UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Meeting of Faculty Council

April 29, 2025 | 12:10-2:30 pm
Hybrid (GB202 & Zoom)

AGENDA

1.	**Speaker's Welcome and Approval of Agenda** For approval as a regular motion	J Nogami
2.	**Introduction of New Faculty** Jianan Yao (ECE)	D Kundur
3.	**Adoption of Minutes of Previous Meetings** December 18, 2024 and February 24, 2025 For approval as regular motions	J Nogami
4.	**Memorial Tribute** Stefan Zukotynski (ECE)	D Kundur
5.	**Report of the Dean** For information	C Yip
6.	**Revised Assessed and Deferred Policy** (Report 3783) For approval as a regular motion	V Papangelakis
7.	**Late Withdrawal for Core Courses in Upper Years** (Report 3784) For approval as a regular motion	V Papangelakis
8.	**Adding Definitions for Core Preparation in the Academic Calendar** (Report 3785) For approval as a regular motion	E Young
9.	**Closure of the Institute for Sustainable Energy, an Extra-Departmental Unit, Type C** (Report 3782) For approval as a regular motion	S Draper
10.	**Closure of Graduate Fields in Biomedical Engineering** (Report 3789) For approval as a regular motion	J Audet
11.	**Closure of Master of Health Science (MHSc) in Clinical Engineering** (Report 3790) For approval as a regular motion	J Audet

12. Information Reports
To receive for information

a)	**Engineering Graduate Education Committee Information Update** (Report 3788)	L Romkey
b)	**Report on Activities and Goals of the Inclusivity, Diversity & Equity Advisory (IDEA) Committee** (Report 3786)	P Asare

13. Other Business — J Nogami

14. Service Presentations

a)	**Retiring Professors**	Chairs and Directors
b)	**Outgoing Faculty Council Speaker**	C Yip
c)	**Teaching Assistant Awards**	C Yip
d)	**Faculty Teaching Awards**	C Yip

15. Date of Next Meeting — J Nogami

16. Adjournment — J Nogami

Rev. 4/21/2025 1:32 PM

UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Council of the Faculty of Applied Science & Engineering
Minutes of the Meeting of December 18, 2024

MEMBERS: Jun Nogami (Speaker), Chris Yip (Dean), Samin Aref, Philip Asare, Carla Baptista, Jason Bazylak, Evan Bentz, Anthony Bowman, Helen Bright, Markus Bussmann, Hai-Ling Margaret Cheng, Alan Chong, Shai Cohen, Stark Draper, Salma Emara, Natalie Enright Jerger, Greg Evans, Ramin Farnood, Marianne Hatzopoulou, Kat Jia, Dawn Kilkenny-Rocheleau, Deepa Kundur, Katy Kwong, Antonio Liscidini, Ethan Mao, Kasra Modares, Emily Moore, Hani Naguib, Vladimiros Papangelakis, Milos Popovic, Mark Rittinger, Jonathan Rocheleau, Lisa Romkey, Jonathan Rose, Benjamin Sanchez, Kimberly Seaman, Tess Seip, Marisa Sterling, Hamid Timorabadi, Chirag Variawa, Belinda Wang, Elizabeth Whitmell, Edmond Young, Daifei Zhang, Yu Zou

SECRETARIAT: Caroline Ziegler (Secretary), Alex Schroen (Moderator), Silvia Delgado (Governance Administrative Assistant)

GUESTS: Ariel Gaitan, Sherry Lin, Jenny Mo, Estelle Olivia-Fisher, Asthma Pathan, Rocky Petinakis, Dan Pettigrew, Zeeshan Rayees, Nefeteria Wickham, Ivan Zhuo

1. Speaker's Welcome and Approval of Agenda

Speaker Jun Nogami called the second Faculty Council meeting of 2024-2025 to order at 12:10 pm, welcoming new Council members in GB202 and online.

The Speaker acknowledged the land on which the University of Toronto operates and reviewed protocols for the hybrid meeting.

The Speaker also addressed ongoing challenges faced by the Indigenous community, including calls for inquiries into the deaths of nine Indigenous people in police interactions and the remains of two Indigenous women found in landfills. The charity *No More Silence* was also discussed for its role in raising awareness and advocating for Indigenous rights.

The agenda and reports were distributed on December 4. There was no discussion and on a regular motion duly moved, seconded and carried, the agenda was approved.

2. Introduction of New Faculty Members

New faculty members Samin Aref of the Department of Mechanical & Industrial Engineering and Daifei Zhang of The Edward S. Rogers Sr. Department of Electrical & Computer Engineering were introduced by their respective chairs.

3. Adoption of the Minutes of Previous Meetings

No errors or omissions were noted in the minutes of the October 24, 2024 Council meeting and on a regular motion duly moved, seconded and carried, the minutes were approved.

4. Report of the Dean

Dean Chris Yip welcomed members to the Faculty Council meeting. He shared that yesterday's Shared Services party was a fun event and extended holiday wishes to all. The Dean also acknowledged that the exam period is currently underway, and wished all students the best of luck.

a) International Genetically Engineered Machine (iGEM) Toronto

The University of Toronto's iGEM team placed in the top 10 in the undergraduate category at the annual event held in Paris, competing against 400 teams from 48 countries. Congratulations to all who participated.

b) National Day of Remembrance and Action on Violence Against Women

The Dean also mentioned the National Day of Remembrance and Action on Violence Against Women, held on December 6th, and thanked all those who participated in the memorial event to mark the 35th anniversary.

c) Congratulations to our New Research Chairs

Congratulations to our new Canada Research Chairs: Deepa Kundur (ECE) for her Tier 1 CRC in Cybersecurity of Critical Infrastructure, Azadeh Kushki (BME) for her Tier 2 CRC in Neurodiversity and Personalized Health, Enid Montague (MIE) for her Tier 2 CRC in Human-centred Automation, and Yu Zou (MSE) for his Tier 2 CRC in Materials and Manufacturing in Extreme Environments. Seven Engineering Researchers also had their CRC appointments renewed.

Dean Yip acknowledged Deepa Kundur, Ali Dolatabadi and Milos Popovic for their inductions as EIC 2025 Fellows. Furthermore, the EIC Médaille Julian C. Smith award was presented to alumnus John Bianchini. The EIC ceremony will take place on April 5 in Ottawa.

d) Administrative Staff Awards Program

Nominations are now being accepted for the Faculty's 2025 Administrative Staff Awards, with a submission deadline of February 7.

e) FASE Flu and Covid Vaccine Clinic was held November 26

The FASE Flu and COVID Vaccine Clinic took place in the Bahen Centre on November 26, with over 20 attendees. Thank you to everyone who participated.

f) Travel Update

The Dean met with alumni and fellow deans during his recent travels to New York, Singapore, Australia, and New Zealand. At their meeting in Australia, deans discussed the challenges they are facing, particularly regarding government funding cuts and other financial difficulties. The Dean also acknowledged the strong alumni presence in Sydney, made possible through connections facilitated by Chirag Variawa, and highlighted the potential for future collaborations with alumni in New Zealand.

g) Iron Ring Anniversary

The 100th anniversary of the Iron Ring is coming up. Plans are in place for an alumni event to celebrate the milestone, with events scheduled for San Francisco this fall and Hong Kong afterward.

h) Applications

The Faculty has seen a 13 percent increase in applications for the upcoming session and is working with the Provost to secure better credit for students and funded units, as they are currently classified as unfunded domestics due to surpassing their targets.

In closing, Dean Yip wished everyone a happy holiday.

The Speaker thanked the Dean for his report. There were no questions.

The following items were endorsed by the Executive Committee of Faculty Council at its November 19 meeting and are recommended for Council's approval by regular motion, requiring a simple majority of members present and voting to carry.

5. Study Break and Winter Reading Week Regulations

Edmond Young, chair of the Undergraduate Curriculum Committee, presented Report 3767 Revised, which looks to implement uniform regulations across departments and Engineering Science to explicitly prohibit assignments scheduled and assessments being made due during Study Break and Winter Reading Week and the weekends immediately after. Since the creation of the Fall Study Break in 2020, and the Winter Reading Week before it, it has only been common practice to avoid scheduling work then.

At the conclusion of the presentation, the following regular motion was moved and seconded –

> THAT the Fall Study Break and Winter Reading Week regulations, as described in Report 3767 Revised, be approved effective immediately.

Council members discussed the definition of "assignment," clarifying that it refers to any task with a grade or mark attached, and it may be further specified in the calendar if necessary. It was confirmed that assignments can be given on the Monday or Tuesday following the final weekend of reading week, as the policy applies only to the last Saturday and Sunday. There was

also a discussion about including accessibility services under accommodations. A request was made to explicitly add "and accessibility services" to the proposal.

A motion to amend was moved and seconded –

> THAT the wording “and accessibility services” be included under accommodations in Report 3767 Revised.

The motion to amend was carried.

The original regular motion, as amended, was on the floor –

> THAT the Fall Study Break and Winter Reading Week regulations, as described in Report 3767 Revised, be approved with the addition of “and accessibility services”, effective immediately.

The motion was carried.

6. Major Curriculum Changes for the 2025-2026 Academic Year

Edmond Young, chair of the Undergraduate Curriculum Committee, presented Report 3777 Revised, which summarizes course changes proposed for the next academic year.

At the conclusion of the presentation, the following regular motion was moved and seconded –

> THAT the proposed curriculum changes for the 2025-2026 academic year, as described in Report 3777 Revised, be approved.

There was no discussion and the motion was carried.

7. Information Reports

The following items were approved by the Executive Committee of Faculty Council at its November 19 meeting and are recommended to Council to receive for information.

a) Inclusion of Certificates in the University of Toronto Sustainability Scholar Program

Dionne Aleman, associate dean of Cross-Disciplinary Programs, presented Report 3772, a proposal to include the Certificate in Electric Vehicle Design and the Certificate in Renewable Resources Engineering in the U of T Sustainability Scholar Program. These inclusions will result in a transcription notations for students, but no actual changes to the certificates.

There was no discussion and the report was received for information.

b) Admissions Update

Alan Chong, chair of the Undergraduate Admissions Committee, presented Report 3773, which provides a summary of the committee's activities for the period of November 1, 2023 to November 1, 2024.

During discussions, concerns were mentioned about immigration and international students. While FASE has not seen a reduction in international spaces, there is concern about how Canada is perceived as a study destination. Total applications were up, with significant domestic interest across all programs, and a notable rise in early applications from Ontario. This may require rethinking the early admissions strategy. More offers were made this year in anticipation of a slightly lower yield. Registered numbers have increased, though international yield remains a challenge due to perception issues. To address this, strategic communications, recruitment efforts, and events are being planned. There are also ongoing efforts to diversify gender applications.

Several topics related to admissions and gender diversity within the engineering faculty were discussed. Efforts to increase female representation in departments with lower percentages, such as Civil & Mineral Engineering and Materials Science & Engineering are ongoing, but specific departmental strategies were not clearly defined.

Regarding graduate admissions, concerns were raised about the drop in female applicants, though it was clarified that graduate admissions are decentralized and not within the scope of the Undergraduate Admissions Committee.

Members discussed the effectiveness of the current admission criteria, especially considering high school grade inflation. Questions were raised about the Broad-Based Admissions (BBA) process. However, it was emphasized that BBA is not a negative aspect of the admissions process and was integral to identifying high-quality future engineers, as academic performance alone – even with 98 percent averages – did not always reflect the best candidates. The possibility of implementing an entrance exam was discussed but deemed impractical. Some members suggested exploring the idea of a province-wide exam, similar to practices in Alberta.

Also mentioned are the challenges posed by the negative perception of U of T Engineering among international students, particularly due to immigration rhetoric. Strategic Communications aims to counteract negative perceptions through student-led social media campaigns among other efforts. Survey data shows that the main reasons international students declined offers were a lack of scholarships and the high cost of living in Toronto.

Finally, female enrollment at 40 percent was seen as a positive milestone, though there are no immediate plans to increase this further by the committee.

The report was received for information.

c) Pilot of Chemistry Requirement Change for A Level Applications

Alan Chong, chair of the Undergraduate Admissions Committee, presented Report 3775, a proposal to offer admissions to candidates that only have IGCSE/GCE/O-level Chemistry without the condition that they present Ontario Grade 12 Chemistry. This will be a time-limited pilot for up to a maximum of four years.

Combined sciences at the O-level was discussed, with some concerned that offering this option would be considered an equity measure. It was explained that the motivation behind this proposal is to encourage students to apply, though it is uncertain if these students will succeed academically. The approach is aligned with other schools, and success will be evaluated over time. The decision to allow combined sciences will be considered on a case-by-case basis, with a review of the O-level qualifications.

The report was received for information.

d) Engineering Graduate Education Committee Update

Lisa Romkey, chair of the Engineering Graduate Education Committee, presented Report 3776, which lists new courses approved in AER, APS, BME, CIV, ECE, MIE, MSE and TEP, as well as minor modifications approved in APS, CHE, and MIE.

There was no discussion and the report was received for information.

e) Formalize "Magic File" to Conditional Decision Regulations

Vlad Papangelakis, chair of the Undergraduate Assessment Committee, presented Report 3778, which proposes to formalize the "Magic File" by renaming it a "conditional decision" and incorporating it into the petition system. This change will improve transparency and ensure fairness and will be documented in the committee's operating manual.

There was no discussion and the report was received for information.

8. Other Business

There was no other business.

9. Graduate Diploma in Engineering Leadership

Emily Moore, professor in the Institute for Studies in Transdisciplinary Engineering Education & Practice, presented on a proposed Graduate Diploma in Engineering Leadership.

The diploma's focus on technical leadership rather than finance sets it apart from traditional Executive MBA programs. It will incorporate team-based learning, with students engaging in employer-based projects and learning pods for case studies and skill development. It targets engineers working in technical industries and will match them with traditional management roles. It is designed to be approximately 50 percent of the cost of an Executive MBA, with plans to secure 50 percent of student sponsorships from industry.

The program is undergoing rigorous review and is being evaluated by an external marketing firm. Feedback from employers and students has been positive. The proposal will return at a future Council meeting for approval.

10. Date of Next Meeting

The next Faculty Council meeting is on February 24, 2025.

11. Adjournment

The meeting was adjourned at 1:49 pm.

Revised 2/26/2025 3:46 PM

UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Council of the Faculty of Applied Science & Engineering
Minutes of the Meeting of February 24, 2025

MEMBERS: Jun Nogami (Speaker), Evan Bentz (Acting Dean), Dionne Aleman, Grant Allen, Cristina Amon, Julie Audet, Carla Baptista, Jason Bazylak, David Boroto, Anthony Bowman, Helen Bright, Markus Bussman, Arthur Chan, Ron Chiong, Shai Cohen, Liyang Dai-Hattrick, Christopher Damaren, Michelle Deeton, Stark Draper, Natalie Enright Jerger, Evelyn Fallah, Jennifer Farmer, Diane Giang, Marianne Hatzopoulou, Angela Henshilwood, Inga Hipsz, Tulgar Ilhan, Katherine Jia, Dawn Kilkenny, Donald Kirk, Deepa Kundur, Antonio Liscidini, Heather MacLean, Ethan Mao, Katherine Mezei, Mohammad Mofrad, Isabelle Rao, Mark Rittinger, Jonathan Rocheleau, Lisa Romkey, Stephen Rouatt, Kimberly Seaman, Philipp Seiler, Tess Seip, Theo Soong, David Steinman, Marisa Sterling, Micah Stickel, Hamid Timorabadi, Olivier Trescases, Patrick Tyrrell, Saskia van Beers, Chirag Variawa, Lesley Warren, Elizabeth Whitmell, Edmond Young

SECRETARIAT: Silvia Delgado (Governance Administrative Assistant), Alex Schroen (Moderator)

GUESTS: Mohaddeseh Abdolhosseini, Rouhollah Ayazian, Inga Breede, Leanne Dawkins, Ines Fernandez, Roger Francis, Teresa Fung, Ariel Gaitan, Leslie Grife, Joanne Lieu, Anna Limanni, Denis Mascarin, Jenny Mo, Don Newton, Asma Pathan, Rocky Petinakis, Dan Pettigrew, Adham Ragab, Emma Scully, Alex Tichine, Geoff Wichert, Yun Wu, Minghan Xu, Keanna Yu, Nefeteria Wickham

1. Speaker's Welcome and Approval of Agenda

Speaker Jun Nogami called the third Faculty Council meeting of 2024-2025 to order at 12:10 pm, welcoming new Council members in GB202 and online.

The Speaker acknowledged the land on which the University of Toronto operates and reviewed protocols for the hybrid meeting.

The agenda and reports were distributed on February 11 and the revised Report 3781 was distributed February 19.

2. Introduction of New Faculty Members

New faculty members Isabelle Rao of the Department of Mechanical & Industrial Engineering; Minghan Xu of the Department of Civil and Mineral Engineering, were introduced by their respective chairs and directors.

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3. Adoption of the Minutes of Previous Meetings

Members discussed the minutes of the December 18, 2024 Council meeting, in particular a statement pertaining to Report 3774: Admissions Cycle 2024 “the Faculty still has 92 percent international applicants”, which requires clarification. Council agreed to table approval of the minutes until its next meeting on April 29, 2025, at which time it can consider the revision.

