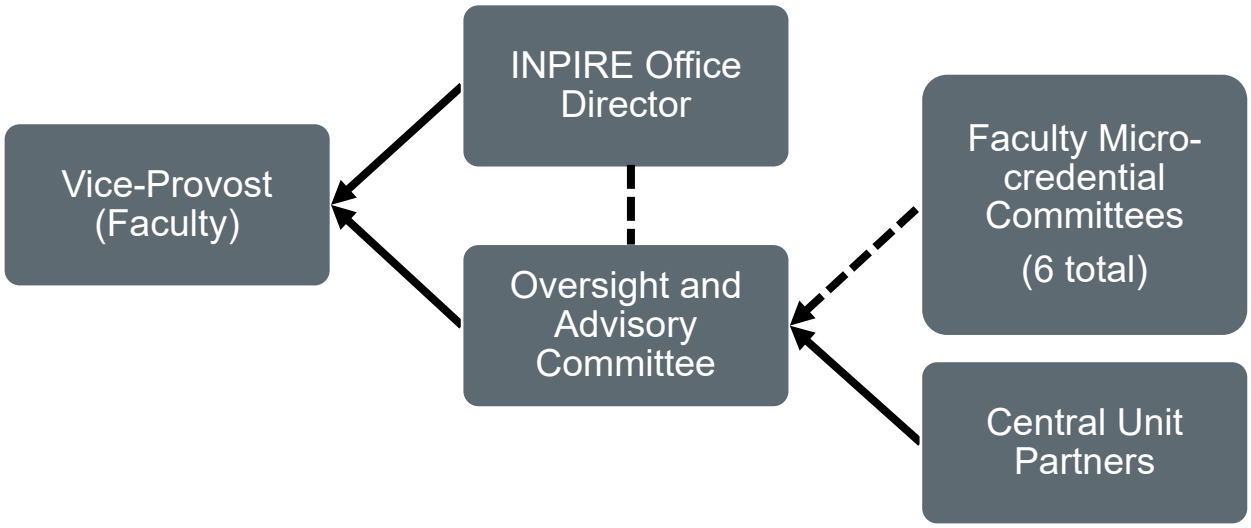
Quality Assurance

There are on-going conversations on the role of external and internal bodies in quality assurance processes in Ontario. We would like to make the following recommendations:

- That McMaster commit to internal quality oversight in partnership with the IQAP team (Educational Developer and IQAP Team at the MacPherson Institute) that provides guidelines on micro-credential delivery and assessment.
- That the Oversight and Advisory Committee is informed by the internal IQAP team and that the team lead (Educational Developer) is a consulting member.
- That the Quality Council (QC) does not oversee quality assurance processes of micro-credentials. This would run contrary to the nimbleness and market responsiveness that micro-credential development requires.
- That where Quality Council (QC) sees a role, it is in providing guidelines for internal quality assurance processes.
- In instances where there are external constraints from Quality Council that these apply only to OSAP-eligible micro-credentials.

Reporting Structure

The recommended reporting structure for micro-credentials at McMaster is outlined in the figure below. All implementation committees and roles will ultimately fall under the Vice-Provost (Faculty) portfolio.



The roles and responsibilities for the implementation of micro-credentials are outlined in the table below.

Role/Committee	Description of Responsibilities
INSPIRE Office Director (short-term)	As mentioned in the Administrative "Home" section of this report, we recommend that the administration of micro-credentials occurs within the mandate of the new INSPIRE Office for Flexible Learning for the short-term. The Director of the Office will be responsible for managing the implementation of micro-credentials at McMaster. We imagine this occurring in collaboration with an Implementation Team, and with advisement from an Oversight and Advisory Committee. This role may transition out of the INSPIRE Office Director role in the future, but in either case, this person will report to the Vice-Provost (Faculty).
Faculty Micro-credential Committees	Similar to how curriculum is currently developed at McMaster, we recommend that the design and development of individual micro-credential offerings take place within each of the Faculties through a Micro-credential Committee. How these groups operate may vary across Faculties and will be determined internally. One representative from each Faculty's Committee (i.e., the Chair) will be a member of the Oversight and Advisory Committee.
Oversight and Advisory Committee	The mandate of the Oversight and Advisory Committee will be to set the strategic direction for micro-credentials at McMaster and align or complement micro-credential offerings across the University. The Committee will be comprised of key stakeholders and senior leadership who will be informed of the evolving landscape of micro-credentials and offer advice on the strategic direction for McMaster University. This Committee will oversee the institutional implementation of micro-credentials at the University. It is recommended that this group is established in the Winter of 2022, meeting 2-3 times per year.
Central Unit Partners	Those involved in the day-to-day implementation and management of micro-credentials at McMaster, outside of the faculties that will inform the Oversight Committee. (i.e. Secretariat, Registrar's Office, INSPIRE Office, School of Graduate Studies, Provost's Office, etc.). The role of this group is to provide consultation to avoid duplication and pass along lessons learned and best practices.

