



**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**

AER1307	Fundamentals of Aeroacoustics
APS1410	Waterpower Essentials
APS1411	Renewal of Waterpower Facilities
BME1510	Data Science for Biomedical Engineers
CHE1152	Materials-Driven Separations
CHE3010	PhD Research
CIV1196, CIV1296, CIV1396, CIV1496, CIV1596	Special Studies in Civil & Mineral Engineering
CIV1197, CIV1297, CIV1397, CIV1497, CIV1597	New Topics in Civil & Mineral Engineering
CIV1283	Advances Asset Management: Quantitative Tools and Methods
CIV1285	Building Information Modeling
CIV1322	Quantitative Methods for Decision Making
ECE1786	Creative Applications of Natural Language Processing
MIE1709	Continuum Mechanics

## MINOR MODIFICATIONS TO EXISTING COURSES

CHE1133 <i>Bioprocess Engineering</i>	Code course change to CHE1450
CHE2222 <i>Safety Workshop</i>	Weight changed from 0.5 FCE to 0.0 FCE
CHE3001 <i>Seminars in Chemical Engineering</i>	Weight changed from 0.5 FCE to 0.0 FCE
CIV1198, CIV1298, CIV1398, CIV1498, CIV1598, CIV1199, CIV1299, CIV1399, CIV1499, CIV1599, <i>Special Studies – Civil &amp; Mineral Engineering</i>	Course series title changed to <i>New Topics in Civil and Mineral Engineering</i> ; no change in course description
TEP1011 <i>Authentic Leadership: Engineering Your Vibrant Future</i>	Course title changed to <i>Authentic Leadership and Teaming</i> ; no change in course description

## MINOR MODIFICATIONS TO PROGRAMS

PhD (CHE)	Annual supervisory committee meeting requirement now associated with a CR/NCR course code, CHE3010: <i>PhD research</i> . See Appendix A.
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## MINOR MODIFICATIONS TO A COLLABORATIVE SPECIALIZATION LED BY FASE

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

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

### 1 Summary

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	Changing admission requirements		Renaming field, concentration or emphasis
x	Changing program requirements		Renaming of program or collaborative specialization (please notify VPAP before governance)
	Changing timing of program requirements		Creating a new emphasis
			Changes to programs affecting an MOA

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

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September, 2022.

### 3 Academic Rationale

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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

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

### 5 Consultation

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

### 6 Resources

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None.

### 7 Governance Approval

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

## Appendix A: Calendar Entry

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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 MSc 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 MSc, 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*.

<b>Collaborative specialization:</b>	Psychology and Engineering <sup>1</sup>
<b>Collaborative specialization director:</b>	Prof. Li Shu (Mechanical and Industrial Engineering)
<b>Lead Faculty:</b>	Applied Science and Engineering
<b>Degree program(s) being added:</b>	Institute of Medical Science MSc, PhD
<b>Unit offering above degree program:</b>	Temerty Faculty of Medicine
<b>Dean's Office contacts:</b>	Prof. Julie Audet, Vice-Dean, Graduate Studies Caroline Ziegler, Governance & Programs Officer
<b>Version date:</b>	April 13, 2022
<b>Effective date:</b>	September 2022
<b>Approvals:</b>	Engineering Graduate Education Committee February 17, 2022

#### Core Graduate Faculty Research Synopses

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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

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<sup>1</sup> 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:

- Kozak-Bidzinski, K., Lowe, D.J.E., Sanches, M., Sorkhou, M., Boileau, I., Kiang, M., Blumberger, D.M., Remington, G., Ma, C., Castle, D.J., Rabin, R.A., George, T.P. (2022). **Investigating Repetitive Transcranial Magnetic Stimulation (rTMS) for Cannabis Use and Cognition in People with Schizophrenia**. NPJ Schizophrenia. 8(1): 2. PMID: 35210458.
- Johnstone, S., Sorkou, M., Al-Saghir, N., Lowe, D.J.E., Steele, V.D., Pearson, G.D., Castle, D.J., George, T.P. (2022). **Neuromodulation for the Treatment of Substance Use Disorders in People with Schizophrenia and Psychotic Spectrum Disorders**. Front. Psychiatry. 13: 793938. PMID: 35237187
- Kozak, K., Sharif-Razi, M., Morozova, M., Gaudette, E.V., Barr, M.S., Daskalakis, Z.J., Blumberger, D.M., George, T.P. (2018). **Effects of Short-Term Repetitive Transcranial Magnetic Stimulation (rTMS) on Tobacco Craving, Withdrawal and Cognition in Cigarette Smokers with and without Schizophrenia**. Schizophr. Res. 197: 441-443. PMID: 29486960
- 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:

- Hull L, Levy L, Lai MC et al. (2021) Is social camouflaging associated with anxiety and depression in autistic adults? *Molecular Autism* 12, 13  
<https://doi.org/10.1186/s13229-021-00421-1>
- Mo K, Sadoway T, Bonato S, Ameis SH, Anagnostou E, Lerch JP, Taylor MJ, Lai M-C (2021) Sex/gender differences in the human autistic brains: A systematic review of 20 years of neuroimaging research, *NeuroImage: Clinical*, 32, 102811, ISSN 2213-1582,  
<https://doi.org/10.1016/j.nicl.2021.102811>.
- 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:

- Tung YH, Lin HY, Chen CL, et al. Whole-brain white matter tracts deviation and idiosyncrasy from normative development in autism, ADHD and their unaffected siblings link with dimensions of psychopathology and cognition. *American Journal of Psychiatry*. 2021 Mar 17. <https://doi.org/10.1176/appi.ajp.2020.20070999>.
- Ni HC, Chen YL, Chao YP, Wu CT, Wu YY, Liang HY, Chin WC, Chou TL, Gau SS, Huang YZ, Lin HY. Intermittent theta burst stimulation over the posterior superior temporal sulcus for children with autism spectrum disorder: A 4-week randomized blinded controlled trial followed by another 4-week open-label intervention. *Autism*. 2021 Feb 25. <https://doi.org/10.1177/1362361321990534>.

### **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:**

- Rapoport M, Zuccherro Sarracini C, Mulsant BH, Seitz D, Molnar F, Nagalie G, Herrmann N, Rozmovits L (2020). A virtual second opinion: acceptability of a computer-based decision tool to assess older drivers with dementia. *Health Informatics Journal* 26(2):911-924 - PMID: 31210555
- Selby P, Vojtila L, Ashfaq I, Dragonetti R, Melamed O, Carriere R, LaChance L, Kohut S, Hahn M, Mulsant BH (2021). Technology-enabled collaborative care for youth with early psychosis: A protocol for a feasibility study to improve physical health behaviours. *Early Intervention in Psychiatry* 15(4):828-836 - PMID: 32748501

**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:**

- Ortiz A, Bradler K, Mowete M, MacLean S, Garnham J, Slaney C, Mulsant BH, Alda M (2021). The futility of long-term predictions in bipolar disorder: mood fluctuations are the result of deterministic chaotic processes. *International Journal of Bipolar Disorders* 9(1):30 - PMID: 34596784
- Ortiz A, Maslej M, Husain I, Daskalakis ZJ, Mulsant BH (2021). Apps and gaps in bipolar disorder: A systematic review on electronic monitoring for episode prediction. *Journal of Affective Disorders* 295:1190-1200 - PMID: 34706433

## Appendix A: Calendar Copy

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

### 2021-22 SGS Calendar: Psychology, Psychiatry and Engineering

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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-engineering-psycheng~~ [gradstudies.engineering.utoronto.ca/collaborative-specialization-psychology-psychiatry-engineering-psycheng](http://gradstudies.engineering.utoronto.ca/collaborative-specialization-psychology-psychiatry-engineering-psycheng)

Email: [psych\\_eng@mie.utoronto.ca](mailto: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:
  - 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 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

APS1305H	PsychEng Seminar Series — Master's Level (Credit/No Credit)
APS1308Y <sup>0</sup>	PsychEng Seminar Series — Doctoral Level (Credit/No Credit)

### Elective Courses

#### Civil Engineering

CIV1320H	Indoor Air Quality
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#### Electrical and Computer Engineering

