MEMORANDUM

To: Executive Committee of Faculty Council (April 6, 2022)
    Faculty Council (April 27, 2022)

From: Professor Julie Audet
       Chair, Engineering Graduate Education Committee

Date: April 11, 2022

Re: Engineering Graduate Education Committee Information Update

REPORT CLASSIFICATION

The following are routine or minor policy matters that have been approved by the Engineering Graduate Education Committee (EGEC) on behalf of Faculty Council. This report will be considered by the Executive Committee for endorsing and forwarding to Faculty Council for information.

NEW COURSES APPROVED

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AER1307</td>
<td>Fundamentals of Aeroacoustics</td>
</tr>
<tr>
<td>APS1410</td>
<td>Waterpower Essentials</td>
</tr>
<tr>
<td>APS1411</td>
<td>Renewal of Waterpower Facilities</td>
</tr>
<tr>
<td>BME1510</td>
<td>Data Science for Biomedical Engineers</td>
</tr>
<tr>
<td>CHE1152</td>
<td>Materials-Driven Separations</td>
</tr>
<tr>
<td>CHE3010</td>
<td>PhD Research</td>
</tr>
<tr>
<td>CIV1196, CIV1296, CIV1396, CIV1496, CIV1596</td>
<td>Special Studies in Civil &amp; Mineral Engineering</td>
</tr>
<tr>
<td>CIV1197, CIV1297, CIV1397, CIV1497, CIV1597</td>
<td>New Topics in Civil &amp; Mineral Engineering</td>
</tr>
<tr>
<td>CIV1283</td>
<td>Advances Asset Management: Quantitative Tools and Methods</td>
</tr>
<tr>
<td>CIV1285</td>
<td>Building Information Modeling</td>
</tr>
<tr>
<td>CIV1322</td>
<td>Quantitative Methods for Decision Making</td>
</tr>
<tr>
<td>ECE1786</td>
<td>Creative Applications of Natural Language Processing</td>
</tr>
<tr>
<td>MIE1709</td>
<td>Continuum Mechanics</td>
</tr>
</tbody>
</table>
MINOR MODIFICATIONS TO EXISTING COURSES

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Description</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE1133</td>
<td>Bioprocess Engineering</td>
<td>Code course change to CHE1450</td>
</tr>
<tr>
<td>CHE2222</td>
<td>Safety Workshop</td>
<td>Weight changed from 0.5 FCE to 0.0 FCE</td>
</tr>
<tr>
<td>CHE3001</td>
<td>Seminars in Chemical Engineering</td>
<td>Weight changed from 0.5 FCE to 0.0 FCE</td>
</tr>
<tr>
<td>CIV1198, CIV1298, CIV1398, CIV1498, CIV1598, CIV1299, CIV1399, CIV1499, CIV1599, Special Studies – Civil &amp; Mineral Engineering</td>
<td>Course series title changed to New Topics in Civil and Mineral Engineering; no change in course description</td>
<td></td>
</tr>
<tr>
<td>TEP1011</td>
<td>Authentic Leadership: Engineering Your Vibrant Future</td>
<td>Course title changed to Authentic Leadership and Teaming; no change in course description</td>
</tr>
</tbody>
</table>

MINOR MODIFICATIONS TO PROGRAMS

<table>
<thead>
<tr>
<th>Program</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD (CHE)</td>
<td>Annual supervisory committee meeting requirement now associated with a CR/NCR course code, CHE3010: PhD research. See Appendix A.</td>
</tr>
</tbody>
</table>

MINOR MODIFICATIONS TO A COLLABORATIVE SPECIALIZATION LED BY FASE

<table>
<thead>
<tr>
<th>Collaborative Specialization in Psychology and Engineering (PsychEng)</th>
<th>Add MSc and PhD programs in the Institute of Medical Science (Temerty Faculty of Medicine). See Appendix B Revised.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSc, PhD (CIV, ECE, MIE)</td>
<td>Rename the Collaborative Specialization: Psychology, Psychiatry and Engineering (PsychEng). See Appendix C Revised.</td>
</tr>
<tr>
<td>MA, PhD (Psychology)</td>
<td></td>
</tr>
</tbody>
</table>

The following major modification proposals will be considered separately at the April 27, 2022 Faculty Council meeting for approval:

- Creation of Collaborative Specialization in Neuromodulation (Report 3716 Revised)
- Creation of Collaborative Specialization in Robotics (Report 3717 Revised)
- Closure of Program Fields of Study in Mechanical & Industrial Engineering (Report 3718)
- Adding Flex-Time Option to Civil & Mineral Engineering’s PhD Program (Report 3719 Revised)
RECOMMENDATION FOR FACULTY COUNCIL

For information.
University of Toronto Minor Modification Proposal

Change to an Existing Graduate Program or Collaborative Specialization

This template should be used to bring forward all proposals for minor modifications to program or admissions requirements for existing graduate programs or collaborative specializations under the University of Toronto’s Quality Assurance Process.