Fees

It is understood that, for the purpose of setting fees, micro-credentials are not "courses". *Academic* micro-credentials may be "stackable", meaning that they are designed according to academic standards that make them suitable to be combined as requirements for academic courses, diplomas, or certificates, but neither *academic* nor *non-academic* micro-credentials are themselves courses whether or not they are so bundled. This section outlines the committee's recommendations regarding the assignment, approval and administration of fees.

- As non-course learning elements, fees for micro-credentials are to be charged without regard to the participant's undergraduate, graduate, or non-student status.
- Fees for *standalone academic* micro-credentials will be approved in accordance with the standard governance of university tuition and fees. A Faculty will recommend micro-credential fees to the University Student Fees Committee (USFC), and the USFC recommendation for approval is subsequently considered by Budget Committee, Planning and Resource Committee and the Board of Governors.
- Where micro-credentials are part of an undergraduate or graduate degree program, fees are charged on a per unit basis, so that micro-credentials must be assigned a unit weight and charged the appropriate per unit cost.
- Fees for *non-academic* micro-credentials are approved by each Faculty. No further approval is required. Certain micro-credentials may be approved for OSAP funding by MCU. The management of OSAP eligibility at McMaster currently resides in the Registrar's Office. The extent to which another office (i.e. the INSPIRE office or MCE) can participate in managing micro-credential OSAP issues is currently unknown.
- Once fees are paid for participation in a micro-credential, no further course tuition is charged for a subsequent academic course composed entirely of bundled micro-credentials. An incidental fee may be charged for transferring micro-credentials to program courses from the Registrar's Office.
- If a student or learner who is not already enrolled at McMaster wished to enrol in *academic* micro-credentials, they shall be charged McMaster Association of Part-time Students (MAPS) ancillary fees. Consistent with the practices at McMaster Continuing Education, other incidental fees may be charged as approved by USFC, for example, application or transfer fees. This will be an ongoing discussion for the implementation team.

Appeals

The following recommendations pertain to how appeals will be administered and managed as part of micro-credential offerings at McMaster:

- Students and learners registered in a degree, diploma or certificate program at McMaster who are enrolled in academic and non-academic micro-credentials will have access to existing student appeal procedures as well as relevant University polices.
- Students and learners who are not registered in a degree, diploma or certificate program at McMaster (termed 'Non-McMaster' students) but enrolled in academic micro-credentials will also have access to existing student appeal procedures as well as relevant University polices.
- Non-McMaster students and learners enrolled in non-academic micro-credentials may appeal their evaluation to the Faculty Standing Committee on Micro-credentials within 4 weeks of the submission of their final grade. Students and learners in this category will not have access to existing student appeal

procedures beyond the Faculty Standing Committee. The student or learner must be informed of the decision within 3 weeks from the date of the appeal. The decision made by the Faculty Standing Committee will be final without right of appeal.
- In all cases, the first step for a student or learner who alleges error, injustice, or unfair treatment in a micro-credential is to attempt to resolve the issue on an informal basis, by reaching out the instructor, coordinator, or Unit offering the micro-credential.

Next Steps

The management of micro-credentials at McMaster will evolve over time. We are grateful for the existing experience brought to us in this area by the Faculty of Engineering. The recommendations outlined in this report will serve as a foundation to extend that exploratory work. Nonetheless, we expect that the implementation will evolve with time as greater clarity emerges from MCU and our counterparts at other institutions.

In the short term, we recommend the following next steps for action:

- Striking a writing group guided by the Dean of Graduate Studies and Vice-Provost (Faculty) to revise the Certificates and Diplomas policy for micro-credentials occur over the Fall of 2021, involving a subset of the committee to draft a new version for review and discussion by the two Councils.
- Bringing the proposed revisions to the Certificates and Diplomas policy to Senate for approval by December 2021.
- Establishing the INSPIRE Office for Flexible Learning.
- Establishing an Implementation Committee tasked with defining terms of reference for the Director, Oversight and Advisory Committee structure, and division of roles and responsibilities between the INSPIRE Office of Flexible Learning and MCE.
    - The Implementation Committee will be comprised of key stakeholders across campus, including but not limited to representatives from each Faculty, the Secretariat, Registrar's Office, Continuing Education and the Vice-Provost (Faculty) and Dean of Graduate Studies. This Committee will collaborate with the INSPIRE Office Director to implement of micro-credentials. It is recommended that this group is established in the summer of 2021 and meets monthly for the 2021-2022 academic year.
- Establishing a handover date for existing micro-credential management to the new structure.
- Considering operational aspects of appeal mechanisms for micro-credentials.

Additional items that still need to be resolved prior to the implementation of micro-credentials at McMaster include (this list is not exhaustive):

- Reviewing the definitions of “undergraduate student”, “graduate student”, and “student” at McMaster to ensure they account for all types of learners enrolled in micro-credentials.
- Determining a management approach to provide flexibility for the completion of micro-credentials.
- Further determining/defining the differences between academic and non-academic micro-credentials.
- Exploring how micro-credentials may be transferred between post-secondary institutions, when appropriate.
- Drafting and proposing a financial model for the administration of micro-credentials that fits into the university budget model.
- Consulting with Faculties and MCE to avoid duplication.
- Determining how T2202 slips will be issued.