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4. Memorial Tributes

a) Gerald N. Steuart

Marianne Hatzopoulou, chair of the Department of Civil and Mineral Engineering, read the following memorial tribute in honour of Professor Emeritus Gerald N. Steuart.

Be it resolved –

> THAT the Council of the Faculty of Applied Science & Engineering record with deep regret the death on November 18, 2024 of Professor Emeritus Gerald N. Steuart.

Professor Steuart was an accomplished scholar, holding a Bachelor of Civil Engineering from the University of Saskatchewan and an M.S and Ph.D. from the University of California, Berkeley.

Professor Steuart joined the Department in 1970 as an Assistant Professor and was promoted to full professor in 1986. Since 1997 he has been Professor Emeritus. He taught transportation-related courses and has supervised numerous undergraduate, masters and doctoral students. In 1990, the University of Toronto – York University Joint Program in Transportation was established and became a Centre within the Faculty of Applied Science & Engineering. Professor Steuart was invited to serve as the first Director of the Center and he held this position until 1996. The Joint Program in Transportation emerged as one of the leading transport research centres in North America. Professor Steuart's intellectual contribution to its research program and his administration of the program was widely recognized.

Gerry founded the transportation section in our Department. He set in motion its directions, established its vibrant spirit, built its richness, reputation and standing. He was also the founding Director of the Data Management Group, which for 36 years and counting has been a world leader in travel data collection and of immeasurable benefit to transportation planning in the Greater Toronto Area and beyond. But just listing his academic achievements would be to miss his essence. Intellectual integrity? Unwavering honesty? Thoroughness? Caring? A Mensch … Words fail. When his name comes up in conversation with ex-students, mentorship is usually mentioned. Gerry was someone they looked up to, someone who influenced what and how they think, a role model who shaped what they became.

In June of 2012, a former student of Gerry's provided a large endowment to establish the Professor Gerald Steuart Graduate Scholarship in Transportation Engineering which is awarded annually to a graduate student enrolled in civil engineering who is undertaking advanced research in transportation engineering and who demonstrates a strong

commitment to pursuing innovative solutions to pressing transportation problems facing urban centres or airports in any region of the world.

Be it further resolved –

> THAT this tribute to Professor Emeritus Gerald N. Steuart be inscribed in the minutes of this Council meeting, and that copies be sent to his family as an expression of the respect and gratitude of the members of this Council.

b) William Howard (Bill) Burgess

Ramin Farnood, chair of the Department of Chemical Engineering & Applied Chemistry, read the following memorial tribute in honour of Professor Emeritus William Howard (Bill) Burgess.

Be it resolved –

> THAT the Council of the Faculty of Applied Science & Engineering record with deep regret the death on January 5, 2025, of Professor Emeritus William Howard (Bill) Burgess.

Bill Burgess's journey at U of T began in 1954 when he joined the Department of Chemical Engineering & Applied Chemistry as an Assistant Professor. Born on March 13, 1924, in Chelsea, Massachusetts, Bill's academic path first began at Cornell University in 1942. His studies were interrupted in 1944 when he was drafted into the United States Army, serving in the Signal Corps until his discharge in 1946.

Upon returning to Cornell, Bill earned his Bachelor of Chemical Engineering in 1949, his Master of Food Science in 1950, and his Ph.D. in Dairy Chemistry in 1954, with minors in physical chemistry and bacteriology. During his time at Cornell, he held research and teaching assistantships, laying the foundation for a lifelong commitment to education.

Bill's career at U of T Engineering spanned five decades, during which he became a pillar of the Chemical Engineering department. Promoted to Associate Professor in 1959 and full Professor in 1968, he mentored countless students, inspiring them with his dedication, humor, and unwavering belief in their potential. His teaching style was both engaging and memorable, leaving a lasting impression on generations of engineering students.

Throughout his career, he received numerous teaching excellence awards, and his legacy is honored through the Bill Burgess Teaching Award, which continues to recognize outstanding contributions to education in our department. Upon his retirement in 1989, he was granted the status of Professor Emeritus. He remained an active and cherished member of the U of T community, continuing to teach until 2004.

Beyond U of T, Bill was a member of the American Chemical Society, Phi Kappa Phi, and Sigma Xi. He joined the Association of Professional Engineers of Ontario in 1963, proudly receiving his iron ring.

Bill's teaching philosophy was rooted in the joy of understanding. He once remarked, "There's nothing so wonderful as when the light bulb goes on…The wonderful feeling when you finally understand something, and you want to share your insight with others to help them understand too."

His colleagues and students alike remember him as a remarkable mentor and collaborator, recalling his extraordinary ability to inspire and support others. Many shared how his guidance left a lasting impact

on their careers and teaching practices, embodying the very essence of dedication and excellence in education.

Bill's warmth, wisdom, and dedication to education have left an indelible mark on our university. His legacy will continue to inspire future generations of engineers and educators.

Be it further resolved –

> THAT this tribute to Professor Emeritus William Howard (Bill) Burgess be inscribed in the minutes of this Council meeting, and that copies be sent to his family as an expression of the respect and gratitude of the members of this Council.

The Speaker assumed concurrence with these resolutions and Council observed one minute of silence in honour of Professors Emeriti Steuart and Burgess.

5. Report of the Dean

Speaker Jun Nogami welcomed Professor Evan Bentz, Acting Dean, to read the Dean's report. Professor Bentz welcomed all to the third Faculty Council meeting of the academic year. He expressed hope that all had a productive and fulling reading week, and wishing everyone continued good health and a successful meeting ahead.

Professor Bentz opened with a photo from Survey Camp, showing a view from the professor's cottage across Gull Lake, a unique and special part of the University of Toronto Campus. This photo highlights the dark skies at Survey Camp at night, showing the Milky Way.

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FACULTY OF APPLIED SCIENCE & ENGINEERING

a) External Reviews

This is a highlight on recent and upcoming external reviews. UTIAS completed its external review earlier in the month, thanks to Professors William Crossley from Purdue, Professor Ellen Longmire from the University of Minnesota Twin Cities, and Professor Siva Nadarajah from McGill. Additionally, an external review for ECE is scheduled for April 8th and 9th of this year, to be conducted by Professors Ryan Li from University of Alberta, Professor Derek Oliver from University of Manitoba, and Professor Arijit Raychowdhury from University of Georgia Tech. We look forward to their visit and wish good success in all ongoing external reviews.

b) Strategic Academic Planning

The process of developing a strategic academic plan has begun, distinct from the overall strategic plan. The community will have an opportunity to provide input and feedback at a later stage, with more details to follow as the process progresses.

c) Canadian Engineering Accreditation Board

This is a snapshot year, during which we are carefully tracking all teaching activities and requirements to gather information over the summer for proper documentation. In the fall, a visiting team will inspect us, but this is not an examination – it's more of an audit to confirm that we are doing our job well. This process gives us the opportunity to assess and improve our practices. Special thanks go to Helen Bright at the registrar's office and Zeeshan Reyees, who developed a new system to streamline data entry into the CAEB online system, making it more efficient. Things are under control and looking good, and the visit will take place this fall.

Professor Bentz concluded with a photo from Survey Camp, showing students, professors, and TAs at the end of camp in August 2024. The key focus is the sign in the photo, marked "2T6." This sign, originally created in 1924 for the class of 2T6, was repainted and reused by the current students, symbolizing the second class to carry that designation. It serves as a reminder that the University of Toronto is part of a long tradition, with 151 years of history.

6. Summer Session Dates, 2025-2026

Edmond Young, chair of the Undergraduate Curriculum Committee, presented Report 3779. Council has historically approved session dates for Fall and Winter terms but has recently adopted the standard session dates set by Simcoe Hall. It is, however, still required to approve our summer session dates.

At the conclusion of the presentation, the following regular motion was moved and seconded –

> THAT the summer session dates for the 2025-2026 summer session be approved as described in Report 3779.

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There was no discussion and the motion was carried

7. Creation of MEng Extended Full Time Plus Co-op Option

Julie Audet, vice-dean graduate, presented Report 3781 Revised, which describes a new Extended Full-time Plus Co-op Option is proposed within the MEng programs. This includes UTIAS, ChemEng, CivMin, ECE, MSE, and MIE. This option will provide a formal, for-credit pathway for MEng students to gain career strategy, workplace skills, industry connections, and significant professional experience prior to graduation, through an extended program length that includes a work term.

At the conclusion of the presentation, the following regular motion was moved and seconded –

> THAT the creation of an Extended Full-time Plus Co-op Option be approved as described in Report 3781 Revised, effective September 2025.

There was no discussion and the motion was carried

8. Information Reports

The following items were approved by the Executive Committee of Faculty Council at its February 3 meeting and are recommended to Council to receive for information.

a) Engineering Graduate Education Committee Update

Lisa Romkey, chair of the Engineering Graduate Education Committee, presented Report 3780 Revised, which describes the alignment of the PhD and MEng programs in Civil and Mineral Engineering with current practices. When admitting students with prior master's degrees into these programs, no distinction is made between thesis-based and course-based master's degrees. Once admitted to the standard or flex-time PhD programs, students are required to complete 2.0 FCEs of coursework. Additionally, MEng students must now complete six technical courses, and a comprehensive minor in courses is required.

There was no discussion and the report was received for information.

9. Other Business

There was no other business.

10. Date of Next Meeting

The next Faculty Council meeting is on April 29, 2025.

11. Adjournment

The meeting was adjourned at 12:53 pm.

UNIVERSITY OF TORONTO
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Memorial Tribute to

STEFAN ZUKOTYNSKI

Professor Emeritus
The Edward S. Rogers Sr. Department of Electrical & Computer Engineering

April 29, 2025

Be it resolved –

> THAT the Council of the Faculty of Applied Science & Engineering records with deep regret the death on February 8, 2025 of Professor Emeritus Stefan Zukotynski.

Stefan earned his PhD in Physics from the University of Warsaw in 1966. He joined The Edward S. Rogers Sr. Department of Electrical & Computer Engineering, then known as the Department of Electrical Engineering, at the University of Toronto as an Assistant Professor in 1968. He rose through the ranks to become Professor, retiring in 2004. Throughout his career, Stefan was passionate about teaching and mentoring students, notably serving as Associate Chair, Undergraduate Studies from 1988 to 1993.

Stefan's research focused on the transport and optical properties of amorphous semiconductors and photovoltaic conversion. From 1970 to 2004, he led the University of Toronto's research group on hydrogenated amorphous semiconductors, authoring numerous papers and patents on the subject.

"Stefan and I worked closely together for over two decades on research projects on hydrogenated amorphous silicon," reflects John Perz, Emeritus Professor of Physics at the University of Toronto. "Stefan was ingenious in designing and implementing apparatus to produce, characterize and develop applications for this unique and important material, which is used today in many solar power devices."

Professor Ali Sheikholeslami shares, "I will always remember Stefan for his clear, articulate view of electronics. He instilled in me a view of electronics that I have cherished since I met him. In his words, 'Electronics is the art of controlling electrons for the purpose of information storage, information processing, and information communication.' I have been using this definition of electronics in all my electronic courses, and I remember him every time I repeat these words."

Stefan is remembered fondly by colleagues, students, and friends for his generosity, personable manner, and approachable nature. Professor Peter Herman recalls, "Stefan was a mentor, generous with his time, and exceptionally thoughtful—a true gentleman in every respect. His mind was brilliant, which he applied strategically to always beat me on the squash courts. His warming presence will be sorely missed!" Former graduate student, Professor Frankco Gaspari, warmly notes “Over the course of the years we became friends but even before that he was never my employer, but a true mentor and a brilliant scientist and engineer.”

Professor Berj Bardakjian adds, "I remember with fondness his sharp wit, charm, and reassuring stances that he brought to our encounters."

"Stefan was a highly respected colleague, engineer and scholar," states Professor Glenn Gulak. "He had an unwavering commitment to our students and to promoting the engineering fundamentals that comprise the foundation of a distinguished department.

After retiring, Stefan continued his work as President and CEO of Torion Plasma Corporation and Sumo Software, Inc.

Stefan is survived by his daughter, Dr. Katherine Zukotynski, who is currently a professor at McMaster University. Professor Khoman Phang elaborates, "An academic family dynasty -- may Stefan's legacy live on through them."

Stefan Zukotynski was a pioneer in his field, and his passing will be deeply felt by all who knew him. His influence and kindness left a lasting impression on the students, faculty, and friends fortunate enough to have known him, and he will be dearly missed by our department.

Be it further resolved –

> THAT this tribute to Professor Emeritus Stefan Zukotynski be inscribed in the minutes of this Council meeting, and that copies be sent to his family as an expression of the respect and gratitude of the members of this Council.

Prepared by Professor Deepa Kundur, Chair of
The Edward S. Rogers Sr. Department of Electrical & Computer Engineering

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Report No. 3783

MEMORANDUM

To: Executive Committee of Faculty Council (April 8, 2025),
Faculty Council (April 29, 2025)

From: Professor Vladimiros Papangelakis,
Chair, Undergraduate Assessment Committee (UAC)

Date: March 19, 2025

Re: Revised Assessed and Deferred Policy

REPORT CLASSIFICATION

This is a major policy matter that the Executive Committee will consider for endorsing and forwarding to the Faculty Council for vote as a regular motion (requiring a simple majority of members present and voting to carry).

BACKGROUND

The Undergraduate Assessment Committee (UAC) offers two types of accommodation for students missing a final exam for valid reasons with appropriate documentation: an assessed final exam mark or a deferred examination/assessment.

The Faculty has a long-standing practice of granting assessed marks. The Faculty's current assessed and deferred exam policy was introduced in 2011, with revisions in 2016. Under this policy, the UAC would grant either a deferred exam (SDF), allowing the student a second chance to write the final exam at a later date, or an assessed mark. The assessed mark is an estimated value of the final exam mark calculated by the Boocock-Will formula. It is based on "sufficient" closely supervised term work completed. The assessed final exam mark produces an estimated course grade based on the composition of the final course mark (COFM) as submitted by the instructor and approved by their Department and the UAC. Under the current rules, the number of course grades assessed for a student cannot exceed three in any term, for a maximum of two terms, that is a maximum total of six during the completion of the program degree. The Boocock-Will Formula for assessed final exam marks is:

$$AFE = ECS/CACS*CAFÉ$$

where: AFE = Assessed Final Exam Mark

ECS = Earned Closely Supervised Term Work

CACS = Class Average Closely Supervised Term Work

CAFE = Class Average Final Exam Mark

When the AFE results in a mark that is higher than other courses in the term, it is capped at the highest technical course grade earned in the recent two terms. The default method of assigning a course grade to students missing a final exam with valid reasoning thus became the assessed grade.

The 2016 revision established a regulation regarding a time limit to write a deferred exam, which was two opportunities or until the beginning of the third term following the original exam date. This revision was made because it was challenging to enforce the timing of the deferred exam date, with limited options for the UAC to accommodate a missed deferred exam with valid documentation, except to provide a retroactive withdrawal from the course, wasting administrative resources and annulling the pedagogical element of the granting of the SDF in the first place.

In recent years, there has been an increase in final exam petitions for students not writing the final exam (DNW) and, consequently, an increase in both the number of assessed course grades and deferred exams, as shown in Tables 1 and 2 below. During the COVID pandemic, in particular, it became necessary for instructors to declare their final exams as 'mandatory' if they wanted students to not receive an assessed course grade but rather earn it through a final exam. This has created some confusion among instructors that has lasted to today. Following the pandemic, the rates of missed final exams and consequential numbers of deferred exams and assessed final exam marks did not drop as quickly as hoped, leading to concerns about a new normal becoming established, one which may also contribute to marks inflation.

Table 1. Assessed Final Exam Marks – Assessed Course Grades

Term	# of Assessed Marks	# of Students Who Received Two Assessed Marks	# of Students Who Received Three Assessed Marks
2024-9, VOI	119	4	7
2024-1, VOI	127	16	2
2023-9, VOI	128	20	3
2023-1, No VOI	317	39	11
2022-9, No VOI	267	39	10
2020-1 to 2022-5 (COVID-19)	Not Accurate		
2019-9, VOI	108	10	5
2019-1	106	12	1
2018-9	114	11	5
2018-1	86	15	1
2017-9	110	15	5
2017-1	90	6	3
2016-9	119	12	4
2016-1	102	10	3
2015-9	113	13	7

Table 2. Deferred Exams per Term*

Year of study	20179	20181	20189	20191	20199	20201	20209	20211	20219	20221	20229	20231	20239	20241	20249
1	1	5	4	4	7	4	22	14	71	362	21	36	13	29	16
2	14	25	6	15	22	1	15	14	201	417	91	130	19	41	25
3	17	34	8	21	15	9	17	26	106	481	50	87	40	72	29
4	21	22	18	34	25	4	16	7	38	71	35	47	23	38	20
N/A			1		1					1	2				
Total	53	86	37	74	70	18	70	61	416	1332	199	300	95	180	90

*During the period from 2020-1 to 2023-1, protocols put in place due to COVID eliminated the requirement for a Verification of Illness for missed exams. From 2020-1 to 2021-1 exams moved online due to COVID. In 2021-9 and 2022-1, the exam period was again disrupted due to COVID.