<table>
<thead>
<tr>
<th>Program/Collaborative Specialization being modified:</th>
<th>PhD in Chemical Engineering and Applied Chemistry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate unit:</td>
<td>Chemical Engineering and Applied Chemistry</td>
</tr>
<tr>
<td>Faculty/academic division:</td>
<td>Engineering</td>
</tr>
<tr>
<td>Dean’s office contact:</td>
<td>Prof. Julie Audet, Vice-Dean, Graduate Studies</td>
</tr>
<tr>
<td>Version date:</td>
<td>March 30, 2022</td>
</tr>
</tbody>
</table>

1 Summary

<table>
<thead>
<tr>
<th>Changing admission requirements</th>
<th>Renaming field, concentration or emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changing program requirements</td>
<td>Renaming of program or collaborative specialization (please notify VPAP before governance)</td>
</tr>
<tr>
<td>Changing timing of program requirements</td>
<td>Creating a new emphasis</td>
</tr>
<tr>
<td></td>
<td>Changes to programs affecting an MOA</td>
</tr>
</tbody>
</table>

Students will now be required to take CHE3010H every year for the duration of their program. This course is a CR/NCR course and will have 0 FCE value. This course is intended to ensure students are making timely progress to complete their degree by meeting with their advisory committee at least once every year.

2 Effective Date of Change

September, 2022.
3 Academic Rationale

According to SGS policy, PhD students must have at least one supervisory committee meeting annually to remain in good standing. A course code (CHE3010: PhD Research) will be used to track that this program requirement has been met in a given year. Students must receive a CR every year to be in good standing. CR will be given as long as the meeting as taken place regardless of how the committee evaluated the progress. This change will make it easier for the graduate advisors to identify students who may be facing difficulties in organizing and scheduling their committee meetings. In those circumstances, the graduate advisors will be able to proactively assist them.

4 Impact on Students

No negative impact is expected on incoming or continuing students. Students are already expected to have advisory committees yearly.

5 Consultation

This proposal was considered by the department’s Graduate Studies Committee and by the Faculty’s Graduate Engineering Education Committee.

6 Resources

None.

7 Governance Approval

<table>
<thead>
<tr>
<th>Unit sign-off</th>
<th>Graduate Studies Committee (February 24, 2022).</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Committee name and meeting date)</td>
<td></td>
</tr>
<tr>
<td>Dean’s office sign-off</td>
<td>Julie Audet, Vice-Dean, Graduate Studies (March 3, 2022).</td>
</tr>
<tr>
<td>(Name and date)</td>
<td></td>
</tr>
<tr>
<td>Faculty/division council approval (or delegated body) if applicable</td>
<td>Approved by the Engineering Graduate Education Committee (EGEC) on behalf of the Council of the Faculty of Applied Science &amp; Engineering (March 15, 2022). Received for information by the Council of the Faculty of Applied Science &amp; Engineering (April 27, 2022).</td>
</tr>
</tbody>
</table>
Appendix A: Calendar Entry

Changes are in red text, below.

Program Requirements
- **Coursework.** Students must successfully complete at least **2.0 full-course equivalents (FCEs)** (four graduate half courses).
  - One course must be CHE1102H *Research Methods and Project Execution* (0.5 FCE) taken once during the program, typically in Year 1.
  - Courses must be selected from the calendar and approved by the student's supervisor and the Graduate Coordinator. At least one of these courses must be taken in a secondary area of study. It is recommended that one of these courses should be selected from Category A: fundamental courses.
  - Normally, PhD students are not allowed to take a 500-level course for credit towards the degree program.
- All Year 1, Year 2, Year 3, and Year 4 students must complete CHE3001H *Leading Edge Seminar Series in Chemical Engineering and Applied Chemistry* (Credit/No Credit) in both the Fall and Winter sessions.
- **Students must complete CHE3010H PhD Research every year following their PhD qualification exam or their transfer exam from the MASc program.**
- If not already completed, students must take CHE2222H *Safety Workshop* and JDE1000H *Ethics in Research.*
- **Thesis** on a research topic.
- Within 9 to 12 months of starting the PhD program, students must pass a **qualifying examination.**
- Students normally remain in **residence** (full-time, on campus) until the departmental recommendation for the **Doctoral Final Oral Examination** is made, unless special permission to do so has otherwise been granted by the departmental Graduate Studies Committee.
- Students have the option of completing an emphasis in Sustainable Energy as part of their degree program. Please see details in the Chemical Engineering and Applied Chemistry MASc, MEng, PhD Emphases section.

Template developed by the Office of the Vice-Provost, Academic Programs. Updated on March 6, 2018.
University of Toronto
Minor Modification Proposal

Participation in a Collaborative Specialization

This template should be used to bring forward all proposals to add or withdraw participation of a degree program from a graduate collaborative specialization for governance approval under the University of Toronto Quality Assurance Process.

<table>
<thead>
<tr>
<th>Collaborative specialization:</th>
<th>Psychology and Engineering¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative specialization director:</td>
<td>Prof. Li Shu (Mechanical and Industrial Engineering)</td>
</tr>
<tr>
<td>Lead Faculty:</td>
<td>Applied Science and Engineering</td>
</tr>
<tr>
<td>Degree program(s) being added:</td>
<td>Institute of Medical Science MSc, PhD</td>
</tr>
<tr>
<td>Unit offering above degree program:</td>
<td>Temerty Faculty of Medicine</td>
</tr>
</tbody>
</table>
| Dean’s Office contacts: | Prof. Julie Audet, Vice-Dean, Graduate Studies
Caroline Ziegler, Governance & Programs Officer |
| Version date: | April 13, 2022 |
| Effective date: | September 2022 |
| Approvals: | Engineering Graduate Education Committee
February 17, 2022 |