The situation in Ontario with respect to micro-credential policy remains dynamic. It is likely that a number of announcements will be made over the implementation period which will require reflection on our planning recommendations and will clarify our next steps.

Appendix A

Ad-Hoc Committee Terms of Reference

AD HOC COMMITTEE ON CERTIFICATES, DIPLOMAS AND MICROCREDENTIALS
(Undergraduate Council/Graduate Council)

TERMS OF REFERENCE

Mandate

With new credentialing approaches gaining acceptance in academic and public spaces, McMaster has an opportunity to help its students effectively demonstrate the different forms of knowledge they are acquiring as undergraduate students, graduate students and adult learners.

A more modular learning approach has emerged in the digital space known as micro credentials, sometimes referred to as badges, which some of the largest global companies are using to train potential employees. Various universities such as the University of Calgary and Universite de Montreal are also involved in the development, delivery and recognition of micro-credentials. The current Senate Policy on Diplomas and Certificates provides some unique modes of acknowledging and packaging academic and non-academic learning activities in ways that help our students verify their knowledge, skills and competencies to an employer. But it lacks adequate modularity, stackability and portability to fully cover all the learning offered through McMaster University, which a badging strategy could help.

Based on the above, an ad hoc committee, governed by McMaster's Undergraduate and Graduate Councils, with the participation of McMaster's Centre for Continuing Education and overseen by the University Secretariat is tasked with considering how micro credentials should be used on campus and to make recommendations for changes to the Senate Policy on Diplomas and Certificates and other policies as required to facilitate implementation.

Requirements of the committee

The Ad Hoc Committee formed will be asked to:

- Undertake an environmental scan to identify practices by other universities and consult relevant literature on badging and micro credentials
- Make recommendations as to whether McMaster should offer micro credentials as a form of recognition for learning activities that alone are insufficient to merit the issuance of a certificate or diploma as currently defined
- Define a micro credential(or credentials) in terms of academic and non-academic learning activities, and recommend how it may be considered to be modular, stackable, and portable.
- Consider the impact of these different credentials on institutional quality assurance, accreditation, and MTCU regulations including financial aid implications
- Recommend the appropriate level of records administration and the responsibility for credential production and verification.

- Define the scope and measure of academic and non-academic learning constituting a micro credential
- Recommend revisions to the appropriate sections of the current Policy on Certificates and Diplomas
- Recommend regulations on the appearance of McMaster's name and logo/crest in relation to micro credentials for consideration by the Senate Committee on University Ceremonials and Insignia

Proposed Membership

- Vice-Provost (Faculty) or designate (Co-chair)
- Vice-Provost and Dean of Graduate Studies or designate (Co-chair)
- Two members appointed by and from Undergraduate Council
- Two members appointed by and from Graduate Council
- Director, CCE, or designate
- University Registrar or designate
- One undergraduate student
- One graduate student
- One adult learner
- University Secretary or designate (non-voting, consultant)

The Committee has the authority to appoint consultants when required.

Appendix B

eCampusOntario Micro Credentials OCGS Briefing Presentation

MICRO-CREDENTIALS

OCGS Briefing + Discussion

Robert Luke, CEO

Lena Patterson, Senior Director,
Programs and Stakeholder Relations

Thank you for having us!

- Overview of eCampusOntario Work
- Micro-credentials, Research and Graduate Learning
- Questions and Discussion

For more information, visit:

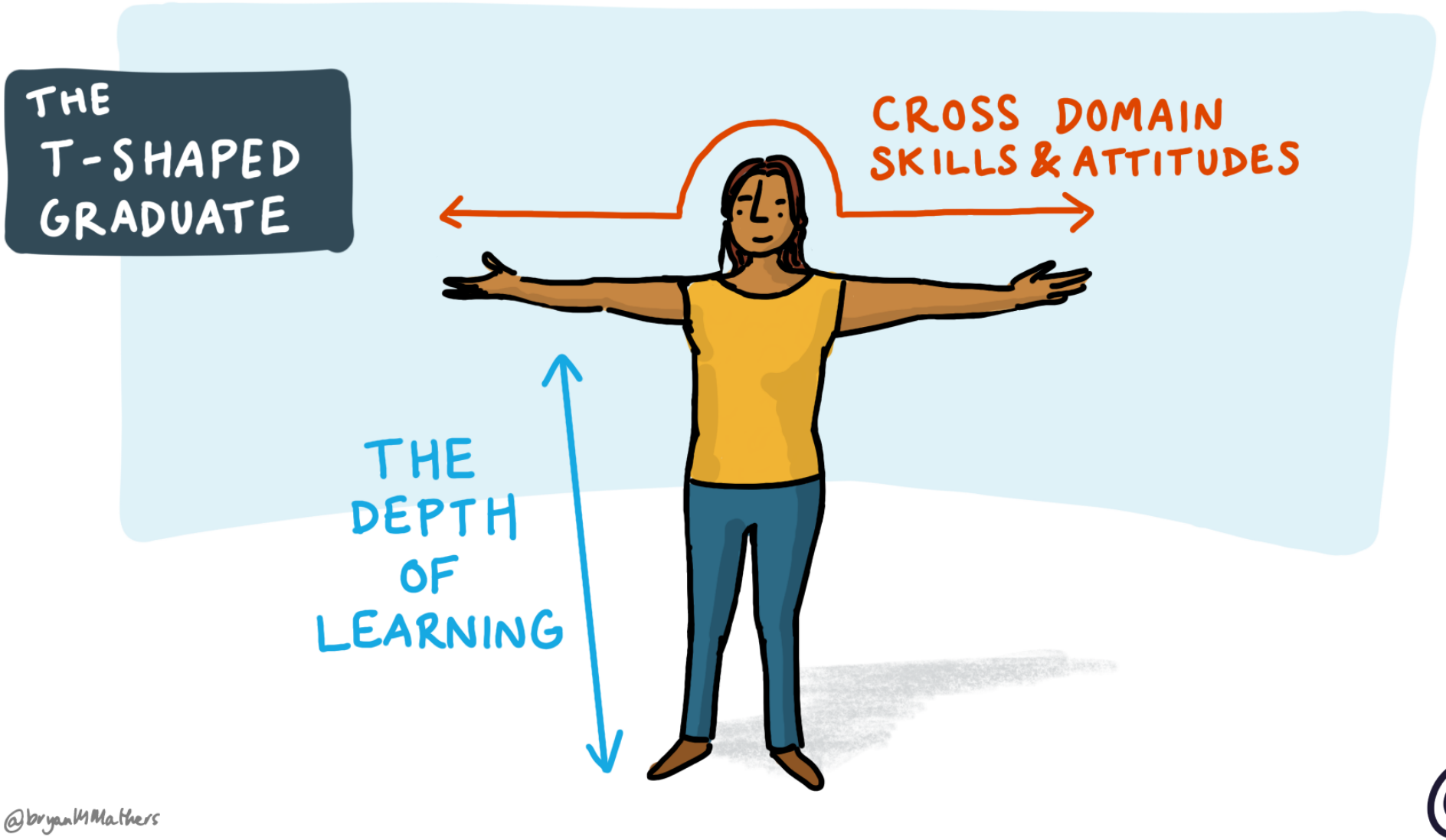
https://micro.ecampusontario.ca

Overview of eCampusOntario Work

- Working definition
- Framework
- Pilot Project Funding
- Research

Working Definition

A micro-credential is a certification of **assessed learning** associated with a **specific and relevant skill or competency**. Micro-credentials enable rapid retraining and augment traditional education through pathways into regular postsecondary programming.


THE
T-SHAPED
GRADUATE
CROSS DOMAIN
SKILLS & ATTITUDES
THE
DEPTH
OF
LEARNING
@bryanMMathers

MICRO-CREDENTIALS

Framework

- Issuing Body
- Competency / Skills Targeted
- Outcomes
- Summative Assessment
- Transcriptable
- Partner Endorsement

Issuing Body

Micro-credentials will be issued by an established agency, organization, institution, or employer.

Competency/Skills targeted

Micro-credentials will adhere to harmonized skills and competency language and will be aligned with a common competency framework such as ESCO1.

Outcomes

Micro-credentials will recognize performance competencies explicitly aligned to underlying knowledge, attitudes and skills.

Summative Assessment

Micro-credentials will require evidence of achievement of outcomes. Evidence will be embedded and visible to employers.

Transcriptable

Micro-credentials will be compatible with traditional transcripts, where possible.

Partner Endorsement

Micro-credentials will be validated by industry partners/external bodies, where possible. This validation will confirm 1) the competency is in demand by industry and; 2) the established assessment is reflective of job performance in that industry.

MICRO-CREDENTIALS

Pilot Project Funding

2 **Years of pilot project funding to date**

36 **Total pilots funded**

18 **University pilots funded.**

18 **College pilots funded.**

5 **Focus areas**

- Human Skills; Technology; Health and Human Services; Manufacturing; Natural Resources

6 **More pilot information:**

https://micro.ecampusontario.ca

MICRO-CREDENTIALS

Publications

- Is the Future Micro? Unbundling Learning for Flexibility and Access
- Micro-credential Business Models in Higher Education
- Micro-credentials: Policy and Regulatory Context in Ontario

All reports are available in both English and French: https://micro.ecampusontario.ca