It is worth noting that the current policy was instituted when most courses had their grades determined by closely supervised work, amounting to 75% of the total course grade. This has changed since around 2019 with many courses incorporating more projects and other non-closely supervised term work. In certain cases where a student has missed the entire final exam period due to illness, the UAC faces the problem of having to grant more than three deferred exams than the petitioning student could reasonably handle in one period (e.g., February sitting). These cases, and other complex ones, may result in Aegrotat (AEG) rulings and an overall adjudication burden that is often at the limit of being unmanageable within the time allotted by the UAC and Academic Advisors. This situation compromises the ability of UAC to resolve petitions promptly, thus affecting student academic standing, including prerequisite requirements for progression to the next term.

In addition, and as a result of the current implementation of the regulations:

1. Assessed marks may allow students to proceed to follow-on courses with uncertain mastery of prerequisite course material.
2. What constitutes “sufficient” closely supervised term work to grant an assessed mark is undefined, resulting in ambiguity and therefore inequity.
3. When deferred exams are offered, students proceed to the next term with unclear academic standing; this is a particular concern with courses that act as prerequisites to follow-on courses.
4. The mandatory or non-mandatory designation of the final exams creates confusion among students and instructors, the majority of whom seem to consider that final exams are, by default, mandatory. This confusion creates ambiguities when the UAC adjudicates a missed final exam petition.

Consequently, there is a need to a) increase consistency, b) create more certainty and transparency for the students (i.e., clarify the expectations), and c) ensure that student grades reflect actual and individual knowledge of the course material. The proposed policy revision is intended to ensure that all students in the program are adequately prepared to proceed successfully to the following terms and courses. It also aims at improving the adjudication efficiency of the UAC so that it can resolve difficult and urgent cases in a timely manner.

There is also a need to formalize the default deferred exam periods for the Faculty during Winter Reading Week (for the immediately preceding Fall Term exams) and the first week of the Fall Term (for the immediately preceding Winter Term exams). The committee may also decide to grant a deferred exam to be taken at the next offering of the same course.

The revised policy rests on the principle that assessed marks are only possible when a student has completed a sufficient amount of closely supervised term work and the instructor has deemed that an assessed mark is an appropriate outcome in their course. Final exams are expected to be **summative** and certify students on a comprehensive understanding of the course material. Final exams play a crucial role in the testing process; missing a final exam should be a rare event.

PROPOSED POLICY

- Where a student has petitioned and provided valid documentation for their absence within seven calendar days of a missed exam, **the default remedy will be a deferred exam.**

REVISED RULES FOR GRANTING AN ASSESSED FINAL EXAM MARK

Where a student has petitioned and provided valid documentation for their absence within seven calendar days of a missed exam, the student will be allowed to write a deferred exam. However, an assessed mark using the Boocock-Will formula also can be considered when **all** conditions below are met:

1. The instructor indicated that an assessed mark is acceptable on the required CIS submission.
2. The student has **not previously** received assessed marks in a maximum of two terms with a maximum of two courses assessed in each term during the entire duration of the degree program (e.g., years 1 to 4).
3. The assessed final exam mark would not result in an assessed mark that either leads to Repeat Probation (PRO2) or Refused Further Registration (RFRG) status or course failure.
4. The student has completed at least 90% of closely supervised term work as shown in the COFM breakdown in the Term Work Report (TWR).
5. The student has achieved at least 60% in the closely supervised term work component as per the COFM.
6. The closely supervised component of the term work in the COFM is worth at least 30% of the final grade.

In all other cases, a deferred exam will be offered, and a Standing Deferred (SDF) will be inserted on ROSI. The CIS and TWR will be modified to reflect the above information.

In the case that it is mathematically impossible for the student to meet condition 3 above, even with a 100% in a deferred exam, the UAC will decide on the best course of action.

REVISED RULES FOR CLEARING SDF STANDING DUE TO A MISSED FINAL EXAM

Missed Final Exam: Students with valid documentation and valid reasoning shall be offered deferred exams for up to three missed final exams in a term. The UAC will take into consideration additional comments provided on the Term Work Report from the Course Instructor regarding the student's mastery of the entire course material. In cases where a student misses more than three final exams, a remedy other than deferred exams including AEG or term withdrawal may be more appropriate.

Missed Deferred Exam: Student must submit a petition with valid documentation within 7 days. The UAC will decide the best course of action for students who provide valid documentation.

Timetable Misread or oversleeping: A deferred exam will be offered with a penalty that subtracts 10 marks from the final course grade only once during a student's degree due to a misreading of the final exam timetable. The same penalty will be applied if an assessed final exam mark is granted.

Re-Write or Supplemental Examination: Students who completed their originally scheduled or deferred exam would not be considered for a supplementary examination.

PROCEDURES FOR DEFERRED EXAMINATIONS

Once a student has been granted a deferred exam, the following would occur:

1. The Undergraduate Assessment Committee (UAC) determines whether the exam will be written during the next deferred exam period or the final exam of the next standard offering of the course.

2. The Registrar's Office will notify the student, Course Instructor and the student's Academic Advisor of the decision, as well as the time, date, and location of the deferred examination.

3. The Course Instructor will submit an examination paper to the Registrar's Office by a requested date. The new examination must be of the same exam type and format as the original final exam.

4. For students who missed or failed their deferred exam, the Registrar's Office will insert the earned course grade on ROSI, and the student's academic standing will be re-assessed based on that grade. If the student is placed on repeat probation (PRO2) or refused further registration (RFRG), their registration will be cancelled, effective immediately.

5. If a new petition is submitted regarding the missed deferred examination, the UAC will decide on the best course of action.

Deferred Examination Periods: A deferred exam period will be held during Winter Reading Week for missed Fall Term exams and the first week of the Fall Term for missed Winter Term exams. Students with deferred exams are expected to be in Toronto during this time, and – as with the regular final exam period – travel plans will not be accommodated.

Graduating Students: Where possible, consideration will be given for a special deferred exam in May.

Prerequisite Courses During SDF Standing: If the student has a deferred exam for a prerequisite course, the student must immediately seek permission from their department to continue in the course while their prerequisite standing is pending. The department has the option to allow or refuse the student to proceed in the course and should notify the student and the Registrar's Office as soon as possible. If the student misses or fails the deferred exam, they will be immediately removed from any courses for which the said course was a prerequisite. To minimize any delays, the instructor of the deferred exam must return the deferred exam mark and the resulting course grade to the Registrar's Office within 7 calendar days.

Academic Standing During SDF Status: Students who would otherwise be required to withdraw due to their academic performance (PRO2/RFRG) will not be permitted to continue due to an SDF status. However, they will be permitted to write their deferred exams while not registered.

CONSULTATION PROCESS

This proposal was approved after extensive deliberations by the Undergraduate Assessment Committee on March 18, 2025.

RECOMMENDATION FOR COUNCIL

THAT the proposal to update the regulations for granting assessed marks and deferred exams as described in Report 3783 is approved, effective the Fall 2025 term.

UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Report No. 3784

MEMORANDUM

To: Executive Committee of Faculty Council (April 8, 2025),
Faculty Council (April 29, 2025)

From: Professor Vladimiros Papangelakis
Chair, Undergraduate Assessment Committee (UAC)

Date: March 19, 2025

Re: Late Withdrawal for Core Courses in Upper Years

REPORT CLASSIFICATION

This is a major policy matter that will be considered by the Executive Committee for endorsing and forwarding to Faculty Council for vote as a regular motion (requiring a simple majority of members present and voting to carry).

BACKGROUND

This proposal concerns the Faculty's policy on late withdrawal without supporting documentation (Academic Regulations Section VIII Subsection 7). Under this policy a student may withdraw from courses after the withdrawal deadline, provided that the late withdrawal request is submitted prior to the start of the Faculty's examination period. If the request is approved, "LWD" will appear on the student's transcript for the corresponding course; courses with an LWD are not factored into the calculation of GPA and sessional average, or into assessment of academic standing.

Students in upper years (Years 2 – 4) are allowed to withdraw late, without penalty, from a maximum of two half-credit (0.5 wt) elective courses. This would be the Years 2 to 4 total and does not include courses withdrawn under this policy in Year 1. Currently, this applies to **technical electives, CS/HSS electives and free electives** taken at the University of Toronto. **Late withdrawal from core courses is not allowed.**

In recent years, the Committee has seen a number of cases in which a student faced significant ongoing health-related challenges with core courses. Although they would go into the final exam period with very little prospect of passing the course, they have no choice but to write the final exam. After failing the course(s), the student would then petition for retroactive withdrawal (WDR). It should be noted that when reviewing petitions, the Committee does not usually grant WDR of selective courses within a term, even with valid documentation and

sufficient reasoning unless there is clear evidence and documentation that a particular course was impacted more than others.

Therefore, the current restriction of LWD to electives for upper-year students essentially forces some students to take a final exam, fail a course, petition for WDR, and receive a retroactive withdrawal from the whole term. This results in undue stress on students who are already facing significant challenges, increased workload of advisors and the Committee to review petitions, and the potentially undesired outcome of withdrawing from all courses even when the request is granted.

Addressing these concerns associated with the current policy will allow students more responsibility for their academic planning and reduce the need for intervention by the Undergraduate Assessment Committee. Furthermore, this policy will also address a current inequity that results in students in programs with a greater proportion of core courses, who have less flexibility to use the LWD option.

PROPOSED

We propose to update this policy to allow for LWD of core courses for upper-year students. The Academic Regulations (Section VIII, Subsection 7 Late Withdrawal Without Supporting Documentation) will be updated as follows:

> *This policy applies to students wishing to withdraw from courses after the withdrawal deadline, but prior to the start of the Faculty's examinations period.*
>
> *Case (1): Students in Years 2–4*
> *Students are allowed to drop, without penalty, a maximum of two half-credit (0.5 weight) courses during their program, excluding any courses dropped under this policy in Year 1. This applies to* ***core courses****, technical electives, CS/HSS electives and free electives taken at the University of Toronto.*

This document proposes no changes to the LWD policy in the first year (Cases 2 and 3) but updates the wording for Case 3 (Year 1 Core 8 & Track One).

> *Case (2): Students in Year 1 Engineering Science*
> *Students are allowed to drop a maximum of three half-credit courses in:*
> *a. Term 1F as part of a transition to term 1S in a core-8 program, or*
> *b. Term 1S as part of a transition to term 2F in a core-8 program.*
>
> *Case (3): Students in Year 1 Core 8/Track One*
> *Students are allowed to drop a maximum of two half-credit courses over all combined Year 1 terms.*

The procedures to request LWD in elective courses will remain the same. Students must make the request through their academic advisors. Students requesting LWD for a core course are required to discuss this matter first with their academic advisor before their request can be processed. Petitions to the Undergraduate Assessment Committee are not required.

CONSULTATION PROCESS

This proposal was approved by the Undergraduate Assessment Committee on March 12, 2025.

RECOMMENDATION FOR COUNCIL

> THAT the proposal to extend late withdrawal to core courses in upper years be approved as described in Report 3784, effective September 2025.

UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Report No. 3785

MEMORANDUM

To: Executive Committee of Faculty Council (April 8, 2025)
Faculty Council (April 29, 2025)

From: Professor Edmond Young
Chair, Undergraduate Curriculum Committee

Date: March 20, 2025

Re: Adding Definitions for Course Preparation in the Academic Calendar

REPORT CLASSIFICATION

This is a major policy matter that will be considered by the Executive Committee for endorsing and forwarding to Faculty Council for vote as a regular motion (requiring a simple majority of members present and voting to carry).

BACKGROUND

Most engineering students choose their enrolment in courses based on information provided in the Academic Calendar regarding a course's need for specific pre-requisites, co-requisites, and whether the course has similarities with other courses, so that consideration may be given for course transfer credits. However, the Academic Calendar currently does not adequately provide clear definitions for terms such as "pre-requisite", "co-requisite", "exclusion", and "equivalency". Thus, to aid students in course selection and to eliminate student questions regarding the meanings of these terms, changes to the Academic Calendar are proposed to formally include these definitions.

PROPOSED

It is proposed that the following text be added to the Academic Calendar:

> **Prerequisites, Co-requisites, and Exclusions**
>
> Prerequisites and co-requisites are established by academic units to ensure that students enrolling in a course have the necessary academic preparation to be successful. Students are responsible for fulfilling prerequisites and co-requisites, and if they enroll in a course for which they do not have the published prerequisites or co-requisite, it is at the discretion of the academic unit to cancel their enrolment in the course at any time during the enrolment period. If students withdraw from a course, they must also withdraw from

any course for which it is a co-requisite unless the academic unit offering the latter course agrees to waive the co-requisite.

An exclusion is a course that is deemed to have content that significantly overlaps with another course. Prerequisites, co-requisites, and exclusions will be listed below the course description.

(a) Prerequisite

A course (or other qualification) required as preparation for enrolment in another course. Prerequisites must be completed in advance of enrolment in a course. If students consider that they have equivalent preparation, they may ask the academic unit to waive the stated prerequisite. The academic unit may choose to consult with the course instructor(s) before deciding whether to approve the request.

(b) Co-requisite

A course to be undertaken concurrently with another course. If a student has previously passed the co-requisite course, or another course deemed to be sufficiently equivalent to the co-requisite course, the academic unit can waive the co-requisite.

(c) Exclusions

Students may not receive degree credit for a course that lists as an exclusion a course they are currently taking or a course they have already passed. If they enroll in such a course, they may be removed at any time during the enrolment period at the discretion of the department. If allowed to remain enrolled in an excluded course, the second course taken will be designated Extra.

(d) Recommended Preparation

Background material or courses that may enhance a student's understanding of a course, but that are not required for enrolment in the course.

Note: Although a course may not formally list pre-requisites in the Academic Calendar, the academic unit reserves the right to deny enrolment in the course if a student has not yet completed the necessary curricular requirements at their stage, as defined by the academic unit.

CONSULTATION PROCESS

The proposed changes were first motivated by discussions with student representatives from the Engineering Society, followed by discussions with the Registrar's Office. The changes as presented above have been reviewed and approved by the UCC, comprised of representatives from each undergraduate program; the Vice-Dean, Undergraduate; the Vice-Dean, First Year; the Associate Dean, Cross-Disciplinary Programs; the Director, First Year Curriculum; the

Registrar's Office; undergraduate students; the Faculty's Teaching and Learning Specialist; the Faculty's Scheduling Officer; and representatives from IBBME, UTIAS, the Engineering Communication Program, and the Engineering and Computer Science Library.

RECOMMENDATION FOR COUNCIL

THAT the proposed changes described in Report 3785 to add definitions to the Academic Calendar on course preparations be approved effective immediately.

UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Report No. 3782

MEMORANDUM

To: Executive Committee of Faculty Council (April 8, 2025)
Faculty Council (April 29, 2025)

From: Professor Stark Draper
Vice-Dean, Research and Chair, Research Committee

Date: February 21, 2025

Re: **Closure of the Institute for Sustainable Energy, an Extra-Departmental Unit, Type C in the Faculty of Applied Science & Engineering**

REPORT CLASSIFICATION

This is a major policy matter that will be considered by the Executive Committee for endorsing and forwarding to Faculty Council for vote as a regular motion (requiring a simple majority of members present and voting to carry).

BACKGROUND

The Centre for Sustainable Energy (CSE) was founded in 2010 as an Extra-Departmental Unit, Type D (EDU:D) within the Department of Mechanical & Industrial Engineering.

In 2013, the Faculty approved a motion to advance the CSE to an Extra-Departmental Unit, Type C (EDU:C) and to rename it the Institute for Sustainable Energy (ISE). Its renewed mandate was to engage in research and scholarly work in energy, facilitate collaborative research projects with industry, and enhance the training of energy research personnel. The EDU:C is currently housed in the Department of Mechanical & Industrial Engineering and the Department of Chemical Engineering & Applied Chemistry.

The ISE was reviewed in 2023-2024 as part of the Faculty's goal to review EDU:Cs on an ongoing basis. A review committee was struck consisting of the Vice-Dean, Research and members of the Faculty's Research Committee. The ISE director submitted a self-study to the review committee in June 2024, and the review committee submitted its report with recommendations to the Dean in October 2024.

PROPOSED

The review committee concluded that the ISE has largely been inactive in recent years and lacks a detailed plan to restart its activities. It therefore recommended the closure of the ISE, with a suggestion that if there is a desire to start an EDU:C in Sustainable Engineering, it should begin from scratch. The Dean agreed with this recommendation.

IMPACT

Closing the ISE will have a minimal impact on donors. The Faculty will continue to administer the Hatch Graduate scholarships.

The role of faculty members in the EDU:C is unclear, as are the number of graduate students associated with the ISE and how they have benefitted from their involvement. It is likely that the closure of the ISE will have little to no impact on them.

The ISE does not contribute to the salary of its supporting administrative staff member, who is part of another EDU:C in the Faculty.