Core Graduate Faculty Research Synopses

Core faculty members are those who are eligible to teach and/or supervise in the collaborative specialization, as appropriate. Core faculty members must hold graduate faculty membership in one of the participating degree programs. The process of identifying a graduate faculty member as a collaborative specialization core faculty member is initiated by the faculty member or the collaborative specialization director. Both the faculty member’s home unit chair/director and the collaborative specialization director

¹ The name of this collaborative specialization will be changed to “Collaborative Specialization in Psychology, Psychiatry and Engineering” under separate report pending approval of April 27, 2022 Faculty Council.
director must agree, as well as the faculty member involved. The collaborative specialization director is responsible for maintaining records of agreements concerning assignment of core faculty members to the collaborative specialization. Formal graduate faculty memberships in the collaborative specialization supporting units are not required for core faculty members. There must be at least one core graduate faculty member from each participating program whose teaching and/or research expertise relate to that of the collaborative specialization subject area.

Tony George
Chief, Addictions Division, Clinician Scientist and Head, Biobehavioural Addictions and Concurrent Disorders Research Laboratory, Campbell Family Mental Health Research Institute, Centre for Addiction and Mental Health
Professor and Co-Director of the Division of Brain and Therapeutics,
Department of Psychiatry, University of Toronto
Graduate Faculty Member, Institute of Medical Science, University of Toronto

Publications:


- MSC1089H: The Biopsychosocial Basis of Mental Health and Addictive Disorders
Prof. George and colleagues will review the biopsychosocial basis of mental health and addictive disorders from the perspectives of etiology, pathophysiology, clinical phenomenology and diagnostics, genetics, neuroimaging, and treatment which have all contributed to our increasing understanding of psychiatric and substance use disorders from a biomedical (“disease”) concept. The role of stigma and recovery would also be discussed from a biobehavioural and social determinants of health perspective, to produce an integrated perspective on mental health and addictive disorders. The contemporary approach to treatment of these disorders would also be discussed which emphasizes biological, psychological and social policy and prevention perspectives.

Meng-Chuan Lai
Staff psychiatrist, clinician scientist and O’Brien Scholar in the Child and Youth Mental Health Collaborative between the Centre for Addiction and Mental Health and The Hospital for Sick Children
Associate Professor, Department of Psychiatry, University of Toronto
Associate Graduate Faculty Member, Institute of Medical Science and Department of Psychology, University of Toronto

Publications:

- PSY5221 Advanced Topics in Cognition II The Neurosciences of Neurodiversity and Neurodevelopmental Conditions
  This course will first provide a focused overview of the current understanding to the aetiology, neurobiology, developmental mechanisms, and cognitive-behavioural characteristics of
neurodiversity and common neurodevelopmental disorders (e.g. autism, ADHD, Tourette syndrome, intellectual disability, dyslexia). Students will then participate in critical appraisal of cutting-edge new research in these topics by delivering presentations and leading discussions, and in the exploration of new research directions in the field of neurodiversity and neurodevelopmental disorders.

**Hsiang-Yuan Lin**  
Clinician-Scientist, Azrieli Adult Neurodevelopmental Centre and Staff Psychiatrist, Adult Neurodevelopmental Services, Adult Neurodevelopmental and Geriatric Division, Centre for Addiction and Mental Health  
Assistant Professor, Department of Psychiatry, University of Toronto  
Associate Graduate Faculty Member, Institute of Medical Science

**Publications:**


**Benoit H. Mulsant**  
Clinician scientist, Centre for Addiction and Mental Health (CAMH).  
Professor, Geriatric Psychiatry  
Labatt Family Chair, Department of Psychiatry, University of Toronto  
Graduate Faculty Member, Institute of Medical Science
Publications:


Abigail Ortiz
Clinician Scientist and the Clinical Lead for Bipolar Disorders in the Mood and Anxiety Service at CAMH
Assistant Professor, Department of Psychiatry, University of Toronto
Associate Graduate Faculty Member, Institute of Medical Science

Publications:


Appendix A: Calendar Copy

Please use track changes/highlighting to indicate where changes have been made.

2021-22 SGS Calendar: Psychology, Psychiatry and Engineering

Exported on June 14, 2021. For editing purposes only.

Psychology, Psychiatry and Engineering: Introduction

Lead Faculty of the Collaborative Specialization

Applied Science and Engineering

Participating Degree Programs

Civil Engineering — MASc, PhD
Electrical and Computer Engineering — MASc, PhD
Institute of Medical Science — MSc, PhD
Mechanical and Industrial Engineering — MASc, PhD
Psychology — MA, PhD

Supporting Units

Department of Mechanical and Industrial Engineering

Overview

The Collaborative Master’s and Doctoral Specialization in Psychology, Psychiatry and Engineering (PsychEng) is between includes participating programs offered by the Departments of Mechanical and Industrial Engineering, Civil and Mineral Engineering, and Electrical and Computer Engineering in the Faculty of Applied Science and Engineering, and the Department of Psychology in the Faculty of Arts and Science and the Institute of Medical Science in the Temerty Faculty of Medicine.