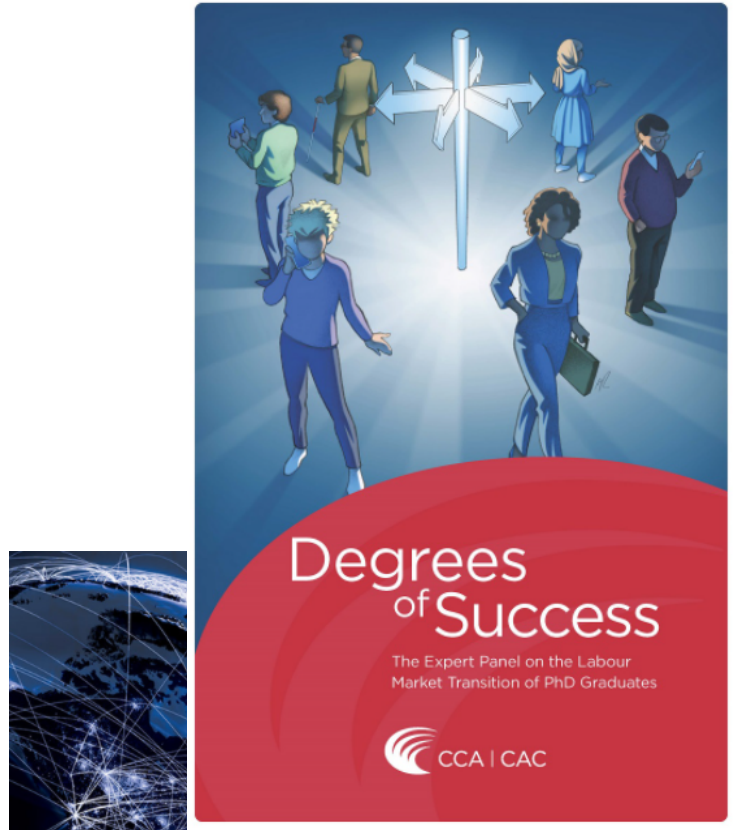
Areas of Future Inquiry?

Micro-credentials, Research, and Graduate Learning

Skills and Competencies for Graduate Students

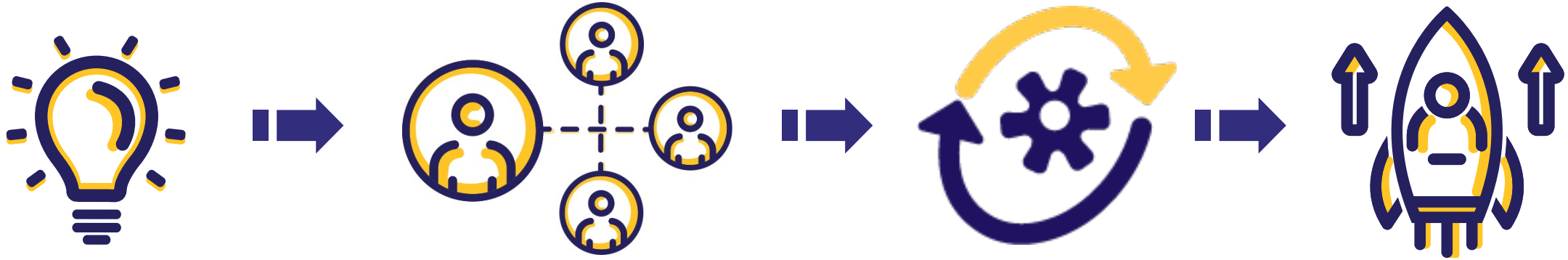
- Recent CCA reports outline the need for increasing industry receptivity for PhD graduates, ensuring graduates understand the skills and competencies they acquire in their programs and can articulate these to potential employers

- This is key to increasing innovation and productivity in Canada



The Ontario Collaborative Innovation Platform (OCIP)

- Projects sourced from the private or public sector to leverage consortium for coordinated R&D
- Will use common tools and templates for scoping projects at any SRL/TRL
- Turn key support: standard NDAs, Contracts, IP agreements, Project Plans and Statements of Work
- Conducting partnered R&D activities to support IP mobilization and industry R&D partnerships
- Students receive micro-credentials for project work