CONSULTATIONS

In writing its recommendations, the review committee consulted the ISE director and the chairs of the host academic units (Chemical Engineering & Applied Chemistry and Mechanical & Industrial Engineering). It also reviewed information provided in the self-study.

The chairs of Chemical Engineering & Applied Chemistry and Mechanical & Industrial Engineering were also consulted on the proposal to close the ISE and had no objections.

The recommendation to close the ISE was approved by the Faculty's Research Committee on November 8, 2024.

RECOMMENDATION FOR COUNCIL

> THAT the Institute for Sustainable Energy, an Extra-Departmental Unit, Type C in the Faculty of Applied Science & Engineering, be closed effective immediately.

UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Report No. 3789

MEMORANDUM

To: Executive Committee of Faculty Council (April 8, 2025)
Faculty Council (April 29, 2025)

From: Professor Julie Audet
Vice-Dean, Graduate Studies

Date: March 23, 2025

Re: Closure of Graduate Fields in Biomedical Engineering

REPORT CLASSIFICATION

This is a major policy matter that will be considered by the Executive Committee for endorsing and forwarding to Faculty Council for vote as a regular motion (requiring a simple majority of members present and voting to carry).

BACKGROUND

In addition to MASc, PhD and MEng programs, the Institute of Biomedical Engineering (BME) offers fields of study in Neural/Sensory Systems Rehabilitation (MEng, MASc, PhD); Biomaterials, Tissue Engineering and Regenerative Medicine (MEng, MASc, PhD); Nanotechnology, Molecular Imaging and Systems Biology (MEng, MASc, PhD); Engineering in a Clinical Setting (MEng, MASc, PhD); and Clinical Engineering (PhD).

PROPOSED

It is proposed to fully close the above-mentioned fields. Although they were created to advertise areas of research strength within BME, the unit never formally grouped degree program students into these specific fields, and program requirements did not change according to the student's field of study. Furthermore, these fields no longer represent the way BME's research themes are currently organized and named.

CONSULTATION PROCESS

Consultations were conducted involving BME faculty. The impact of the closure on divisional and other program/units has been considered, as has the impact on students. The proposal was approved by the Faculty's Engineering Graduate Education Committee in March 2025.

RECOMMENDATION FOR COUNCIL

THAT the graduate fields in Biomedical Engineering, as described in Report 3789, be closed effective August 31, 2025.

University of Toronto
Major Modification Proposal

Closure of an Existing Program or Program Structure (Graduate or Undergraduate)

Closures proposed:	Graduate Fields in Biomedical Engineering: Master of Applied Science (MASc): • Biomaterials, Tissue Engineering and Regenerative Medicine • Engineering in a Clinical Setting • Nanotechnology, Molecular Imaging and Systems Biology • Neural/Sensory Systems and Rehabilitation Master of Engineering (MEng): • Biomaterials, Tissue Engineering and Regenerative Medicine • Engineering in a Clinical Setting • Nanotechnology, Molecular Imaging and Systems Biology • Neural/Sensory Systems and Rehabilitation Doctor of Philosophy (PhD): • Biomaterials, Tissue Engineering and Regenerative Medicine • Clinical Engineering • Engineering in a Clinical Setting • Nanotechnology, Molecular Imaging and Systems Biology • Neural/Sensory Systems and Rehabilitation
Department/unit if applicable:	Institute of Biomedical Engineering (BME)
Faculty/academic division:	Faculty of Applied Science & Engineering (FASE)
Department/unit contact:	Prof. Hai-Ling Margaret Cheng, Associate Director, Graduate Studies Jason Wen, Education Officer
Faculty/academic division contacts:	Prof. Julie Audet, Vice-Dean, Graduate Caroline Ziegler, Faculty Governance & Programs Officer
Date when admissions were administratively suspended:	January 1, 2021 (Clinical Engineering in the PhD) June 7, 2024 (all other fields, MASc, MEng, PhD)
Effective date of full closure:	August 31, 2025
Version date:	March 23, 2025

Framework for UTQAP Closures

UTQAP processes support a structured approach for creating, reflecting on, assessing, and developing plans to change and improve academic programs and units in the context of institutional and divisional commitments and priorities.

The University of Toronto (U of T), in its *Statement of Institutional Purpose* (1992), articulates its mission as a commitment "to being an internationally significant research university, with undergraduate, graduate, and professional programs of excellent quality." Thus “quality assurance through assessment of new program proposals and review of academic programs and units in which they reside is a priority for the University…:

> The quality of the scholarship of the faculty, and the degree to which that scholarship is brought to bear in teaching are the foundations of academic excellence. More generally, all of the factors that contribute to collegial and scholarly life —academic and administrative complement, research and scholarly activity, infrastructure, governance, etc.—bear on the quality of academic programs and the broad educational experience of students. (*Policy for Approval and Review of Academic Programs and Units* (2010))

The University’s approach to quality assurance is built on two primary indicators of academic excellence: the quality of the scholarship and research of faculty; and the success with which that scholarship and research is brought to bear on the achievement of Degree Level Expectations.

These indicators are assessed by determining how our scholarship, research and programs compare to those of our international peer institutions and how well our programs meet their Degree Level Expectations.

Program and Program Structure Closure

Proposals for program closures are vehicles of academic change. The University of Toronto views the closing of academic activities as a normal and positive part of quality assurance and program evolution. There are a number of possible reasons for closing a program including low enrolment, a changing disciplinary landscape and poor quality of the academic program. These reasons may be articulated in external review reports or may be identified by members of the University community.

This template (last updated by the Office of the Vice-Provost, Academic Programs on May 16, 2024) aligns with UTQAP requirements and will help to ensure that all evaluation criteria established by the Quality Council are addressed in bringing forward a proposal. Divisions may have additional requirements that should be integrated into the proposal.

Steps	Dates
Decanal sign-off (Dean or designate)	January 2025
VPAP sign-off	March 19, 2025
FASE Engineering Graduate Education Committee (EGEC) approval	March 2025
Faculty/divisional council (approval of program structures, freestanding minors, fields, concentrations, category 1 certificates)	April 29, 2025
AP&P (approval of program closures: undergraduate specialists/majors; diplomas)	n/a
Academic Board (approval of degree, graduate program, joint program closures)	n/a
Executive Committee of Governing Council (executive confirms degree, graduate program, joint program closures)	n/a
Report to AP&P	May 2025
Include in OVPAP's annual report to Quality Council	July 2025

1. Executive Summary

- *Provide a brief summary of the closure being proposed.*

The Institute of Biomedical Engineering (BME) in the Faculty of Applied Science and Engineering (FASE) offers three full time graduate programs: the research-intensive Master of Applied Science (MASc) and Doctor of Philosophy (PhD), and the professional Master of Engineering (MEng).

BME also offers the following fields of study:

- Neural/Sensory Systems Rehabilitation (MEng, MASc, PhD)
- Biomaterials, Tissue Engineering and Regenerative Medicine (MEng, MASc, PhD)
- Nanotechnology, Molecular Imaging and Systems Biology (MEng, MASc, PhD)
- Engineering in a Clinical Setting (MEng, MASc, PhD)
- Clinical Engineering (PhD only)

The field in Clinical Engineering in the PhD was suspended to admissions, effective January 1, 2021. The remaining fields in each of the MASc, MEng and PhD were suspended to admissions, effective June 7, 2024.

This proposal is to fully close all of the above-mentioned fields. Although they were created to advertise areas of research strength within BME, the unit never formally grouped degree program students into these specific fields, and program requirements did not change according to the student's field of study. Since the existing fields were never used to formally classify or group students in any University systems, the existing fields will close. Additionally,

these fields no longer represent the way BME's research themes are currently organized and named.

2. Academic Rationale

- *Discuss the academic rationale for the closure including alignment with the unit's academic plan and connection to any previous reviews.*
- *Discuss any resource implications.*

In 2014 BME brought forward a major modification proposal to establish four new fields in the MASc, MEng and PhD programs: Neural/Sensory Systems and Rehabilitation; Biomaterials, Tissue Engineering and Regenerative Medicine; Nanotechnology, Molecular Imaging and Systems Biology; and Engineering in a Clinical Setting. These fields were in addition to an already existing field in Clinical Engineering in the PhD. These fields were intended to articulate and advertise the unit's areas of research strength; however, the fields primarily functioned to facilitate informal matching between students and potential supervisors. Students do not apply to these fields, are not admitted or enrolled in a field, and do not graduate with a field designation on their academic record. After a change of leadership in 2017, BME underwent internal reorganization and streamlining, including a renaming of the unit in 2020 (from Institute of Biomaterials & Biomedical Engineering to Institute of Biomedical Engineering). The existing fields are no longer representative of BME's research themes.

3. Impact of Closure on Divisional and Other Programs/Units

- *Discuss the impact on the nature and quality of the division's program of study including the impact of closure on other units including inter-divisional and inter-institutional agreements/contracts.*

BME program fields have no impact on divisional and other programs/units. The proposal to close BME program fields does not involve any change to the MEng, MASc, or PhD degree requirements. There are no changes to the MASc, MEng or PhD programs, including to the admission and completion requirements, or their program learning outcomes as a result of the closure of the fields.

4. Impact on Students

- *Provide the current enrolment showing breakdown by year of study in the program or option being closed.*

Table 1: Graduate Breakdown

Status	POSt Cd	Transcript Title	# Active Students
OPEN	BEFLDBTRMC	Field (MASc): Biomaterials, Tissue Engineering and Regenerative Medicine	0
OPEN	BEFLDBTRMG	Field (MEng): Biomaterials, Tissue Engineering and Regenerative Medicine	0
OPEN	BEFLDBTRPH	Field (PhD): Biomaterials, Tissue Engineering and Regenerative Medicine	0
OPEN	BEFLDCBEPH	Field (PhD): Clinical Engineering	0
OPEN	BEFLDENCMC	Field (MASc): Engineering in a Clinical Setting	0
OPEN	BEFLDENCMG	Field (MEng): Engineering in a Clinical Setting	0
OPEN	BEFLDENCPH	Field (PhD): Engineering in a Clinical Setting	0
OPEN	BEFLDNMSMC	Field (MASc): Nanotechnology, Molecular Imaging and Systems Biology	0
OPEN	BEFLDNMSMG	Field (MEng): Nanotechnology, Molecular Imaging and Systems Biology	0
OPEN	BEFLDNMSPH	Field (PhD): Nanotechnology, Molecular Imaging and Systems Biology	0
OPEN	BEFLDNSSMC	Field (MASc): Neural/Sensory Systems Rehabilitation	0
OPEN	BEFLDNSSMG	Field (MEng): Neural/Sensory Systems Rehabilitation	0
OPEN	BEFLDNSSPH	Field (PhD): Neural/Sensory Systems Rehabilitation	0

- *Referring to the table above, discuss the impact on and accommodation of any students currently enrolled in the program.*

There is no impact on new or continuing students as they do not enrol in the fields. The identified fields were not used to formally group students in university systems. Although the fields were created as Subject POSts in ROSI, BME did not use the codes to track students. The fields have not appeared on students' transcripts.

5. Consultation

- *Discuss consultation with affected divisions, units, faculty and students.*

Since 2018-19 there have been multiple consultations within BME's faculty group on the plan to close the fields. There have been no concerns because faculty do not engage with the

fields. Like faculty, students do not engage with the fields and will not be impacted by the change.

Faculty members will be notified by the BME Director's office about the closure of the fields. The fields will be removed from the Introduction section of the SGS Calendar.

Appendix A: Current Calendar Copy with Changes Shown in Red

Biomedical Engineering

Biomedical Engineering: Introduction
Faculty Affiliation
Applied Science and Engineering

Degree Programs

Biomedical Engineering
Note: admissions to all fields have been administratively suspended; however, **admissions to the program remain open.** Students are not required to select a field to complete the program.

MASc
- ~~Fields:~~
  - ~~Biomaterials, Tissue Engineering and Regenerative Medicine;~~
  - ~~Engineering in a Clinical Setting;~~
  - ~~Nanotechnology, Molecular Imaging and Systems Biology;~~
  - ~~Neural/Sensory Systems and Rehabilitation~~

MEng
- ~~Fields:~~
  - ~~Biomaterials, Tissue Engineering and Regenerative Medicine;~~
  - ~~Engineering in a Clinical Setting;~~
  - ~~Nanotechnology, Molecular Imaging and Systems Biology;~~
  - ~~Neural/Sensory Systems and Rehabilitation~~
- Emphases:
  - Engineering and Globalization;
  - Entrepreneurship, Leadership, Innovation and Technology (ELITE);
  - Forensic Engineering

PhD
- ~~Fields:~~
  - ~~Biomaterials, Tissue Engineering and Regenerative Medicine;~~
  - ~~Clinical Engineering;~~
  - ~~Engineering in a Clinical Setting;~~
  - ~~Nanotechnology, Molecular Imaging and Systems Biology;~~
  - ~~Neural/Sensory Systems and Rehabilitation~~

Clinical Engineering
MHSc (admissions have been administratively suspended)

Collaborative Specializations

The following collaborative specializations are available to students in participating degree programs as listed below:

- **Cardiovascular Sciences**
  - Biomedical Engineering, MASc, PhD
- **Developmental Biology**
  - Biomedical Engineering, MASc, PhD
  - Clinical Engineering, MHSc
- **Genome Biology and Bioinformatics**
  - Biomedical Engineering, PhD
- **Musculoskeletal Sciences**
  - Biomedical Engineering, MASc, PhD
- **Neuromodulation**
  - Biomedical Engineering, MASc, PhD
- **Neuroscience**
  - Biomedical Engineering, MASc, PhD
  - Clinical Engineering, MHSc
- **Resuscitation Sciences** (admissions have been administratively suspended)
  - Biomedical Engineering, PhD
  - Clinical Engineering, MHSc
- **Robotics**
  - Biomedical Engineering, MASc, PhD

Overview

The Institute of Biomedical Engineering (BME) offers facilities for research in biomedical engineering and for three educational programs leading to master's and doctoral degrees.

Biomedical engineering is a multidisciplinary field that integrates engineering and biology/medicine. It uses methods, principles, and tools of engineering, physical sciences, and mathematics to solve problems in the medical and life sciences for the study of living systems; the enhancement and replacement of those systems; the design and construction of systems to measure basic physiological parameters; the development of instruments, materials, and techniques for biological and medical practice; and the development of artificial organs and other medical devices. By its nature, the majority of the institute's work is interdisciplinary.

Contact and Address

Institute of Biomedical Engineering Academic Programs Office

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Institute of Biomedical Engineering
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MASc Program
Telephone: (416) 978-4841
PhD Program
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MEng Program
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Biomedical Engineering: Biomedical Engineering MASc
The **Master of Applied Science (MASc) program** is a research-stream, thesis-based program which provides a strong academic foundation for students who want to become immersed in the discipline of biomedical engineering. This program is designed to offer students challenging and rewarding research opportunities within the context of using engineering principles to enhance the quality of our health-care system.

~~The MASc program is offered in the fields of 1) Biomaterials, Tissue Engineering and Regenerative Medicine; 2) Engineering in a Clinical Setting; 3) Nanotechnology, Molecular Imaging and Systems Biology; and 4) Neural/Sensory Systems and Rehabilitation. **Note: admissions to the MASc fields have been administratively suspended; however, the program remains open to new enrolments.**~~

MASc Program

Minimum Admission Requirements
- Applicants are admitted under the General Regulations of the School of Graduate Studies. Applicants must also satisfy the institute's additional admission requirements stated below.
- A bachelor's degree in dentistry, engineering, medicine, or one of the physical or biological sciences from a recognized university with a minimum academic standing of mid-B or 3.0 grade point average (GPA) in the final two years of study or over senior-level courses.

Completion Requirements
- **Coursework.** The program normally comprises **at least 2.0 full-course equivalents (FCEs)** including:
    - Two of the following (1.0 FCE):
        - BME1477H *Biomedical Engineering Project Design and Execution*
        - BME1478H *Coding for Biomedical Engineers*

        - BME1479H *Statistical Discovery Techniques for Biomedical Researchers*
    - Two half-course electives relevant to the student's area of research (1.0 FCE).
- Students must participate in:
    - Either BME1010H or BME1011H *Graduate Seminar* series.
    - JDE1000H *Ethics in Research*.
    - Health and safety training workshops.
- Successful completion of a **research thesis**. ~~in at least one of the biomedical engineering research fields: 1) Biomaterials, Tissue Engineering and Regenerative Medicine; 2) Engineering in a Clinical Setting; 3) Nanotechnology, Molecular Imaging and Systems Biology; and 4) Neural/Sensory Systems and Rehabilitation~~.

Mode of Delivery: In person
Program Length: 5 sessions full-time (typical registration sequence: FWS-FW)
Time Limit: 3 years full-time

Biomedical Engineering: Biomedical Engineering MEng
The **Master of Engineering (MEng) program** is an accelerated, professional program with a focus on the design and commercialization of biomedical devices. Students will have the opportunity to take on applied design challenges and meet the growing demands of this industry through a four-month practical experience through internships, research projects, or practical course activities.