Engineering involves the creative application of science to the design of systems, processes, structures, and technologies. Psychology is a science that focuses on the mind and behaviour of people and animals to understand individuals and groups across all levels of analyses, from the cellular to the cultural. Psychiatry is the study and treatment of mental illness, emotional disturbance, and abnormal behavior. The Psychology, Psychiatry and Engineering collaborative specialization supports graduate students and faculty interested in contributing to the growing interdisciplinary scholarship at the nexus of psychology, psychiatry and engineering. Fields of study that may benefit from this collaborative specialization include, but are not limited to human
factors, design theory and methodology, artificial intelligence and information engineering, mental health, operations research, and robotics. This specialization strengthens ties between the three Faculties, and may propel research of interest to both beyond what is possible individually.

Upon successful completion of the master's and/or doctoral degree requirements of the participating home graduate unit and the collaborative specialization, students will receive the notation “Completed Collaborative Specialization in Psychology, Psychiatry and Engineering” on their transcript.

Contact and Address
Web: gradstudies.engineering.utoronto.ca/collaborative-specialization-psychology-psychiatry-engineering-psycheng
Email: psych_eng@mie.utoronto.ca
Telephone: (416) 946-3028
Fax: (416) 978-7753

Collaborative Specialization in Psychology, Psychiatry and Engineering
Department of Mechanical and Industrial Engineering
University of Toronto
5 King’s College Road
Toronto, Ontario M5S 3G8
Canada

Psychology, Psychiatry and Engineering: Doctoral Level

Admission Requirements
- Applicants who wish to enrol in the collaborative specialization must apply to and be admitted to a doctoral-level graduate degree program in one of the collaborating graduate units.
- Applicants must provide:
  - A statement of purpose that describes the applicant's background experience relating to psychology, psychiatry, and engineering, and motivation for pursuing studies in PsychEng. Complete the online application form.
  - A supervisor's letter of recommendation in support of the student's application to PsychEng.

Specialization Requirements
- Two sessions of APS1308Y PsychEng Seminar Series — PhD Level (Credit/No Credit) worth 0.0 full-course equivalent (FCE).
• Two PsychEng elective half courses (1.0 FCE). One of the courses must be from the other discipline. Students from either one discipline (psychology, psychiatry or engineering) should first consult with the instructor before registering for a course in the other discipline to ensure adequate fit in terms of interest and preparation. Psychology and Medical Science students must complete at least one graduate course in Engineering, and Engineering students must complete at least one graduate course in either Psychology or the IMS.

• A thesis focused on a topic in the area of the collaborative specialization.

• Students who have completed the PsychEng collaborative specialization at the master's level must take the core seminar course at the PhD level, which requires a higher level of participation; i.e., present more frequently and/or take a leadership role in seminar activities such as the discussion of research papers. Students take two further (different) PsychEng electives during their doctoral program, and their research will be at a level appropriate to a PhD degree.

• All students enrolled in the collaborative specialization must complete the requirements of the collaborative specialization, in addition to those requirements for the degree program in their home graduate unit. The collaborative specialization director and/or specialization committee is/are responsible for certifying the completion of the collaborative specialization requirements. The home graduate unit is solely responsible for the approval of the student’s home degree requirements.

**Psychology and Engineering: Master's Level**

**Admission Requirements**

• Applicants who wish to enrol in the collaborative specialization must apply to and be admitted to both the collaborative specialization and a graduate degree program in one of the collaborating graduate units.

• Applicants must provide:
  o A statement of purpose that describes background experience relating to psychology, psychiatry and engineering, and motivation for pursuing studies in PsychEng. Complete the online application form.
  o A supervisor's letter of recommendation in support of the student's application to PsychEng.

**Specialization Requirements**

• Two sessions of APS1305H PsychEng Seminar Series — Master's Level (Credit/No Credit) worth 0.0 full-course equivalent (FCE).

• Two PsychEng elective half courses (1.0 FCE). One of the courses must be from the other discipline. Students from either one discipline (psychology, psychiatry or engineering) should first consult with the instructor before registering for a course
in the other discipline to ensure adequate fit in terms of interest and preparation. Psychology and Medical Science students must complete at least one graduate course in Engineering, and Engineering students must complete at least one graduate course in either Psychology or the IMS.

- A thesis focused on a topic in the area of the collaborative specialization.
- All students enrolled in the collaborative specialization must complete the requirements of the collaborative specialization, in addition to those requirements for the degree program in their home graduate unit. The collaborative specialization director and/or specialization committee is/are responsible for certifying the completion of the collaborative specialization requirements. The home graduate unit is solely responsible for the approval of the student’s home degree requirements.

**Psychology, Psychiatry and Engineering: Courses**

**Core Course**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS1305H</td>
<td>PsychEng Seminar Series — Master's Level (Credit/No Credit)</td>
</tr>
<tr>
<td>APS1308Y0</td>
<td>PsychEng Seminar Series — Doctoral Level (Credit/No Credit)</td>
</tr>
</tbody>
</table>

**Elective Courses**

**Civil Engineering**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIV1320H</td>
<td>Indoor Air Quality</td>
</tr>
</tbody>
</table>

**Electrical and Computer Engineering**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE1774H</td>
<td>Sensory Cybernetics (suitable for Engineering students only)</td>
</tr>
<tr>
<td>ECE1778H</td>
<td>Creative Applications for Mobile Devices</td>
</tr>
<tr>
<td>JEB1444H</td>
<td>Neural Engineering (suitable for Engineering students only)</td>
</tr>
</tbody>
</table>