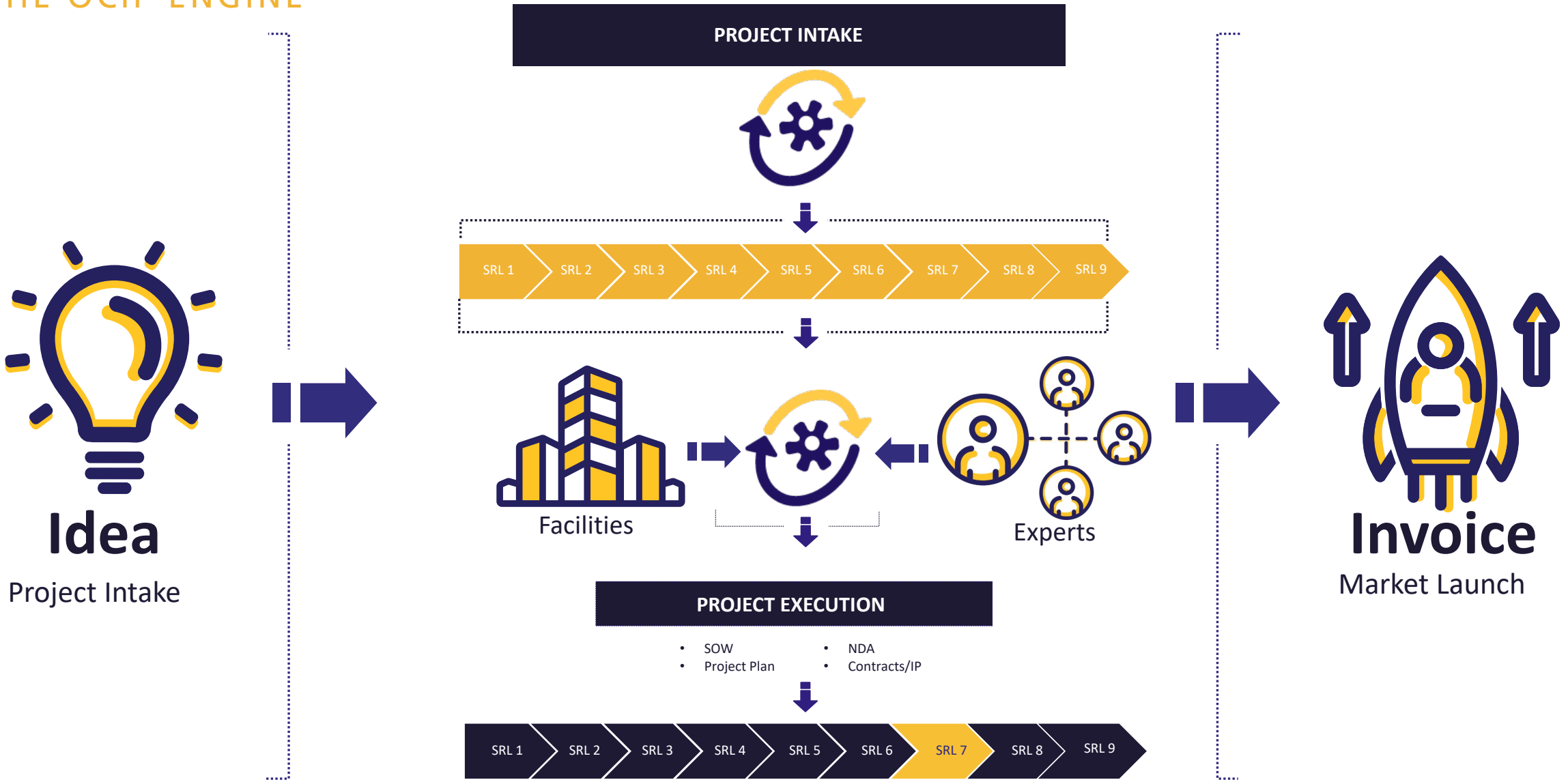
Projects/ideas are posted to the system

Academics from across institutions identify interests, expertise and equipment

Matching projects and partners, with turn key support:

Market Launch

THE OCIP ENGINE



Idea

Project Intake

Invoice

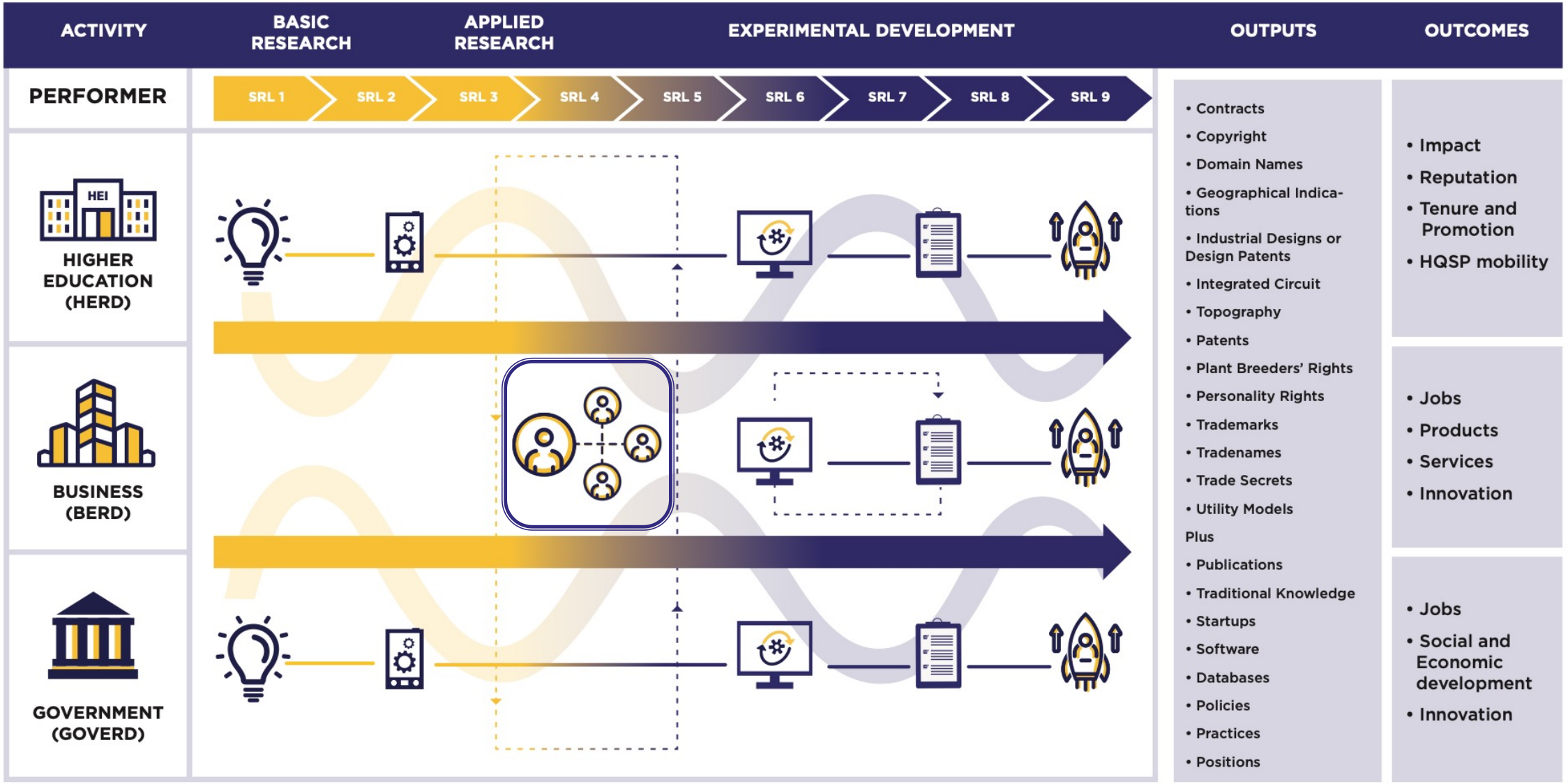
Market Launch

Innovation Skills

- Students
  - **Participate in all aspects of projects as paid research assistants**
  - **Perform a range of duties, from conducting the R&D activities under the supervision of expert faculty, to project management, teamwork and communications**
  - **Gain valuable innovation literacy skills, work experience and jobs**
- Micro-credentials validate activities and skills
  - **Innovation Literacy micro-credentials in OCIP come from project participation, coupled with access to just-in-time online learning about Intellectual Property (IP)**
  - **Personal portfolios to document project work**
  - **Project sponsors to co-brand badges and micro-credentials**

Team-based Innovation: We find the right people, for the right project at the right time

Integrated approach to innovation



GTA COVID-19
Collaboration Innovation Platform

Pilot Implementation

CITY OF TORONTO RESEARCH PROJECTS

1

Project Intake

2

CIP Working Group

Higher Education Institutions (HEI)

Experts

1. Projects are collected via standard forms
2. Initial scoping with HEI members of CIP
3. Scoping call with project sponsors and ad hoc working groups from HEIs
4. Project planning, agreements and funding as required
5. Project launches

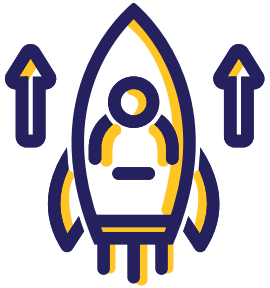
3

Project Plan Template

Collaborative Research Agreement

Research Funding
(if applicable)

4



Project Launches

5

GTA COVID-19
Collaboration Innovation Platform

- **Pilot Partners and Collaborators**

TORONTO

CENTENNIAL COLLEGE

GEORGE BROWN COLLEGE

HUMBER

OCAD UNIVERSITY

Ryerson University

Seneca

UNIVERSITY OF TORONTO

YORK UNIVERSITÉ UNIVERSITY

OCE Where Next Happens

MITACS

MAGNET

ecampus Ontario

NRC·IRAP

NSERC CRSNG

SCIP SMART COMPUTING FOR INNOVATION

Appendix C

HEQCO Making Sense of Microcredentials: Summary of Research Findings Presentation

Making sense of Microcredentials

Summary of research findings
March, 2021

Read the full report here.

Higher Education Quality Council of Ontario
An agency of the Government of Ontario

Conseil ontarien de la qualité de l'enseignement supérieur
Un organisme du gouvernement de l'Ontario

Project Goals

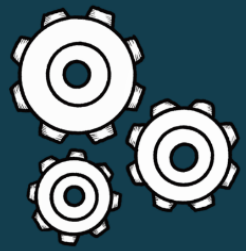
1. Facilitate a common understanding

2. Provide evidence / insights in perceptions of end-users

Higher Education Quality Council of Ontario

An agency of the Government of Ontario

HEQCO's definition



"A microcredential is a representation of learning, awarded for completion of a short program that is focused on a discrete set of competencies (i.e., skills, knowledge, attributes), and is sometimes related to other credentials."