~~The MEng program is offered in the fields of 1) Biomaterials, Tissue Engineering and Regenerative Medicine; 2) Engineering in a Clinical Setting; 3) Nanotechnology, Molecular Imaging and Systems Biology; and 4) Neural/Sensory Systems and Rehabilitation. **Note: admissions to the MEng fields have been administratively suspended; however, the program remains open to new enrolments.**~~

The MEng program can be taken on a full-time, extended full-time, or part-time basis.

MEng Program (Full-Time and Part-Time Options)

Minimum Admission Requirements
- Applicants are admitted under the General Regulations of the School of Graduate Studies. Applicants must also satisfy BME's additional admission requirements stated below.
- A four-year bachelor's degree in engineering, medicine, dentistry, or one of the physical or biological sciences from a recognized university, with at least a mid-B average (3.0 grade point average [GPA]) in the final two years of study or over senior-level courses.

Completion Requirements

- **Coursework.** Students must successfully complete a total of **5.0 full-course equivalents (FCEs)** as follows:
    - At least 2.0 FCEs in biomedical engineering courses; these include all BME and joint BME course offerings.
    - At least 1.0 FCE in commercialization and entrepreneurship courses such as BME1800H, BME1801H, BME1802H, and BME1405H. Completion of either BME1800H or BME1801H is required for graduation.
    - A 1.0 FCE *Practical Experience in Applied Research* course in biomedical device development, usually over one session for a full-time placement (BME1899Y) or over three sessions for a part-time placement (BME1898Y). ~~The placement must be in at least one of the following biomedical engineering research fields: 1) Biomaterials, Tissue Engineering and Regenerative Medicine; 2) Engineering in a Clinical Setting; 3) Nanotechnology, Molecular Imaging and Systems Biology; or 4) Neural/Sensory Systems and Rehabilitation.~~ The practical experience course can be taken in academic research and teaching laboratories, government institutions, health-care facilities, in the industry, or in health-care consulting firms.
    - The remaining 1.0 FCE can be two half courses in either biomedical engineering, commercialization and entrepreneurship, or any graduate-level course the student is interested in.
- All courses must be at the graduate level, which includes both 500- and 1000-level. Students can take a maximum of one 500-level course.
- Health and safety training workshops.
- Students have the option of completing an emphasis in Engineering and Globalization; Entrepreneurship, Leadership, Innovation and Technology in Engineering (ELITE); or Forensic Engineering as part of their degree program. Please see details in the Biomedical Engineering Emphases section.

Mode of Delivery: In person
Program Length: 3 sessions full-time (typical registration sequence: FWS); 9 sessions part-time (typical registration sequence: FWS-FWS-FWS)
Time Limit: 2 years full-time; 6 years part-time

MEng Program (Extended Full-Time Option)

Minimum Admission Requirements

- Applicants are admitted under the General Regulations of the School of Graduate Studies. Applicants must also satisfy BME's additional admission requirements stated below.
- A four-year bachelor's degree in engineering, medicine, dentistry, or one of the physical or biological sciences from a recognized university, with at least a mid-B

average (3.0 grade point average [GPA]) in the final two years of study or over senior-level courses.

Completion Requirements

- **Coursework.** Students must successfully complete a total of **5.0 full-course equivalents (FCEs)** as follows:
    - At least 2.0 FCEs in biomedical engineering courses; these include all BME and joint BME course offerings.
    - At least 1.0 FCE in commercialization and entrepreneurship courses such as BME1800H, BME1801H, BME1802H, and BME1405H. Completion of either BME1800H or BME1801H is required for graduation.
    - A 1.0 FCE *Practical Experience in Applied Research* course in biomedical device development, usually over one session for a full-time placement (BME1899Y) or over three sessions for a part-time placement (BME1898Y). ~~The placement must be in at least one of the following biomedical engineering research fields: 1) Biomaterials, Tissue Engineering and Regenerative Medicine; 2) Engineering in a Clinical Setting; 3) Nanotechnology, Molecular Imaging and Systems Biology; or 4) Neural/Sensory Systems and Rehabilitation.~~ The practical experience course can be taken in academic research and teaching laboratories, government institutions, health-care facilities, in the industry, or in health-care consulting firms.
    - The remaining 1.0 FCE can be two half courses in either biomedical engineering, commercialization and entrepreneurship, or any graduate-level course the student is interested in.
- All courses must be at the graduate level, which includes both 500- and 1000-level. Students can take a maximum of one 500-level course.
- Health and safety training workshops.
- Students have the option of completing an emphasis in Engineering and Globalization; Entrepreneurship, Leadership, Innovation and Technology in Engineering (ELITE); or Forensic Engineering as part of their degree program. Please see details in the Biomedical Engineering Emphases section.

Mode of Delivery: In person
Program Length: 6 sessions full-time (typical registration sequence: FWS-FWS)
Time Limit: 3 years full-time

Biomedical Engineering: Biomedical Engineering PhD

The **Doctor of Philosophy (PhD) program** offers courses and a strong research thesis component. Students emerge from this program ready to pursue careers in academia, medicine, industry, and government. Students with a particular interest in conducting biomedical engineering research with a primary clinical focus may pursue a field in clinical engineering within the Biomedical Engineering PhD program.

Applicants may enter the PhD program via one of three routes: 1) following completion of an appropriate master's degree; 2) transfer from the University of Toronto MASc or MHSc program; or 3) direct entry following completion of an appropriate bachelor's degree.

~~Note: admissions to the PhD fields have been administratively suspended; however, the program remains open to new enrolments.~~

~~Fields: 1) Biomaterials, Tissue Engineering and Regenerative Medicine; 2) Engineering in a Clinical Setting; 3) Nanotechnology, Molecular Imaging and Systems Biology; 4) Neural/Sensory Systems and Rehabilitation~~

Minimum Admission Requirements

- Applicants are admitted under the General Regulations of the School of Graduate Studies. Applicants must also satisfy the institute's additional admission requirements stated below.
- Applicants must have a master's degree in dentistry, engineering, medicine, or one of the physical or biological sciences with an overall average of at least B+ (3.3 grade point average [GPA]) from a recognized university.

Completion Requirements

- **Coursework.** Normally, students must complete **at least 1.0 full-course equivalents (FCEs)** including:
    - Two of the following (1.0 FCE):
        - BME1477H *Biomedical Engineering Project Design and Execution*;
        - BME1478H *Coding for Biomedical Engineers*; or
        - BME1479H *Statistical Discovery Techniques for Biomedical Researchers*.
- ~~Students are also expected to pursue a **thesis topic** relevant to at least one of the following Biomedical Engineering research fields: 1) Biomaterials, Tissue Engineering and Regenerative Medicine; 2) Engineering in a Clinical Setting; 3) Nanotechnology, Molecular Imaging and Systems Biology; and 4) Neural/Sensory Systems and Rehabilitation.~~
- Within 12 months of registration, students must pass a **qualifying examination** covering the broad field of biomedical engineering appropriate to their background.
- Successful completion of a **thesis**, representing an original investigation in biomedical engineering.
- Students will continue to meet with their supervisory committee at least once every 12 months until recommendation for the **departmental oral examination** is made. On the recommendation of the supervisory committee and special approval from their department Graduate Chair or Coordinator, candidates have the opportunity to waive the departmental oral examination and proceed directly to the **Doctoral Final Oral Examination**.
- Students must participate in:

- Either BME1010H or BME1011H *Graduate Seminar* series;
- JDE1000H *Ethics in Research*;
- Health and safety training workshops.

Mode of Delivery: In person
Program Length: 4 years full-time (typical registration sequence: Continuous)
Time Limit: 6 years full-time

PhD Program (Transfer)

Transfer Requirements

- Highly qualified master's students (MHSc students in Clinical Engineering or MASc students in any field) may be considered for transfer into the PhD program in any of the five fields. MASc and MHSc students who transfer to a PhD must fulfil the admission requirements listed under the specific field of the PhD program they are transferring to.

Completion Requirements

Program Requirements for MASc Transfer Students

- **Coursework.** Students who transfer from the MASc program in Biomedical Engineering must complete the total course requirements for both degrees: 2.0 full-course equivalents (FCEs) at the master's level plus 1.0 FCE at the PhD level, for **a total of 3.0 FCEs**:
  - Students must complete two of the following (1.0 FCE):
    - BME1477H *Biomedical Engineering Project Design and Execution*;
    - BME1478H *Coding for Biomedical Engineers*; or
    - BME1479H *Statistical Discovery Techniques for Biomedical Researchers*.
  - Elective courses relevant to the student's area of research (2.0 FCEs)

Program Requirements for MHSc Transfer Students

- **Coursework.** Students who transfer from the MHSc program in Biomedical Engineering must complete the total course requirements for both degrees: 4.0 FCEs at the master's level plus 1.0 FCE at the PhD level, for **a total of 5.0 FCEs**:
  - BME1405H *Clinical Engineering Instrumentation I* and BME1436H *Clinical Engineering Surgery*.
  - Students must complete two of the following (1.0 FCE):
    - BME1477H *Biomedical Engineering Project Design and Execution*;
    - BME1478H *Coding for Biomedical Engineers*; or

        - BME1479H *Statistical Discovery Techniques for Biomedical Researchers*.
    - Two half-course electives relevant to the student's area of research (1.0 FCE).
    - BME4444Y *Practical Experience Course* in health-care facilities, the medical device industry, or health-care consulting firms. The practical experience course must total a minimum of 625 hours.

All PhD Students

- ~~Students are also expected to pursue a **thesis topic** relevant to at least one of the following Biomedical Engineering research fields: 1) Biomaterials, Tissue Engineering and Regenerative Medicine; 2) Engineering in a Clinical Setting; 3) Nanotechnology, Molecular Imaging and Systems Biology; and 4) Neural/Sensory Systems and Rehabilitation.~~
- Within 12 months of registration, students must pass a **qualifying examination** covering the broad field of biomedical engineering appropriate to their background.
- Successful completion of a **thesis**, representing an original investigation in biomedical engineering.
- Students will continue to meet with their supervisory committee at least once every 12 months until recommendation for the **departmental oral examination** is made. On the recommendation of the supervisory committee and special approval from their department Graduate Chair or Coordinator, candidates have the opportunity to waive the departmental oral examination and proceed directly to the **Doctoral Final Oral Examination**.
- Students must participate in:
    - Either BME1010H or BME1011H *Graduate Seminar* series;
    - JDE1000H *Ethics in Research*;
    - Health and safety training workshops.

Mode of Delivery: In person
Program Length: 5 years full-time (typical registration sequence: Continuous)
Time Limit: 7 years full-time

PhD Program (Direct-Entry)

Minimum Admission Requirements

- Applicants are admitted under the General Regulations of the School of Graduate Studies. Applicants must also satisfy the institute's additional admission requirements stated below.
- Direct entry with a bachelor's degree may be considered in exceptional circumstances. Applicants must have an undergraduate degree in dentistry, engineering, medicine, or one of the physical or biological sciences.

Completion Requirements

- **Coursework.** Normally, students must complete **3.0 full-course equivalent (FCE)** including:
    - Two of the following (1.0 FCE):
        - BME1477H *Biomedical Engineering Project Design and Execution*;
        - BME1478H *Coding for Biomedical Engineers*; or
        - BME1479H *Statistical Discovery Techniques for Biomedical Researchers*.
- ~~Students are also expected to pursue a **thesis topic** relevant to at least one of the following Biomedical Engineering research fields: 1) Biomaterials, Tissue Engineering and Regenerative Medicine; 2) Engineering in a Clinical Setting; 3) Nanotechnology, Molecular Imaging and Systems Biology; and 4) Neural/Sensory Systems and Rehabilitation.~~
- Successful completion of a **thesis**, representing an original investigation in biomedical engineering.
- Students will continue to meet with their supervisory committee at least once every 12 months until recommendation for the **departmental oral examination** is made. On the recommendation of the supervisory committee and special approval from their department Graduate Chair or Coordinator, candidates have the opportunity to waive the departmental oral examination and proceed directly to the **Doctoral Final Oral Examination**.
- Students must participate in:
    - Either BME1010H or BME1011H *Graduate Seminar* series;
    - JDE1000H *Ethics in Research*;
    - Health and safety training workshops.

Mode of Delivery: In person
Program Length: 5 years full-time (typical registration sequence: Continuous)
Time Limit: 7 years full-time

~~**Biomedical Engineering: Biomedical Engineering PhD; Field: Clinical Engineering**~~
~~The PhD program offers courses and a strong research thesis component. Students emerge from this program ready to pursue careers in academia, medicine, industry, and government. Students with a particular interest in conducting biomedical engineering research with a primary clinical focus may pursue a field in clinical engineering within the Biomedical Engineering PhD program.~~
~~Applicants may enter the PhD program via one of three routes: 1) following completion of an appropriate master's degree; 2) transfer from the University of Toronto MASc or MHSc program; or 3) direct entry following completion of an appropriate bachelor's degree.~~

Effective January 2021, admissions to this field have been administratively suspended.

Field: Clinical Engineering

Minimum Admission Requirements

PhD Program

- Applicants are admitted under the General Regulations of the School of Graduate Studies. Applicants must also satisfy the institute's additional admission requirements stated below.
- Applicants must have a master's degree in dentistry, engineering, medicine, or one of the physical or biological sciences with an overall average of at least B+ (3.3 grade point average [GPA]) from a recognized university.

Completion Requirements

- **Coursework.** Normally, students must complete **at least 1.0 full-course equivalent (FCE)** including:
  - Two of the following (1.0 FCE):
    - BME1477H *Biomedical Engineering Project Design and Execution*;
    - BME1478H *Coding for Biomedical Engineers*; or
    - BME1479H *Statistical Discovery Techniques for Biomedical Researchers*.
  - If a student does not have a formal degree in clinical engineering, 0.5 FCE from one of the BME clinical engineering courses (BME1405H, BME1436H, BME1439H, or BME4444Y) is required. A student who possesses protracted professional engineering experience (five or more years) will be exempt from this requirement.
- Students must (1) conduct their research in a clinical environment and (2) be co-supervised by both engineering and health science faculty. The primary supervisor must be BME-appointed; however, the co-supervisor could be from a clinical unit other than BME but must be appointed to SGS.
- Within 12 months of registration, students must pass a **qualifying examination** covering the broad field of biomedical engineering appropriate to their background.
- Successful completion of a **thesis**, representing an original investigation in biomedical engineering.
- Students will continue to meet with their supervisory committee at least once every 12 months until recommendation for the **departmental oral examination** is made. On the recommendation of the supervisory committee and special approval from their department Graduate Chair or Coordinator, candidates have

the opportunity to waive the departmental oral examination and proceed directly to the **Doctoral Final Oral Examination**.

- Students must participate in:
  - Either BME1010H or BME1011H *Graduate Seminar* series;
  - JDE1000H *Ethics in Research*;
  - Health and safety training workshops.

Mode of Delivery: In person
Program Length: 4 years full-time (typical registration sequence: Continuous)
Time Limit: 6 years full-time

PhD Program (Transfer)

Transfer Requirements

- Highly qualified master's students (MHSc students in Clinical Engineering or MASc students in any field) may be considered for transfer into the PhD program in any of the five research fields. To be eligible to transfer to the PhD, Clinical Engineering MHSc students must complete 3.0 full-course equivalents (FCEs) within the MHSc curriculum.
- MHSc students who transfer to a PhD in the field of Clinical Engineering must fulfil the PhD program requirements listed below. MHSc students who transfer to the other PhD fields must fulfil the program requirements of the PhD field as described in the applicable section.

Completion Requirements

Program Requirements for MASc Transfer Students

- **Coursework.** Students who transfer from the MASc program in Biomedical Engineering must complete the total course requirements for both degrees: 2.0 full-course equivalents (FCEs) at the master's level plus 1.0 FCE at the PhD level, for **a total of 3.0 FCEs**:
  - Students must complete two of the following (1.0 FCE):
    - BME1477H *Biomedical Engineering Project Design and Execution*;
    - BME1478H *Coding for Biomedical Engineers*; or
    - BME1479H *Statistical Discovery Techniques for Biomedical Researchers*.
  - Elective courses relevant to the student's area of research (2.0 FCE's).
  - If a student does not have a formal degree in clinical engineering, 0.5 FCE from one of the BME clinical engineering courses (BME1405H, BME1436H, BME1439H, or BME4444Y) is required. A student who possess protracted professional engineering experience (five or more years) will be exempt from this requirement.

Program Requirements for MHSc Transfer Students

- **Coursework.** Students who transfer from the MHSc program in Biomedical Engineering must complete the total course requirements for both degrees: 4.0 FCEs at the master's level plus 1.0 FCE at the PhD level, for **a total of 5.0 FCEs**:
  - BME1405 *Clinical Engineering Instrumentation* and BME1436 *Clinical Engineering Surgery*.
  - Students must complete two of the following (1.0 FCE):
    - BME1477H *Biomedical Engineering Project Design and Execution*;
    - BME1478H *Coding for Biomedical Engineers*; or
    - BME1479H *Statistical Discovery Techniques for Biomedical Researchers*.
  - Two half-course electives relevant to the student's area of research (1.0 FCE).
  - BME4444Y *Practical Experience Course* in health-care facilities, the medical device industry, or health-care consulting firms. The practical experience course must total a minimum of 625 hours.