**Mechanical and Industrial Engineering**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIE1070H</td>
<td>Intelligent Robots for Society</td>
</tr>
<tr>
<td>MIE1402H</td>
<td>Experimental Methods in Human Factors Research</td>
</tr>
<tr>
<td>MIE1403H</td>
<td>Analytical Methods in Human Factors Research</td>
</tr>
<tr>
<td>MIE1412H</td>
<td>Human-Automation Interaction</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------</td>
</tr>
<tr>
<td>MIE1415H</td>
<td>Analysis and Design of Cognitive Work</td>
</tr>
<tr>
<td>MIE1444</td>
<td>Engineering for Psychologists (and Psychiatrists)</td>
</tr>
<tr>
<td>MIE1505H</td>
<td>Enterprise Modelling</td>
</tr>
<tr>
<td>MIE1510H</td>
<td>Formal Techniques in Ontology Engineering</td>
</tr>
<tr>
<td>MIE1720H</td>
<td>Creativity in Conceptual Design</td>
</tr>
</tbody>
</table>

**Psychology**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY1000H</td>
<td>Directed Studies</td>
</tr>
</tbody>
</table>

Department of Psychology courses offered in the 5000 series; contact the department for exclusions.

**Institute of Medical Science**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSC1006H</td>
<td>Neuroanatomy - Introduction to Anatomical Organization of the Brain</td>
</tr>
<tr>
<td>MSC1085H</td>
<td>Molecular Approaches to Mental Health and Addictions</td>
</tr>
<tr>
<td>MSC1087H</td>
<td>MRI Neuroimaging Methods</td>
</tr>
<tr>
<td>MSC1089H</td>
<td>The Biopsychosocial Basis of Mental Health and Addictive Disorders</td>
</tr>
<tr>
<td>MSC6000H</td>
<td>Special Topics, Reading Course</td>
</tr>
</tbody>
</table>
Appendix B: Addendum to the MOA

To Add or Withdraw a Participating Degree Program in a Collaborative Specialization

ADDENDUM to MEMORANDUM of AGREEMENT

COLLABORATIVE MASTER’S AND DOCTORAL SPECIALIZATION IN PSYCHOLOGY, PSYCHIATRY AND ENGINEERING

Effective Date: September 2022

I indicate with my signature below that I have read the Memorandum of Agreement for the collaborative specialization. The graduate unit agrees to the participation of the degree program(s) named below. The graduate unit and participating graduate degree program agree to abide by the terms and conditions of the Memorandum of Agreement.

1. Unit, Participating Graduate Degree Program

Institute of Medical Science: MSc, Medical Science and PhD, Medical Science

2. Collaborative Specialization Requirements and Degree Program Requirements

The MSc and PhD, offered through the Institute of Medical Science (IMS) of the Temerty Faculty of Medicine (FoM) are NOT course-work only programs. PsychEng requirements, at both the master’s and doctoral level are as follows: two terms of a CR/NCR core seminar course (APS1305/APS1308), two PsychEng electives, and research that includes engineering in addition to psychiatry/psychology. The core seminar CR/NCR course (APS 1305 at the master's level or APS1308 at the doctoral level) are in addition to the home program requirements. IMS MSc or PhD students supervised by faculty appointed to the Department of Psychiatry would normally take elective graduate courses with content in Psychology/Psychiatry to satisfy one PsychEng elective requirement. For the other PsychEng elective requirement, students must complete a graduate course in Engineering. This course can be accommodated in the IMS elective room.
**Institute of Medical Science**

([https://ims.utoronto.ca/degree-requirements](https://ims.utoronto.ca/degree-requirements))

**MSc in Medical Science**

Participating Degree Program Requirements:

\[
\begin{align*}
\text{# Required FCEs} & = 1.0 \quad \text{(line 1)} \\
\text{# Elective FCEs} & = 1.0 \quad \text{(line 2)} \\
\text{Total} & = 2.0 \quad \text{(line 3)}
\end{align*}
\]

**PhD in Medical Science**

Participating Degree Program Requirements:

\[
\begin{align*}
\text{# Required FCEs} & = 1.0 \quad \text{(line 1)} \\
\text{# Elective FCEs} & = 1.0 \quad \text{(line 2)} \\
\text{Total} & = 2.0 \quad \text{(line 3)}
\end{align*}
\]

**Collaborative Specialization Requirements:**

\[
\begin{align*}
\text{For participating programs requiring a major research paper, essay, thesis or other major activity (e.g., practicum):} \\
\text{(leave blank if adding coursework-only participating program)}
\end{align*}
\]

1. The topic must be in the area of the collaborative specialization and under the supervision of a graduate faculty member associated with the collaborative specialization.

2. Collaborative Specialization Requirements: \# FCEs = 1.0 \quad \text{(line 4)}

\[
\begin{align*}
\text{Line 4 (CS FCEs) must be equal to or less than line 2 (participating program elective courses)} \\
1.0 \quad < \text{ or } = 1.0
\end{align*}
\]

\[
\begin{align*}
\text{line 4} & \quad \text{line 2}
\end{align*}
\]
For coursework-only participating programs:

(leave blank if adding participating program with a major research paper, essay, thesis or other major activity)

- At least 30% of the courses taken towards the degree must be in the area of specialization including the core course(s).