Higher Education Quality Council of Ontario

An agency of the Government of Ontario

Purpose	Pathway to a formal qualification  *e.g., a bridging program*	Update previous qualifications  *i.e., incorporating emerging research/best practice*	Gain technical skills  *e.g., learn a software program*	Develop transferable skills  *e.g., critical thinking*
Mode of Delivery	In-person 	Hybrid *A microcredential could be a hybrid of online and in-person delivery.*		Online 
Flexibility	Fixed pace 	Hybrid *A microcredential could be a hybrid of fixed pace and self-paced learning.*		Self-paced 
Student/Instructor Interaction	Cohort learning 	Both *A microcredential could include both cohort learning and independent learning.*		Independent learning 
Credential Form	Paper credential 	Both *A microcredential could be issued as both paper and digital credentials*		Digital credential 
Indicator of Achievement	Participation 	Demonstrated competence 		Demonstrated mastery 

Quality Markers

Relevant

Consulted or involved industry/community

Accredited

Recognized or issued by a professional accrediting body

Standardized

Meets a government-set quality standard

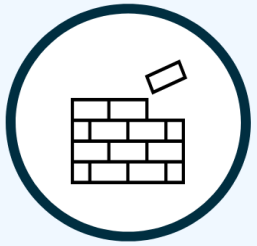
Assessed

The learner must demonstrate skills/knowledge to earn the credential

Flexible

The pace and/or structure of learning can be personalized

Stackable



Can be "stacked" or combined toward a larger credential, e.g. a diploma or degree

Higher Education Quality Council of Ontario

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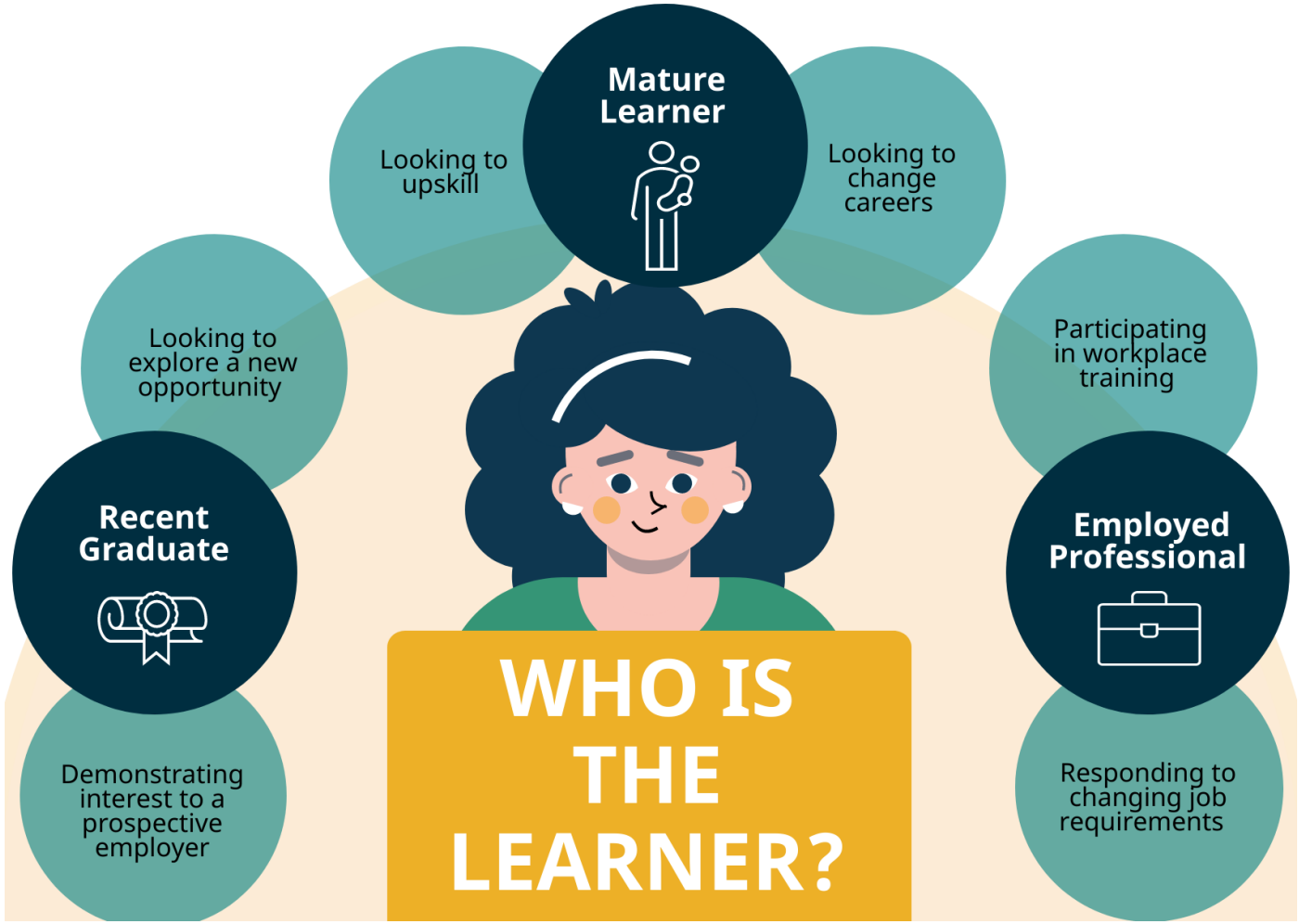

Higher Education Quality Council of Ontario

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