All PhD Students

- Students must (1) conduct their research in a clinical environment and (2) be co-supervised by both engineering and health science faculty. The primary supervisor must be BME-appointed; however, the co-supervisor could be from a clinical unit other than BME but must be appointed to SGS.
- Within 12 months of registration, students must pass a **qualifying examination** covering the broad field of biomedical engineering appropriate to their background.
- Successful completion of a **thesis**, representing an original investigation in biomedical engineering.
- Students will continue to meet with their supervisory committee at least once every 12 months until recommendation for the **departmental oral examination** is made. On the recommendation of the supervisory committee and special approval from their department Graduate Chair or Coordinator, candidates have the opportunity to waive the departmental oral examination and proceed directly to the **Doctoral Final Oral Examination**.
- Students must participate in:
  - Either BME1010H or BME1011H *Graduate Seminar* series;
  - JDE1000H *Ethics in Research*;
  - Health and safety training workshops.

Mode of Delivery: In person
Program Length: 5 years full-time (typical registration sequence: Continuous)
Time Limit: 7 years full-time

PhD Program (Direct-Entry)

Minimum Admission Requirements

- Applicants are admitted under the General Regulations of the School of Graduate Studies. Applicants must also satisfy the institute's additional admission requirements stated below.
- Direct entry with a bachelor's degree may be considered in exceptional cases. Applicants must have an undergraduate degree in dentistry, engineering, medicine, or one of the physical or biological sciences.

Completion Requirements

- **Coursework.** Normally, students must complete **at least 3.0 full-course equivalent (FCE)** including:
  - Two of the following (1.0 FCE):
    - BME1477H *Biomedical Engineering Project Design and Execution*;
    - BME1478H *Coding for Biomedical Engineers*; or
    - BME1479H *Statistical Discovery Techniques for Biomedical Researchers*.
  - Elective courses relevant to the student's area of research (2.0 FCEs).
  - If a student does not have a formal degree in clinical engineering, 0.5 FCE from one of the BME clinical engineering courses (BME1405H, BME1436H, BME1439H, or BME4444Y) is required. A student who possesses protracted professional engineering experience (five or more years) will be exempt from this requirement.
- Students in the Clinical Engineering field must (1) conduct their research in a clinical environment and (2) be co-supervised by both engineering and health science faculty. The primary supervisor must be BME-appointed; however, the co-supervisor could be from a clinical unit other than BME but must be appointed to SGS.
- Within 12 months of registration, students must pass a **qualifying examination** covering the broad field of biomedical engineering appropriate to their background.
- Successful completion of a **thesis**, representing an original investigation in biomedical engineering.
- Students will continue to meet with their supervisory committee at least once every 12 months until recommendation for the **departmental oral examination** is made. On the recommendation of the supervisory committee and special approval from their department Graduate Chair or Coordinator, candidates have the opportunity to waive the departmental oral examination and proceed directly to the **Doctoral Final Oral Examination**.
- Students must participate in:
  - Either BME1010H or BME1011H *Graduate Seminar* series;
  - JDE1000H *Ethics in Research*;

- Health and safety training workshops.

Mode of Delivery: In person
Program Length: 5 years full-time (typical registration sequence: Continuous)
Time Limit: 7 years full-time

UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Report No. 3790

MEMORANDUM

To: Executive Committee of Faculty Council (April 8, 2025)
Faculty Council (April 29, 2025)

From: Professor Julie Audet
Vice-Dean, Graduate Studies

Date: March 26, 2025

Re: Closure of Master of Health Science (MHSc) in Clinical Engineering

REPORT CLASSIFICATION

This is a major policy matter that will be considered by the Executive Committee for endorsing and forwarding to Faculty Council for vote as a regular motion (requiring a simple majority of members present and voting to carry).

BACKGROUND

The Master of Health Science (MHSc) in Clinical Engineering, offered by the Institute of Biomedical Engineering (BME), was created in 1984 with the primary objective of educating engineers on how to better manage an influx of technology into Canada's health care facilities, in a time when that technology was in a field somewhat unprepared to deal with it. The MHSc program focus was centred on the impact of technological resources in modern hospitals, and how they met the specialized requirements of the hospitals, the medical professionals, and the patient problems encountered.

PROPOSED

It is proposed to close the Master of Health Science (MHSc) in Clinical Engineering due to declining program interest in a changing academic landscape and to reduce overlap with BME's existing MASc and MEng programs.

CONSULTATION PROCESS

BME conducted a series of consultations with stakeholders and received consistent support from students, faculty and divisional leadership to close the MHSc program. The deans of BME's partner divisions, the Temerty Faculty of Medicine and the Faculty of Dentistry, also support the closure of the MHSc.

The proposal was approved by the Faculty's Engineering Graduate Education Committee in March 2025.

RECOMMENDATION FOR COUNCIL

THAT the Master of Health Science (MHSc) in Clinical Engineering, as described in Report 3790, be closed effective August 31, 2025.

University of Toronto Proposal

Closure of an Existing Program or Program Structure (Graduate or Undergraduate):

Master of Health Science (MHSc) in Clinical Engineering

Closure proposed:	Master of Health Science (MHSc) in Clinical Engineering
Department/unit if applicable:	Institute of Biomedical Engineering (BME)
Faculty/academic division:	Applied Science & Engineering (FASE)
Department/unit contact:	Prof. Hai-Ling Margaret Cheng, Associate Director, Graduate Studies (BME) Jason Wen, Education Officer (BME)
Faculty/academic division contact:	Prof. Julie Audet, FASE Vice-Dean, Graduate Caroline Ziegler, FASE Governance & Programs Officer
Date admissions administratively suspended:	January 1, 2021
Effective date of full closure of program:	August 31, 2025
Version date:	March 26, 2025

Framework for UTQAP Closures

UTQAP processes support a structured approach for creating, reflecting on, assessing, and developing plans to change and improve academic programs and units in the context of institutional and divisional commitments and priorities.

The University of Toronto (U of T), in its *Statement of Institutional Purpose* (1992), articulates its mission as a commitment "to being an internationally significant research university, with undergraduate, graduate, and professional programs of excellent quality." Thus “quality assurance through assessment of new program proposals and review of academic programs and units in which they reside is a priority for the University…:

> The quality of the scholarship of the faculty, and the degree to which that scholarship is brought to bear in teaching are the foundations of academic excellence. More generally, all of the factors that contribute to collegial and scholarly life —academic and administrative complement, research and scholarly activity, infrastructure, governance, etc.,—bear on the quality of academic programs and the broad educational experience of students. (*Policy for Approval and Review of Academic Programs and Units* (2010))

The University's approach to quality assurance is built on two primary indicators of academic excellence: the quality of the scholarship and research of faculty; and the success with which that scholarship and research is brought to bear on the achievement of Degree Level Expectations.

These indicators are assessed by determining how our scholarship, research and programs compare to those of our international peer institutions and how well our programs meet their Degree Level Expectations.

Program and Program Structure Closure

Proposals for program closures are vehicles of academic change. The University of Toronto views the closing of academic activities as a normal and positive part of quality assurance and program evolution. There are a number of possible reasons for closing a program including low enrolment, a changing disciplinary landscape and poor quality of the academic program. These reasons may be articulated in external review reports or may be identified by members of the University community.

This template (last updated by the Office of the Vice-Provost, Academic Programs on May 16, 2024) aligns with UTQAP requirements and will help to ensure that all evaluation criteria established by the Quality Council are addressed in bringing forward a proposal. Divisions may have additional requirements that should be integrated into the proposal.

Approvals and Governance

Steps	**Dates**
Decanal (Dean or designate) sign-off	January 2025
VPAP sign-off	March 26, 2025
FASE Engineering Graduate Education Committee (EGEC) approval	March 18, 2025
Faculty/Divisional Council approval	April 29, 2025
AP&P (approval of program closures: undergraduate specialists/majors; diplomas)	May 13, 2025
Academic Board (approval of degree, graduate program, joint program closures)	May 29, 2025
Executive Committee of Governing Council (confirms degree, graduate program, joint program closures)	June 12, 2025
Inclusion in annual report to Quality Council	July 2025

1. Executive Summary

- *Provide a brief summary of the closure being proposed.*

This proposal is to close the Master of Health Science (MHSc) program in Clinical Engineering, offered through the Institute of Biomedical Engineering.

In addition to the MHSc, the Institute of Biomedical Engineering (BME) offers a Master of Applied Science (MASc), Doctor of Philosophy (PhD), and Master of Engineering (MEng). The MASc and PhD programs focus on research, while the MEng program is a professional program designed to provide a hands-on/internship component that can be conducted in an industry, a hospital, or a research lab setting. Due to declining program interest in a changing academic landscape, and to reduce overlap with other master's programs, the MHSc program, which has already been administratively suspended since January 2021, will close.

2. Academic Rationale

- *Discuss the academic rationale for the closure including alignment with the unit's academic plan and connection to any previous reviews, including any resource implications.*

The Master of Health Science (MHSc) program in Biomedical Engineering is offered by the Institute of Biomedical Engineering (BME), an Extra-Departmental Unit Type A (EDU:A). The Faculty of Applied Science & Engineering is the lead division of BME and the Faculty of Dentistry and Temerty Faculty Medicine are partner divisions. Created in 1984, the MHSc program had the primary objective of educating engineers on how to better manage an influx of technology into Canada's health care facilities, in a time when that technology was in a field somewhat unprepared to deal with it. The MHSc program focus was centred on the impact of technological resources in modern hospitals, and how they met the specialized requirements of the hospitals, the medical professionals, and the patient problems encountered.

In 2001, BME launched the Master of Applied Science (MASc) and Doctor of Philosophy (PhD) programs to advance BME's curriculum and research themes. In 2017, BME launched the Master of Engineering (MEng) program to meet the growing demand of learners in biomedical devices, commercialization, and entrepreneurship. Several educational aspects of the MHSc program were also blended into the MEng, MASc, and PhD curriculums, which continue to evolve to spearhead the expansion and transformation of biomedical engineering in Canada.

In 2019, the MHSc program underwent a minor modification to align the admission and program requirements internally across all degrees offered at BME, although it was clear that both the interest in and the impact of the MHSc program had diminished over

time. With three additional master's programs concurrently operating at BME, the value of the MHSc program was investigated to ensure educational alignment through a series of consultations with stakeholders. It was concluded that the resources needed to maintain the MHSc program had outpaced its value. Importantly, the clinical engineering field, for which the MHSc program was originally designed, had changed, and would be better served through BME's other existing program offerings.

As part of the 2021 UTQAP review of BME, the reviewers identified that between 2016 and 2020, the MASc and PhD programs offered experienced growth of 45% and 28%, respectively. In contrast, enrolment in the MHSc program decreased significantly (-89%) in the same period. The reviewers felt reflected that students had a stronger interest in the design and engineering of new medical devices rather than the clinical use of existing devices. The Dean's administrative response to the review report confirmed that that the MHSc would close.

3. Impact of Closure on Divisional and Other Programs/Units

- *Discuss the impact on the nature and quality of the division's program of study, including the impact of closure on other units including inter-divisional and inter-institutional agreements/contracts.*

There will be no impact of closure on divisional and other programs/units. The BME MHSc program has been administratively suspended since January 2021.

4. Impact on Students

- *Provide the current enrolment showing breakdown by year of study in the program or option being closed.*

Table 1: Graduate Breakdown

	Year	**Year**	**Year**	**Year**	**Year**	**Year**
	# of students					
Current Master's enrolment	0	0	0	0	0	0

- *Referring to the table above, discuss the impact on and accommodation of any students currently enrolled in the program.*

There is no impact on students. No students have been registered in the MHSc program after 2019, and the BME MHSc program has been administratively suspended since January 2021.

5. Consultation

- *Discuss consultation with affected divisions, units, faculty and students.*

BME conducted a series of consultations with stakeholders and received consistent support from students, faculty, and divisional leadership about closure of the MHSc program. The meetings occurred between 2018 and 2021, and the key takeaways from these meetings were as follows:

Consultation with students

Students were initially consulted in March 2018 to investigate the state of the MHSc program. Relative to other master's programs at BME, MHSc students expressed concerns about several challenges, including a longer program completion time, unequal access to funding, and limited research opportunities. Subsequent student consultations were held in 2021 with both students and alumni, and additional barriers to student success were identified, such as difficulties in securing clinical internships and conflicting demands on student time between research and placement obligations. Alumni also recognized that the clinical engineering field had changed over time and had blended into various aspects of biomedical engineering and thus may be better positioned as a sub-theme of the BME curriculum instead of a separate program. Overall, student consensus was in favour of closing the MHSc program.

Consultation with faculty

BME faculty members were consulted on numerous occasions including at a faculty retreat in May 2019. The faculty body recognized that interest and enrollment in the MHSc program had both declined. Given limited resources, BME would be better served by closing the MHSc program and redirecting resources to other programs. BME faculty members were subsequently notified about the MHSc program suspension in March 2021; faculty members were again consulted, and they reaffirmed their support for the MHSc program closure.

Consultation with Deans

The Deans of the BME partner divisions, the Temerty Faculty of Medicine and Faculty of Dentistry were contacted in August 2021. Dean Houston (Temerty) and Dean Haas (Dentistry) both indicated support for closure of the MHSc program.

Internal program review

In November 2021, a special faculty committee was created to comprehensively review the MHSc program. After consideration of program performance indicators and collective feedback, the committee unanimously recommended the closure of the MHSc program. In a report to Dean Yip (Engineering), the committee cited fundamental weaknesses in the MHSc program (for example, declining interest and recognition of the clinical engineering field) as impetus for closure. Importantly, there was significant overlap between the MHSc program and two other BME master's programs (MASc and

MEng): the once core components of the MHSc program have, over time, integrated and evolved within the MASc and MEng curriculums. Thus, the need to maintain a separate MHSc program had been eliminated, and the unit would be better served by redirecting resources elsewhere.

UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Report No. 3788

MEMORANDUM

To: Executive Committee of Faculty Council (April 8, 2025)
Faculty Council (April 29, 2025)

From: Professor Lisa Romkey
Chair, Engineering Graduate Education Committee

Date: March 28, 2025

Re: Engineering Graduate Education Committee Information Update

REPORT CLASSIFICATION

This is a routine or minor policy matter that will be considered by the Executive Committee for approving and forwarding to Faculty Council to receive for information.

MINOR MODIFICATION

The following modifications to the PhD and MEng programs in Civil & Mineral Engineering were approved by the Engineering Graduate Education Committee.

CHANGE TO AN EXISTING GRADUATE PROGRAM OR EMPHASIS

New Emphasis: Semiconductor Fabrication and Inspection	MEng students in the Departments of Electrical & Computer Engineering, and Materials Science & Engineering can earn an emphasis in the area of Semiconductor Fabrication and Inspection by completing four courses, including a core course (JEM1068) in "Semiconductor Fabrication and Inspection". This new emphasis will provide an unprecedented experiential and interdisciplinary learning environment for semiconductor fabrication and inspection. Hands-on training will be carried out at the Toronto Nanofabrication Centre (TNFC), a Micro/Nanotechnology research and training facility and the Open Center for the Characterisation of Advanced Materials (OCCAM). Students will get a chance to perform deposition, lithography and etching at TNFC's cleanroom and learn to measure the dimensions of the fine patterns formed on semiconductor wafers using OCCAM's state-of-the-art electron microscopes. See Appendix I for further details.

NEW COURSES APPROVED

The following new courses have been approved by the Engineering Graduate Education Committee.

CHE1149: Chemical Engineering Data Organization	Artificial Intelligence (AI) and Data Informed Decision Making (DIDM) rely heavily on data and the use of AI and DIDM is necessary in order to maintain competitiveness. Industry benchmarks indicate that 70-80% of the effort in implementing AI and DIDM is associated with the task of acquiring pertinent data. Organizing and thereby making industrial data easier to acquire would help mitigate the efforts involved. This course introduces the current tools used to address this problem. Students will learn about industry standards, approaches, and data transport protocols. Working both in team and individual environments, these concepts will be applied to real world scenarios.
CIV1287: Construction Virtualization and Analytics	Advanced practices in construction project management are enabled by several fundamental shifts. The course will explore the interplay between two of the most significant shifts. First, smart hardware (from virtual reality to robotics and IoT), which are transforming site technology and construction methods. Second, and probably more importantly, advanced data analytics and the use of machine learning are revolutionizing work processes and decision making. This course creates a co-learning environment for students to explore state of the art in the virtualization and analytics systems in the industry, and to critically analyze the enabling factors and the building blocks behind these two shifts. It will enable students to evaluate the contribution and role of several types of technologies and data systems in virtualization and analytics. The course will provide students with means to compare diverse trends in these two domains, and to synthesize how the interaction between them can create changes to project planning and management and the overall organizational culture. Ultimately, it will provide students with a chance to discover the paradigm shifts in our models (or lack, thereof) of knowledge that underpin advances in these two domains.
CIV1507: Analytics for Transit & Mobility Systems	Transit agencies worldwide witness a growing trend of data abundance and diversity, presenting opportunities to enhance transit system effectiveness but requiring specialized knowledge and experience with analytics for harnessing such data. Transportation agencies and companies overseeing other modes and emerging mobility services face the same challenges. This course provides students with in-depth exposure to emerging data types, sources, and standards for transit and other mobility systems. The course will cover a range of analytics for harnessing diverse data in various planning and management applications. While special focus will be given to transit applications, other mobility modes and services will be considered as appropriate.