Collaborative Specialization Requirements:

# Core course(s) FCEs = __________ (line 5)
# Additional course(s) FCEs = __________ (line 6)
Total = __________ (line 7)

__________ X 30% = __________ (line 8)

Line 7 (CS FCEs) must be equal to or greater than line 8 (30% of the courses taken towards the participating degree program)

__________ > or = __________

line 7 line 8

Line 7 (CS FCEs) must be equal to or less than line 2 (participating program elective courses)

__________ > or = __________

line 4 line 2

The VPAP Office is happy to assist divisions in completing this template. Contact the Assistant Coordinator, Academic Change (see the contact information on the VPAP website).

3. Resources to be Provided by the Participating Unit/Program

Possible development of new course relevant to PsychEng.
SIGNATURES

Graduate Chair/Director of Participating Unit/Program:

_________________________________________  Date: _________________________
Professor Lucy Osborne
Acting Director, Institute of Medical Science
MSc and PhD Programs

Dean/Vice-Dean of Participating Unit/Program:

_________________________________________  Date: _________________________
Professor Trevor Young
Dean, Temerty Faculty of Medicine

or

Professor Justin Nodwell
Vice-Dean, Research & Health Science Education
Temerty Faculty of Medicine

Director of Collaborative Specialization:

_________________________________________  Date: _________________________
Professor Li Shu, Department of Mechanical and Industrial Engineering
Director, Collaboration Specialization in Psychology, Psychiatry and Engineering

Dean/Vice-Dean of Lead Faculty:

_________________________________________  Date: _________________________
Professor Julie Audet
Vice-Dean, Graduate Studies
Faculty of Applied Science and Engineering
University of Toronto
Minor Modification Proposal
Change to an Existing Graduate Program or Collaborative Specialization

This template should be used to bring forward all proposals for minor modifications to program or admissions requirements for existing graduate programs or collaborative specializations under the University of Toronto’s Quality Assurance Process.

<table>
<thead>
<tr>
<th>Collaborative Specialization:</th>
<th>Psychology and Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate units:</td>
<td>Existing Graduate units with participating programs:</td>
</tr>
<tr>
<td></td>
<td>Department of Civil and Mineral Engineering</td>
</tr>
<tr>
<td></td>
<td>Department of Electrical and Computer Engineering</td>
</tr>
<tr>
<td></td>
<td>Department of Mechanical and Industrial Engineering</td>
</tr>
<tr>
<td></td>
<td>Department of Psychology</td>
</tr>
<tr>
<td></td>
<td>New Graduate unit with new participating program:</td>
</tr>
<tr>
<td></td>
<td>Institute of Medical Science</td>
</tr>
<tr>
<td>Faculty/academic division:</td>
<td>Faculty of Applied Science and Engineering</td>
</tr>
<tr>
<td></td>
<td>Faculty of Arts and Science</td>
</tr>
<tr>
<td></td>
<td>Temerty Faculty of Medicine</td>
</tr>
<tr>
<td>Dean’s office contact:</td>
<td>Prof. Julie Audet, Vice-Dean, Graduate Studies</td>
</tr>
<tr>
<td></td>
<td>Caroline Ziegler, Governance &amp; Programs Officer</td>
</tr>
<tr>
<td>Version date:</td>
<td>April 13, 2022</td>
</tr>
</tbody>
</table>

1. Summary

<table>
<thead>
<tr>
<th>Changing admission requirements</th>
<th>Renaming field, concentration or emphasis*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changing program requirements</td>
<td>Renaming of program or collaborative specialization (please notify VPAP before governance)</td>
</tr>
<tr>
<td>Changing timing of program requirements</td>
<td>Creating a new emphasis</td>
</tr>
<tr>
<td>Changes to programs affecting an MOA</td>
<td></td>
</tr>
</tbody>
</table>

A proposal is going forward to the April 27, 2022 Council of the Faculty of Applied Science and Engineering to approve the addition of the Department of Psychiatry, Institute of Medical Science (IMS) in the Temerty Faculty of Medicine to the Collaborative Specialization in Psychology and Engineering (PsychEng). Pending approval of this addition, it is proposed that the name of the collaborative
specialization be changed to add “Psychiatry.” The new name will be the “Collaborative Specialization in Psychology, Psychiatry and Engineering” (PsychEng).

In addition, the collaborative specialization program requirements at the master’s and doctoral levels have been slightly revised to reflect the new programs – the MSc and PhD in Medical Science – that are joining the collaborative specialization through a separate proposal going to FASE governance at the same time as this proposal.

2. **Effective Date of Change**

September 2022.

3. **Academic Rationale**

It is proposed to add "Psychiatry" to the name of the collaborative specialization to yield "Collaborative Specialization in Psychology, Psychiatry and Engineering", to reflect the successful expansion of the collaborative specialization to include faculty and students in the Department of Psychiatry and Institute of Medical Science (IMS), Temerty Faculty of Medicine.

The program requirements are being adjusted to accommodate the onboarding of the Medical Science MSc and PhD programs to the collaborative specialization. The program requirements for Medical Science students will be similar to the existing requirements for Psychology students, in that students in these two groups will need to complete one graduate course in Engineering. The program requirements for Engineering students in the collaborative specialization are changing so that this group of students will take at least one graduate course in Psychology or Medical Science, thus providing them with more choice.

4. **Impact on Students**

Engineering graduate students will be able to take a graduate course in either Psychology or Medical Science. Psychology and Medical Science graduate students will take a graduate course in Engineering.