ECE1774H	Sensory Cybernetics (suitable for Engineering students only)
ECE1778H	Creative Applications for Mobile Devices
JEB1444H	Neural Engineering (suitable for Engineering students only)

#### Mechanical and Industrial Engineering

MIE1070H	Intelligent Robots for Society
MIE1402H	Experimental Methods in Human Factors Research
MIE1403H	Analytical Methods in Human Factors Research
MIE1412H	Human-Automation Interaction

MIE1415H	Analysis and Design of Cognitive Work
MIE1444	Engineering for Psychologists (and Psychiatrists)
MIE1505H	Enterprise Modelling
MIE1510H	Formal Techniques in Ontology Engineering
MIE1720H	Creativity in Conceptual Design

## Psychology

PSY1000H	Directed Studies
Department of Psychology courses offered in the 5000 series; contact the department for exclusions.	

## Institute of Medical Science

MSC1006H	Neuroanatomy - Introduction to Anatomical Organization of the Brain
MSC1085H	Molecular Approaches to Mental Health and Addictions
MSC1087H	MRI Neuroimaging Methods
MSC1089H	The Biopsychosocial Basis of Mental Health and Addictive Disorders
MSC6000H	Special Topics, Reading Course



## **Appendix B: Addendum to the MOA**

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### **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>)

### MSc in Medical Science

Participating Degree Program Requirements:

# Required FCEs	=	<u>  1.0  </u>	(line 1)
# Elective FCEs	=	<u>  1.0  </u>	(line 2)
Total	=	<u>  2.0  </u>	(line 3)

### PhD in Medical Science

Participating Degree Program Requirements:

# Required FCEs	=	<u>  1.0  </u>	(line 1)
# Elective FCEs	=	<u>  1.0  </u>	(line 2)
Total	=	<u>  2.0  </u>	(line 3)

Collaborative Specialization Requirements:

**For participating programs requiring a major research paper, essay, thesis or other major activity (e.g., practicum):**

(leave blank if adding coursework-only participating program)

- 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.

Collaborative Specialization Requirements: # FCEs =   1.0   (line 4)

Line 4 (CS FCEs) must be equal to or less than line 2 (participating program elective courses)

  1.0   < or =   1.0    
line 4                      line 2

**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 3

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*.

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

#### 1. Summary

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

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

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

## 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-engineering-psycheng~~ [gradstudies.engineering.utoronto.ca/collaborative-specialization-psychology-psychiatry-engineering-psycheng](http://gradstudies.engineering.utoronto.ca/collaborative-specialization-psychology-psychiatry-engineering-psycheng)

Email: [psych\\_eng@mie.utoronto.ca](mailto: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 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**

APS1305H	PsychEng Seminar Series — Master's Level (Credit/No Credit)
APS1308Y <sup>0</sup>	PsychEng Seminar Series — Doctoral Level (Credit/No Credit)

**Elective Courses**

**Civil Engineering**

CIV1320H	Indoor Air Quality
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**Electrical and Computer Engineering**

ECE1774H	Sensory Cybernetics (suitable for Engineering students only)
ECE1778H	Creative Applications for Mobile Devices
JEB1444H	Neural Engineering (suitable for Engineering students only)

**Mechanical and Industrial Engineering**

MIE1070H	Intelligent Robots for Society
MIE1402H	Experimental Methods in Human Factors Research
MIE1403H	Analytical Methods in Human Factors Research
MIE1412H	Human-Automation Interaction
MIE1415H	Analysis and Design of Cognitive Work
MIE1444	Engineering for Psychologists (and Psychiatrists)
MIE1505H	Enterprise Modelling
MIE1510H	Formal Techniques in Ontology Engineering
MIE1720H	Creativity in Conceptual Design

## Psychology

PSY1000H	Directed Studies
Department of Psychology courses offered in the 5000 series; contact the department for exclusions.	

## Institute of Medical Science

MSC1006H	Neuroanatomy - Introduction to Anatomical Organization of the Brain
MSC1085H	Molecular Approaches to Mental Health and Addictions
MSC1087H	MRI Neuroimaging Methods
MSC1089H	The Biopsychosocial Basis of Mental Health and Addictive Disorders
MSC6000H	Special Topics, Reading Course

<sup>0</sup> 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.