JEM1068: Semiconductor Fabrication and Inspection	The course will cover the fabrication process and the inspection techniques of semiconductors. It is an introduction to the fundamentals of micro- and nano-fabrication processes with emphasis on cleanroom practices. It will cover: 1) The physical principles of optical lithography, electron-beam lithography, alternative nanolithography techniques, and thin film deposition and metrology methods; 2) The physical and chemical processes of wet and dry etching; 3) Cleanroom concepts and safety protocols; 4) Sequential micro-fabrication processes involved in the manufacture of microelectronic and photonic devices; 5) Metrology, imaging and characterization of micro- and nano-structures; and 6) Examples of practical existing and emerging micro- and nano-devices. Emphasis will be hands-on learning, and 50 % of the contact hours will lab sessions. Students divided in small groups will use the tools and equipment at the Toronto Nanofabrication Centre (TNFC) and the Open Centre for the Characterization of Advanced Materials (OCCAM).
TEP1701: Navigating Engineering Workplaces	The field of engineering is moving at a rapid pace, driven by advancements in technology, innovation, and global challenges. Coupling in-class learning with practical experience is demonstrated to be an invaluable tool in preparation for a professional career in engineering. In this graduate-level course, the emphasis is on students to gain a comprehensive understanding of engineering workplace strategies before diving into their co-op term, and building a personal legacy on authentic engineering education experiences. Through a combination of lectures, self-paced assignments, and collaborative group discussion, students will engage with their peers to understand course materials (including published literature), explore Canadian workplace contexts, and develop the skillset to conceptually design a narrative of experiential learning.

COURSE MODIFICATIONS

The following courses have had minor modifications approved by the Engineering Graduate Education Committee.

CHE1147: Chemical Data Science and Engineering	Course title change from “Data Mining in Engineering” to “Chemical Data Science and Engineering” to better reflect the contents of the course, and the specificity around Chemical Engineering applications.
CHE1148: Artificial Intelligence for Applied Chemistry and Chemical Engineering	Name change from “Data Process Analytics” to “Artificial Intelligence for Applied Chemistry and Chemical Engineering” to reflect increasing focus on AI.

MIE1076: AI & Robotics II	Remove the prerequisite MIE1075: AI & Robotics I. Courses are complementary but cover different applications, and MIE1076 does not require MIE1075 to be taken first.
MIE1624: Introduction to Data Science, Analytics and Artificial Intelligence	Name change from “Introduction to Data Science and Analytics” to “Introduction to Data Science, Analytics and Artificial Intelligence” to reflect the contents of the course.
MIE1402: Design and Analysis of Experiments	Name change from “Experimental Methods in Human Factors Research” to “Design and Analysis of Experiments.” The use of the term “Human Factors” in the course title is unnecessarily restrictive since the course covers the design and analysis of any experiments.

RECOMMENDATION FOR COUNCIL

For Information.

University of Toronto
Minor Modification Proposal

Change to an Existing Graduate Program or Collaborative Specialization

Creation of Emphasis in Semiconductor Fabrication and Inspection

This template was developed by the Office of the Vice-Provost, Academic Programs and updated on March 6, 2018. It 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 UTQAP.

Program/Collaborative Specialization being modified:	Master of Engineering (MEng) in Electrical and Computer Engineering Master of Engineering (MEng) in Materials Science & Engineering
Graduate unit:	Electrical & Computer Engineering (ECE) Materials Science & Engineering (MSE)
Faculty/academic division:	Applied Science & Engineering
Dean's office contact:	Prof. Julie Audet, Vice-Dean, Graduate Studies
Version date:	March 12, 2025

1. Summary

- *Check box for type(s) of change. Summarize what the change is, including details about any changes to FCEs.*

	Changing admission requirements		Renaming field, concentration or emphasis[1]
	Changing program requirements		Renaming of program or collaborative specialization (please notify VPAP before governance)
	Changing timing of program requirements	**X**	**Creating a new emphasis**
			Changes to programs affecting an MOA

[1] Anything with a changed/new name requires consultation with OVPAP prior to governance; if name change implies significant change to what is being offered or how it is being offered, this may be a major modification or new program.

MEng students in the departments of Electrical & Computer Engineering and Materials Science & Engineering can earn an emphasis in the area of **Semiconductor Fabrication and Inspection** by completing four courses from the lists described in Appendix A.

2. Effective Date of Change

September 1, 2025.

3. Academic Rationale

- *Describe the academic reasons for the change.*

In July 2024, Canadian government launched the $120M FABrIC initiative to secure Canada's future in semiconductors and advanced manufacturing. This five-year FABrIC program will help Canada to expand its semiconductor industry, develop new innovative Made-in-Canada semiconductor-based products. It is forecasted that the industry will require 40,000 well-trained labor force. In responding to the surge of industrial demand, leveraging the strength and world-class facilities of the Open Centre for the Characterization of Advanced Materials (OCCAM) and Toronto Nanofabrication Centre (TNFC), we will set up a new MEng Emphasis in **"Semiconductor Fabrication and Inspection".**

This new emphasis will provide an unprecedented experiential and interdisciplinary learning environment for semiconductor fabrication and inspection. Hands-on training will be carried out at the Toronto Nanofabrication Centre (TNFC), a Micro/ Nanotechnology research and training facility and the Open Center for the Characterisation of Advanced Materials (OCCAM). Students will get a chance to perform deposition, lithography and etching at TNFC's cleanroom and learn to measure the dimensions of the fine patterns formed on semiconductor wafers using OCCAM's state-of-the-art electron microscopes.

4. Impact on Students

- *Outline the expected impact on continuing and incoming students, if any, and how they will be accommodated.*

Students eligible for the emphasis can, at the beginning of their program, enrol the emphasis by requesting the notation on their transcripts to the FASE graduate office.

5. Consultation

- *Describe any consultation undertaken with the students, faculty, Dean and chair/director. Address any major issues discussed.*

Support from Industry

The Emphasis in Semiconductor Fabrication and Inspection has been developed with consultation from the FABrIC program and the CMC Microsystem, with the intention of connecting students to potential careers, and facilitating continuing education for industry practitioners. The CMC is a not-for-profit organization that accelerates research and innovation in advanced technologies including microelectronics, photonics, microelectromechanical systems (MEMS), Internet of Things (IoT), Artificial Intelligence (AI), and quantum software and hardware. To support the development of the Canadian semiconductor industry, the FABrIC has organized the Canadian Semiconductor Symposium in October 2024 in Markham, Ontario. Professors Wai Tung Ng and Jane Howe met with industrial leaders and the representatives of the local businesses and asked for their feedbacks and demand. The curriculum is being designed in close collaboration with the FABrIC and the CMC.

We are in the process of connecting with prospective students from industry. We will invite them to enroll in the new courses. It is estimated that roughly a dozen people will be strongly interested in enrolling the coming academic year.

Consultation with UofT students

A group of six current MEng students in MSE were consulted. They all gave positive feedbacks and expressed enthusiasm in having courses with industry connections, and further curricula on semiconductor fabrication and inspection.

Support from UofT Faculty

Prof. Antonio Liscidini, ECE Associate Chair, Graduate Studies is in favour of creating this new emphasis. Prof. Wai Tung Ng (ECE), Director of Toronto Nanofabrication Centre (TNFC), and Prof. Jane Howe (MSE), Co-Director of the Open Centre for the Characterization of Advanced Materials (OCCAM) and MSE Associate Chair, Graduate Studies, are spearheading its establishment. Prof. Naomi Matsuura, MSE Associate Chair, Research has also been fully supportive.

Prof. Hani Naguib, MSE Chair, and Prof. Deepa Kundur, ECE Chair, have also been consulted. Both are strongly in favour of establishing this new emphasis.

The Faculty's Vice-Dean, Graduate Studies and the Chief Financial Officer were consulted and support the establishment of the emphasis.

6. Resources

- *Describe any resource implications of the change(s) including, but not limited to, faculty complement, space, libraries and enrolment/admissions).*

The MEng students will be asked to declare the emphasis as soon as they enroll into the program. There are minimal resource implications as major increases in enrolment are not expected for any of the eligible courses listed given the significant number of them. A FASE-level administrator with access to ROSI will be responsible for verifying that students from the different participating units have completed the required courses and for adding the emphasis notation on their transcripts. It is intended that resources will be sought for both marketing and development of course material. Prof. Jane Howe intends to continue to oversee and guide the implementation process for at least the first five years of the program's life.

7. Governance Approval

Sign-off by Units	Prof. Antonio Liscidini (ECE) Prof. Jane Howe (MSE)
Sign off by Dean's Office	Prof. Julie Audet, Vice-Dean, Graduate Studies, March 5, 2025
Approval by FASE Engineering Graduate Education Committee (EGEC)	March 13, 2025
Receipt for Information by FASE Council	April 29, 2025

Appendix A: Calendar Entry

Use track changes to indicate where changes have been made.

MEng students must successfully complete **four half courses (2.0 FCE), including** one core course. The remaining coursework may be taken from the following lists.

Core courses (Required)

JEM1068 Semiconductor Fabrication and Inspection. This new course will be taught jointly by ECE and MSE. It is a graduate-level technical course which can be used by M Eng, MASc, and PhD students towards their degree requirements in MSE and ECE. In addition to the lectures of theories, this course will include six bi-weekly 4-hour practical sessions of learning the fabrication process in TNFC and the inspection using OCCAM facility.

Electives - choose at least 3 of the following courses

ECE1398	VLSI Technology
MSE1026	Advanced Electron Microscopy
ECE1395H	Power Semiconductor Devices & Applications
MSE1066	Practical Aspects of Electron Microscopy
MSE1067	Materials Failure
MSE1031	Forensic Engineering
JTC 1135	Applied Surface & Interface Analysis
MSE1061	Engineered Ceramics
MSE1022	Special Topics in Materials Science I: Quantum Transport
MSE1065	Application of Artificial Intelligence in Materials Design
ECE1352	Analog Circuit Design I
ECE1396	Analog Signal Processing Circuits
ECE1336	Semiconductor Physics
ECE1390	Selected Topics in Circuits and Systems: Integrated Circuits for Sensors and Biomedical Devices
ECE1718	Special Topics in Computer Hardware Design: Advanced Computer Architecture
ECE1385	Selected Topics in VLSI Systems: VLSI-based Digital Signal Processing and AI Systems
ECE1777	Computer Methods for Circuit Simulation
ECE1387	CAD for Digital Circuit Synthesis & Layout
ECE1392	Integrated Circuits for Digital Communication

UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Report No. 3786

MEMORANDUM

To: Executive Committee of Faculty Council (April 8, 2025)
Faculty Council (April 29, 2025)

From: Professor Philip Asare
Chair, Inclusivity, Diversity, and Equity Advisory (IDEA) Committee

Date: March 21st, 2025

Re: Report on Activities and Goals of the IDEA Committee

REPORT CLASSIFICATION

This is a routine or minor policy matter that will be considered by the Executive Committee for approving and forwarding to Faculty Council to receive for information.

BACKGROUND

In accordance with Procedures of Committees for Council of the Faculty of Applied Science and Engineering, this report is a summary of some the activities undertaken by the Inclusivity, Diversity, and Equity Advisory (IDEA) Committee over the period starting 2022-2023 to the current academic year. The report also references goals for the rest of the current academic year and for the 2025-2026 academic year, based on the outcomes of these activities. The IDEA Committee transitioned to its current form from the Community Affairs and Gender Issues (CAGI) Committee over the 2019-2020 and 2020-2021 academic years. Since that transition, the committee has been adapting to its new role and has not had the opportunity to report on its activities. The period of reporting spans multiple academic years because the committee felt that it was important to render the work over that period visible to Faculty Council and that the history is important for understanding current activities and future goals.

ACTIVITIES

The report contains an overview of the activities of the committee and details of activities, summarizing the background, committee actions, and outcomes & learnings for each activity.

RECOMMENDATION FOR COUNCIL

For information.

Overview of the Activities of the Committee

Committee Procedures

Meetings and Conducting of Committee Business

The committee typically meets at least 6 times in the year and this year plans to meet 9 times for a total of 13.5 hours of meeting time (meetings are 90 minutes long). The committee typically meets once a month throughout the year except for the months of June, July, and August. In addition to meetings, the committee conducts some business through its Teams site and over email with subsets of members working committee tasks in-between meetings.

Embodying Inclusion in Committee Work

The committee strives to enact the values that are parts of its domain and model inclusive practices that others can adopt. Some of these include

- Since the 2021-2022 academic year when the University transitioned back to primarily in-person operations, conducting most meetings online to give members the most flexibility in joining meetings. This has been helpful particularly in allowing our alumni member to join more often, as well as those with different personal responsibilities that may require them to be off campus during meeting times. The committee tries to have at least two in-person or hybrid meetings during the year (one in the Fall and one in the Winter/Spring). The committee has discussed the option of hybrid meetings and remains open to it but the current preference for majority of the committee is online meetings.
- Adopting Jitsi as its online meeting platform because of its open-source nature and enhanced accessibility for those who use various aids to connect to digital tools.
- Striving to create an environment where the difficult conversations that often arise in EDI can be approached in respectful in productive ways. Two resources that have served as helpful guides are:
    - "Safe Spaces and Brave Spaces: Historical Context and Recommendations for Student Affairs Professionals" by Diana Ali
    - "Inclusive workplace guide" by the Canadian Centre for Diversity and Inclusion / Centre canadien pour la diversité et l'inclusion.

Summary of Activities

The committee has worked on a number of issues in the period of reporting, collaborating with other standing committees and FASE offices as necessary. Key activities highlighted in this report include:

1. Providing input and facilitating consultations on EDI-related matters brought to the attention of the committee using example activities of:

   a. Supporting consultations on the Justice, Equity, Diversity, and Inclusion (JEDI) certificate
   b. Providing input on the Sandford Fleming basement atrium renovation plans (Project No. P009-22-044)
2. Improving accessibility within the Faculty focusing on activities in:
   a. Improving accessibility of the By the Numbers report.
   b. Supporting streamlining of processes with Accommodated Testing Services.
   c. Addressing accessibility in academics and facilities.
   d. Identifying accessibility resources for faculty and staff with disabilities.
3. Understanding how EDI data can help the work of the faculty.
4. Revising the committee's manual to better align with its current work.

The remaining sections of the report provide more information on these activities including background on the issue, committee actions, and outcomes and learnings from the activity. In addition, the goals for the rest of the current academic year and the 2025-2026 academic year are presented at the end of the report.

Providing Input and Facilitating Consultations on EDI-Related Matters Brought to the Attention of the Committee

The committee is sometimes invited to provide input or help facilitate consultation and conversation on EDI-related matters. We highlight two such cases: one from the 2022-2023 academic year and another from the 2023-2024 academic year.

Supporting Consultations on the Justice, Equity, Diversity, and Inclusion (JEDI) Certificate

Background

In early fall of 2022, Mikhail Burke, then Associate Director, Access & Inclusive Pedagogy and Dean's Advisor, Black Inclusivity approached Dionne Aleman, Associate Dean for Cross-Disciplinary Programs about developing a Certificate in Justice, Equity, Diversity, and Inclusion (JEDI). In October 2022, after developing a draft proposal, both reached out to the IDEA committee for input and to help with departmental and office consultations.

Committee Actions

Over the rest of the Fall 2022 term IDEA committee members reached out to members of their departments and offices to solicit feedback on the proposal. The proposal was discussed at the IDEA December 2022 meeting, where committee members provided their perspective in addition to feedback from their departments and offices.

Outcomes & Learnings

IDEA's composition and resulting reach was effective at enabling broad consultations that helped in the revisions to and wide-ranging support for the proposal. The IDEA committee has learned from this and other experiences that its structure and composition (spanning all departments as well as a number administrative offices) is strength for facilitating broad consultations on EDI matters. The proposal was approved at the February 2023 meeting of Faculty Council and the Certificate took effect in September 2023.

Providing input on the Sandford Fleming Basement Atrium Renovation Plans (Project No. P009-22-044)

Background

In October 2023, as part of the planning for the renovation of the Sandford Fleming (SF) Atrium, the planning team put out a survey soliciting input on two design options for the centerpiece for the Sandford Fleming Atrium, commonly known as "The Pit".

In November 2023, the Engineering Equity Diversity and Inclusion Action Group (EEDIAG), brought to the IDEA committee's attention a letter they had drafted in response to the survey highlighting concerns with the way EDI had been considered in the survey design and resulting potential influence on decision-making.

Committee Actions

After discussion as a committee, IDEA also decided to weigh on the planning process itself that may have led to the concerns with the survey, which was just one part of the planning process. IDEA drafted and shared a statement (reproduced below) with the planning team, highlighting important procedure considerations as they relate to EDI. The IDEA Chair and Recording Secretary also participated in a meeting with representatives from EEDIAG and the SF Atrium Renovation planning team to discuss both letters and ways the planning team might be more attentive to EDI, especially in its consideration of accessibility, in light of the university's new Facility Accessibility Design Standard which incorporates universal design principles.