For students graduating this June or earlier, the collaborative specialization title remains the same as it is now. In-progress students registered as of September 2022, who were already in the collaborative specialization, will be provided the choice of whether to opt-in to a name change reflected on their transcript upon completion of the collaborative specialization. In-progress students (fewer than 20) will be contacted in writing by email and responses will be collected until September 30, 2022. For students who do not respond by this date, the original collaborative specialization title will be used on their transcript upon completion of the collaborative specialization, unless they opt-in in time for their graduation date.
5. Consultation

From October 2021 through March 2022, consultations were held with PsychEng representatives in the FASE Departments of Civil and Mineral Engineering (CivMin), Electrical and Computer Engineering (ECE), and Mechanical and Industrial Engineering (MIE), and with the graduate unit in the FAS Department of Psychology. Psychology sought and was provided clarification that Psychology graduate students will take other-department elective in Engineering, and not Medical Science. No major issues were discovered during these discussions.

The involved IMS faculty, their chair/director and the collaborative specialization director have agreed to these changes.

6. Resources

No significant resource implications are anticipated. Medical Science administration and course instructors agree to a small number of potential Engineering graduate students enrolling in Medical Science courses. Engineering graduate courses can accommodate the small number of potential Medical Science students.

Based on existing PsychEng enrollments, this change is unlikely to involve more than five Engineering students taking Medical Science graduate courses, or more than five Medical Science students taking Engineering graduate courses.

7. Governance Approval

<table>
<thead>
<tr>
<th>Unit sign-off</th>
<th>PsychEng Committee including representatives from CivMin, ECE, MIE and Psychology (March-April 2022)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dean’s office sign-off</td>
<td>Julie Audet, Vice-Dean Graduate Studies (February 2022)</td>
</tr>
<tr>
<td>Faculty/division council approval (or delegated body) if applicable</td>
<td>Approved by the Engineering Graduate Education Committee on behalf of FASE Council (February 17, 2022). Received for information by FASE Council (April 27, 2022)</td>
</tr>
</tbody>
</table>

8. Calendar Copy

See Appendix 1.
Appendix 1: Calendar Copy

Please use track changes or highlights to indicate where changes have been made.

2021-22 SGS Calendar: Psychology, Psychiatry and Engineering

Exported on June 14, 2021. For editing purposes only.

Psychology, Psychiatry and Engineering: Introduction

Lead Faculty of the Collaborative Specialization
Applied Science and Engineering

Participating Degree Programs

Civil Engineering — MASc, PhD
Electrical and Computer Engineering — MASc, PhD
Institute of Medical Science — MSc, PhD
Mechanical and Industrial Engineering — MASc, PhD
Psychology — MA, PhD

Supporting Units
Department of Mechanical and Industrial Engineering

Overview

The Collaborative Master’s and Doctoral Specialization in Psychology, Psychiatry and Engineering (PsychEng) includes participating programs offered by the Departments of Mechanical and Industrial Engineering; Civil and Mineral Engineering; and Electrical and Computer Engineering in the Faculty of Applied Science and Engineering; the Institute of Medical Science in the Temerty Faculty of Medicine; and the Department of Psychology in the Faculty of Arts and Science.

Engineering involves the creative application of science to the design of systems, processes, structures, and technologies. Psychology is a science that focuses on the mind and behaviour of people and animals to understand individuals and groups across all levels of analyses, from the cellular to the cultural. Psychiatry is the study and treatment of mental illness, emotional disturbance, and abnormal behavior. The Psychology, Psychiatry and Engineering collaborative specialization supports graduate students and faculty interested in contributing to the growing interdisciplinary scholarship at the nexus of psychology, psychiatry and engineering. Fields of study that may benefit from this collaborative specialization include, but are not limited to human factors, design theory and methodology, artificial intelligence and information engineering, mental health, operations research, and robotics. This specialization
strengthens ties between the three Faculties, and may propel research of interest to both beyond what is possible individually.

Upon successful completion of the master's and/or doctoral degree requirements of the participating home graduate unit and the collaborative specialization, students will receive the notation “Completed Collaborative Specialization in Psychology, Psychiatry and Engineering” on their transcript.

Contact and Address
Web: gradstudies.engineering.utoronto.ca/collaborative-specialization-psychology-psychiatry-engineering-psycheng
Email: psych_eng@mie.utoronto.ca
Telephone: (416) 946-3028
Fax: (416) 978-7753

Collaborative Specialization in Psychology, Psychiatry and Engineering
Department of Mechanical and Industrial Engineering
University of Toronto
5 King's College Road
Toronto, Ontario M5S 3G8
Canada

Psychology, Psychiatry and Engineering: Doctoral Level

Admission Requirements
• Applicants who wish to enrol in the collaborative specialization must apply to and be admitted to a doctoral-level graduate degree program in one of the collaborating graduate units.
• Applicants must provide:
  o A statement of purpose that describes the applicant’s background experience relating to psychology, psychiatry and engineering, and motivation for pursuing studies in PsychEng. Complete the online application form.
  o A supervisor’s letter of recommendation in support of the student’s application to PsychEng.

Specialization Requirements
• Two sessions of APS1308Y PsychEng Seminar Series — PhD Level (Credit/No Credit) worth 0.0 full-course equivalent (FCE).
• Two PsychEng elective half courses (1.0 FCE). One of the courses must be from the other discipline. Students from either one discipline (psychology, psychiatry or engineering) should first consult with the instructor before registering for a course in the other discipline to ensure adequate fit in terms of interest and preparation.
Psychology and Medical Science students must complete at least one graduate course in Engineering, and Engineering students must complete at least one graduate course in either Psychology or Medical Science.

- A thesis focused on a topic in the area of the collaborative specialization.
- Students who have completed the PsychEng collaborative specialization at the master's level must take the core seminar course at the PhD level, which requires a higher level of participation; i.e., present more frequently and/or take a leadership role in seminar activities such as the discussion of research papers. Students take two further (different) PsychEng electives during their doctoral program, and their research will be at a level appropriate to a PhD degree.
- All students enrolled in the collaborative specialization must complete the requirements of the collaborative specialization, in addition to those requirements for the degree program in their home graduate unit. The collaborative specialization director and/or specialization committee is/are responsible for certifying the completion of the collaborative specialization requirements. The home graduate unit is solely responsible for the approval of the student’s home degree requirements.

Psychology and Engineering: Master's Level

Admission Requirements
- Applicants who wish to enrol in the collaborative specialization must apply to and be admitted to both the collaborative specialization and a graduate degree program in one of the collaborating graduate units.
- Applicants must provide:
  - A statement of purpose that describes background experience relating to psychology, psychiatry and engineering, and motivation for pursuing studies in PsychEng. Complete the online application form.
  - A supervisor's letter of recommendation in support of the student's application to PsychEng.

Specialization Requirements
- Two sessions of APS1305H PsychEng Seminar Series — Master's Level (Credit/No Credit) worth 0.0 full-course equivalent (FCE).
- Two PsychEng elective half courses (1.0 FCE). One of the courses must be from the other discipline. Students from either one discipline (psychology, psychiatry or engineering) should first consult with the instructor before registering for a course in the other discipline to ensure adequate fit in terms of interest and preparation. Psychology and Medical Science students must complete at least one graduate course in Engineering, and Engineering students must complete at least one graduate course in either Psychology or Medical Science.
- A thesis focused on a topic in the area of the collaborative specialization.
• All students enrolled in the collaborative specialization must complete the requirements of the collaborative specialization, in addition to those requirements for the degree program in their home graduate unit. The collaborative specialization director and/or specialization committee is/are responsible for certifying the completion of the collaborative specialization requirements. The home graduate unit is solely responsible for the approval of the student’s home degree requirements.

**Psychology, Psychiatry and Engineering: Courses**

**Core Course**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS1305H</td>
<td>PsychEng Seminar Series — Master’s Level (Credit/No Credit)</td>
</tr>
<tr>
<td>APS1308Y0</td>
<td>PsychEng Seminar Series — Doctoral Level (Credit/No Credit)</td>
</tr>
</tbody>
</table>

**Elective Courses**

**Civil Engineering**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIV1320H</td>
<td>Indoor Air Quality</td>
</tr>
</tbody>
</table>

**Electrical and Computer Engineering**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE1774H</td>
<td>Sensory Cybernetics (suitable for Engineering students only)</td>
</tr>
<tr>
<td>ECE1778H</td>
<td>Creative Applications for Mobile Devices</td>
</tr>
<tr>
<td>JEB1444H</td>
<td>Neural Engineering (suitable for Engineering students only)</td>
</tr>
</tbody>
</table>

**Mechanical and Industrial Engineering**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIE1070H</td>
<td>Intelligent Robots for Society</td>
</tr>
<tr>
<td>MIE1402H</td>
<td>Experimental Methods in Human Factors Research</td>
</tr>
<tr>
<td>MIE1403H</td>
<td>Analytical Methods in Human Factors Research</td>
</tr>
<tr>
<td>MIE1412H</td>
<td>Human-Automation Interaction</td>
</tr>
<tr>
<td>MIE1415H</td>
<td>Analysis and Design of Cognitive Work</td>
</tr>
<tr>
<td>MIE1444</td>
<td>Engineering for Psychologists (and Psychiatrists)</td>
</tr>
<tr>
<td>MIE1505H</td>
<td>Enterprise Modelling</td>
</tr>
<tr>
<td>MIE1510H</td>
<td>Formal Techniques in Ontology Engineering</td>
</tr>
<tr>
<td>MIE1720H</td>
<td>Creativity in Conceptual Design</td>
</tr>
</tbody>
</table>
Psychology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY1000H</td>
<td>Directed Studies</td>
</tr>
</tbody>
</table>

Department of Psychology courses offered in the 5000 series; contact the department for exclusions.

Institute of Medical Science

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSC1006H</td>
<td>Neuroanatomy - Introduction to Anatomical Organization of the Brain</td>
</tr>
<tr>
<td>MSC1085H</td>
<td>Molecular Approaches to Mental Health and Addictions</td>
</tr>
<tr>
<td>MSC1087H</td>
<td>MRI Neuroimaging Methods</td>
</tr>
<tr>
<td>MSC1089H</td>
<td>The Biopsychosocial Basis of Mental Health and Addictive Disorders</td>
</tr>
<tr>
<td>MSC6000H</td>
<td>Special Topics, Reading Course</td>
</tr>
</tbody>
</table>

*Course that may continue over a program. Credit is given when the course is completed.*

Template developed by the Office of the Vice-Provost, Academic Programs and updated on March 6, 2018.