Outcomes & Learnings

IDEA has learned that the letters from the committee and EEDIAG as well as the meeting led to further consultations with members from the groups who are better positioned to provide input on accessibility considerations and requirements. It is our understanding that these people had not been consulted directly by the planning team prior to EEDIAG and IDEA's input to the team.

The experience here did highlight the challenges with consultations around accessibility around identifying groups of people with various disabilities and accessibility requirements to

seek input from. One reason is that information on disability status is private. Another reason is that FASE currently does not have a group (student club or other) organized specifically around this topic that can best represent this community.

For Reference: IDEA Statement to Sandford Fleming Basement Atrium Renovation Project Team (reproduced)

To: Tom Saint-Ivany, Director, Facilities & Infrastructure Planning
Jenny Hung, Capital Projects' Project Manager
CC: Christopher Yip, Dean
From: Philip Asare, Chair, Inclusivity, Diversity, and Equity Advisory (IDEA) Committee
Date: November 30th, 2023
Re: Sandford Fleming Basement Atrium Renovation Project

The IDEA Committee appreciates the Faculty's approach in Sandford Fleming Basement Atrium Renovation in soliciting broad input on the two design options produced through the survey sent out in October 2023. However, the committee felt the need to weigh in separately as the Standing Committee of Faculty Council focused on EDI, to provide important perspective on how the renovation process can align with the faculty's EDI values, particularly in this case where the choices affect accessibility, and its related issue of including and belonging.

The Chair and Vice Chair of the committee were made aware of the letter from the Engineering Equity Diversity and Inclusion Action Group (EEDIAG) responding to the October survey. IDEA is grateful to EEDIAG for putting together a thoughtful response to both the proposed design options and the approach to soliciting input through the survey that is leading to important dialogue about the renovation as it relates to EDI.

The EEDIAG letter raises important points and questions about how we ensure that the process and outcomes of this decision align with the Faculty's EDI values. IDEA would like to build on the points raised by EEDIAG to highlight the following points that need to be addressed.

- <u>EDI-aligned guiding principles</u>
  The Faculty's statement on Shared Values of Diversity, Inclusion and Professionalism states that "[o]ur vision is that the school looks, feels and acts inclusive, equitable and professional" and that "we are taking actions to create a place, a climate and a culture … to let everyone bring forward their best selves." It was not clear in the communication in October that accompanied the survey how these had been enacted in the whole renovation process. For EDI values to have impact, they must be made

explicit and connected to the processes and actions that enact them. How did our EDI values play a role in the process that led to the two design options? How do those options embody these values?

- Identifying and ensuring diversity of voices consulted
  Related to the previous point, it is not clear how the project team is tracking and ensuring that a broad range of voices are being consulted. The EEDIAG letter pointed out that no other diversity identifiers were asked of survey respondents beyond gender. In addition, it is not clear if particular community groups were specifically consulted (e.g. University's Accessibility Awareness Club, Accessibility Services). Beyond the need for critically considering accessibility needs as pointed out in the EEDIAG letter, it is also important to consider the kind of cultural environment the physical space configuration creates and how this enables those from traditionally marginalized groups to feel truly included in the space.

- Transparency in process and decision-making
  The two previous points imply a need for transparency in this process so that constituents can be assured that the process and design outcome align with the faculty's EDI values. First, the survey only focused on what is currently the Pit part of the Atrium, even though the document presenting the Pit design options mentioned that the renovation is for the whole Atrium including "the Food Court's tables & seating, the washrooms, the adjacent seating & corridor spaces, ventilation & electrical systems". It would be helpful for the whole community to understand what the current thoughts for those pieces are so any that are improving the inclusivity and accessibility of the larger Atrium can be acknowledged, and any gaps related to EDI can be identified. For example, IDEA has been made aware that all-gender restrooms are part of the current plan, which is laudable.

  Second, it would be helpful for the renovation team when seeking input from the larger community to provide background summarizing the process up to that point, the guiding principles, the range of voices consulted, the factors considered in any decision making, and the rationale for specific set of information being presented for the community for input. It would also be important to include in that summary how these relate to the faculty's EDI goals. A similar report out once final design has been produced would also be helpful.

- Follow up to assess whether space goals are met
  While broad consultation and input from a diversity of voices can improve the potential of the space to be more inclusive and accessible, it is not a guarantee that these goals will be met. Though not part of the current design phase, it is important in the longer term for the Faculty to have a plan that assesses the space once it is open and in use,

to understand if the intended goals are being met, including EDI goals of having a diversity of people access and use the space.

The IDEA committee echoes EEDIAGs comment that "this space can send a clear message to our community that we are committed to backing up our statements of equity and inclusion with clear action". In addition, the committee sees this renovation process as an opportunity to work on how we incorporate EDI considerations into our decision-making processes in a way that can inform similar future endeavors. The committee recognizes that the project team has spent some time and effort on the design process already, but hopes the team would consider adjustments to this process as they move forward to better align with Faculty's EDI goals.

Improving Accessibility Within the Faculty

Since 2022-2023 academic year, accessibility has been a recurring theme in issues brought to the attention of the committee. Our student members, an engaged and active group within the committee, have taken leadership on this particular issue, regularly soliciting input from the student community and bringing reports to IDEA on student concerns. Below are four key areas of accessibility that IDEA has discussed and began to act on in collaboration with relevant standing committees and FASE offices.

Improving Accessibility of the By The Numbers Report

Background

By The Numbers is the Faculty's annual accounting of progress toward the goals outlined in our Academic Plan. Through 140 figures, charts, graphs and tables, we monitor the size and diversity of our student body, our ability to attract research funding from a wide range of sources, the honours and awards earned by our community members and much more.

The *By The Numbers* report is augmented with the Impact Report, which tells the story of the past year through photos, videos and narrative prose. Both reports are typically released in September, as the new school year begins, and cover a one-year reporting period.

Until 2022, both reports were printed on paper and posted online in PDF format.

In the February 2023 IDEA Committee meeting, a member of the committee identified that there were some accessibility issues with the report that was only in PDF format. After further discussion, the committee decided to refer the matter to Engineering Strategic Communications (StratComm).

Committee Actions

One of the staff representatives on the committee was a staff member in StratComm so they volunteered to lead the conversation with StratComm about potential changes to the formatting of the report to make it more accessible to those who use various aids to read the report.

In the April 2023 meeting, the committee got an update from StratComm that they had been in communication with the university's Accessibility for Ontarians With Disabilities Act (AODA) Office to seek input on ways to move forward with making the report more accessible. They noted that the conversation was productive and provided them with thoughts and learnings for working on new ways to format the report. There was also discussion within the committee where members shared their own experience with documents and accessibility as well as support from the AODA Office on this topic.

Outcomes & Learnings

Starting with the 2023 report, StratComm switched to an HTML (web-based) format for the report that included accessibility features such as text descriptions of figures. StratComm also committed to sharing the learnings from this process: The team presented on the transition to the more accessible format to the faculty's Engineering Communicators Network, as well as more widely across the university at a U of T Communications Lunch and Learn session. Accessibility and AODA guidelines are available in the website handbook on the Faculty & Staff Hub (intranet). The StratComm team, as well as U of T's AODA office, are available for consultation on projects related to producing accessible documents.

This experience showed how IDEA, under its domain of "EDI in member experience", can work with administrative offices on changes to procedures. In this particular case, we worked to ensure that all members of the Faculty can meaningfully access information put out by the Faculty. This accessibility of information allows members to engage in conversations relevant to the information contained in these reports.

Supporting Streamlining of Processes with Accommodated Testing Services

Background

In March 2023, a student member of the committee brought to our attention issues that had been reported to them about student experiences with Accommodated Testing Services (ATS). This included poor communication with ATS by instructors on details of authorized aids. It also included issues with student bookings with ATS being cancelled when advisors or the First Year Office move the student to a different section of the same course, or to an equivalent course. These problems have led to stress right before the test or exam in trying to resolve the issue or, in the case of test aids, placing the student at a disadvantage because they are not

allowed to use aids that their peers who are not taking the exam with ATS are allowed access to.

Committee Actions

In the meetings that followed, the committee discussed the issues and how best the committee could help. In addition, the committee invited the Engineering On-Location Accessibility Advisor from Accessibility Services (a different office from ATS) to provide some perspective on what can be done to better support students who have accommodated testing requirements. As a result of the discussion, the Faculty Registrar volunteered to connect with ATS to understand their process better and address the technical issues leading to bookings being cancelled when students switch sections. The Registrar also forwarded the report from the student member to the Undergraduate Assessment Committee (UAC) to help with the authorized aids issue. The Assistant Dean for Diversity Inclusion and Professionalism (DIP) (ex-officio member of the IDEA committee) brought the issue to the attention of the Dean and Vice Dean, Undergraduate.

Outcomes & Learnings

While conversations with ATS and UAC are ongoing, there has been some progress made on improving the experience.

- As a result of the information provided by the student member, the Undergraduate Assessment Committee updated exam type C and created 3 subtypes (see also report to FC) to allow instructors to better articulate their approved format for aid sheets and to ensure consistency between students writing in the standard exam room and those writing with ATS.
- A cover sheet template, developed by the Registrar's Office, is now shared with instructors each term to ensure better consistency with regards to permitted aids.
- The Registrar's Office has had a number of conversations with ATS to better understand how their processes work and identify areas for improvement.
- In October 2023, Krysta Halliwell, Engineering On-Location Accessibility Advisor, and Emma Davidson, Manager at Accommodated Testing Services, spoke to Faculty Council about Accessibility Services, Accommodated Testing Supports and the role that instructors play.
- In Fall 2024, the Engineering Computing Facility (ECF) worked with the Registrar's Office and ATS to make use of a ECF lab for a number of the accommodated sittings for a computer lab exam; this ensured a more consistent experience for students writing their computer lab exam with ECF. It is expected that this will be a model for other exams going forward.

In communication with ATS, it is clear that the process for students to schedule their tests, quizzes and mid-terms can still be onerous and involves back and forth with ATS and instructors to ensure that everything is properly set up. Exam scheduling has been simplified for students, but still requires considerable work between ATS and instructors to ensure accommodations are in place ahead of the exam. The Registrar's Office (RO) works with ATS during the exam period, but has no responsibility for mid-terms. The role of instructors is very important in successful administration of tests with ATS.

Instructors have raised concerns about communications on test or exam day when they need to communicate with students writing in other locations (e.g. errors found on exam papers). Instructors are encouraged to e-mail ATS, but the RO has flagged that this continues to be a challenge.

The Registrar's Office is in regular communication with ATS and has made it clear that we (FASE) are willing to work with them on new initiatives and have Faculty members who have signaled willingness to support pilot projects. The IDEA committee continues to be committed to supporting the RO, UAC, and other relevant entities within FASE in this work.

Addressing Accessibility in Academics and Facilities

Background

We mentioned the specific on-going efforts to streamline processes with Accommodated Testing Services above. In addition, the following concerns have also been raised

- Content delivery in lectures
- Student participation in tutorials
- Student participation in group or team-based work
- Student participation in courses that require hands-on work with equipment and components.

Also, the accessibility of facilities in terms of entrances, navigating buildings, and ability to use various spaces impacts the experience of members of the Faculty (students, faculty, and staff).

Committee Actions

In light of these concerns, the IDEA committee is forming two working groups to partner with relevant standing committees to address issues using a short-term, medium-term, and long-term framework. One group will focus on accessibility and academics, and the other will focus on accessibility and facilities. We recognize that there are issues that overlap between the two focus areas (e.g. lab facilities where hands-on work in courses take place) and will encourage the groups to collaborate on these areas of overlap.

The short-term goals would be to work with relevant administrative offices to identify and implement (temporary) stop-gap measures that can alleviate some of the negative impacts of these issues, while longer-term structural changes are developed and incorporated into policies and procedures going forward. To reach the long-term goals, medium term goals are focused on developing and piloting policy and procedure ideas to learn what might work and to refine these ideas before formal policy and procedure changes that apply broadly are proposed.

Conversations with other committees about the working groups will begin shortly, but the preliminary topics of focus for each group that IDEA has identified are presented below.

Table 1. Short-Term and Medium / Long-Term topics for Accessibility and Academics Working Group

Timeline	**Topics**
Short-Term	• Logistics and practices in working with Accommodated Testing Services (ATS)
Medium / Long-Term	• Timing of quizzes and lead times for setting up of high stakes assessments • Timing and logistics of implementations of accommodations, especially accommodations that must be in place at the start of the term. • Supporting students with accessibility requirements in courses with significant hands-on work expectations • Accessibility of lecture delivery • Accessibility of course content and materials • Accessibility of digital tools used by the Faculty for academic work

Table 2. Short-Term and Medium / Long-Term topics for Accessibility and Facilities Working Group

Timeline	**Topics**
Short-Term	• Identification of and conversations with relevant points of contact in facilities to engage on pressing issues with out-of-order accessible entrances.
Medium / Long-Term	• Engage with Master Plan team and other decision makers on better frameworks for ensuring that facilities enhance student experience, especially those with accessibility needs.

Outcomes & Learnings

We hope to report on some of these in the 2025-2026 governance cycle.

Identifying Accessibility Resources for Faculty and Staff with Disabilities

Background

This conversation is in preliminary stages, but it has been brought to IDEA's attention that some faculty and staff members have difficulty with the specific computational tools required for use for academic duties (e.g., uploading marks) which creates difficulties in performing their duties. In general, many of the conversations on accessibility tend to be student-focused, so there is a need to be inclusive to also be responsive to accessibility requirements raised by faculty and staff.

Committee Actions

IDEA has begun consultations with stakeholders and identifying relevant points of contacts to get a better understanding of the situation and potential paths forward. We will be reaching out to the relevant committees and administrative offices as conversations progress.

Outcomes & Learnings

We hope to report on some of our findings in the 2025-2026 governance cycle.

Understanding How EDI Data Can Help the Work of the Faculty

Background

In the 2022-2023 governance cycle, the IDEA Committee Chair heard questions raised by faculty, student, and staff members of the committee on the extent to which EDI data is collected about the Faculty and how could this data could help guide the work of the IDEA committee, other standing committees, the larger Faculty Council, and departments and offices.

Committee Actions

The committee took two main actions. First, we spoke with data experts within FASE to learn more about the current EDI-data landscape at the University. We then formed a working group to investigate the topic further.

Consultation with Experts

The first expert was Goeff Wichert, the Faculty's Senior Reporting & Budget Analyst who shared his experience collecting and reporting on EDI data within the Faculty as well as his understanding of the data collection and governance landscape across the University. The committee also spoke with members the Engineering Equity Diversity and Inclusion Action Group (EEDIAG), Mikhail Burke and Professor Micah Stickel, about community conversations EEDIAG had organized on what EDI-related information could be helpful to know. Both were

involved in the development of the Engineering Applicant Census, and Professor Stickel was involved in the development of the University-wide Student Equity Census. In addition, the committee has the Assistant Dean, Diversity, Inclusion and Professionalism, Marisa Sterling, as a member, who shared the evolving EDI-data collection and data access plans across the University.

Formation of EDI Data Working Group

IDEA agreed to form a working group to assemble a list of all available EDI data sources owned by FASE and various offices across the University and detail how members of IDEA and the Faculty might be able to access this data. The key excerpts of working group terms of reference are below:

1. Examining the state [of] data collection and reporting within the Faculty of Applied Science and Engineering (FASE) and "external" to FASE but about FASE constituents (or relevant to FASE EDI efforts) that is EDI focused or could be linked to EDI indicators to create EDI-focused insights.
2. Consulting with the Faculty community to understand and collate the various EDI data needs.
3. Investigate existing EDI data collection and governance best practices and propose a framework for the Faculty.
4. Report on progress and learnings annually to Faculty Council (through the IDEA committee) and as necessary to relevant groups within larger EDI data collection and management ecosystem at the University.

The working group's initial term was from July 1, 2024 to June 30, 2025. The work done so far has focused on item 1 in the terms of reference list above. In particular, the working group

- Compiled a (continually updated) list of University-managed, FASE-managed, and external EDI data sources potentially relevant to FASE that includes key information about the dataset including (but not limited to):
    - Purpose of data collection
    - EDI-related and non-EDI-related indicators and information collected,
    - who manages the data,
    - what population that data is focused on (undergraduate students, graduate students, or staff)
    - Information on public dissemination of the data through
    - How accessible is the data for analysis by FASE
- Met with the University's Division of Student Life on surveys they steward including the student equity census and other survey about student experience to better understand those dataset and possible access to the datasets for local analysis by FASE
- Is working with Strategic Communications on ways to communicate within FASE how to navigate finding applicable data sources

Outcomes & Learnings

The working group plans to submit its first report to the IDEA committee in May and then for presentation at the October 2025 meeting of Faculty Council. However, these are some preliminary findings of the working group:

Data Sources About FASE Constituents

The working group has identified a little over 30 data sources that are relevant to FASE. Of those, about 20 are data collected primarily about FASE constituents or about members of the university of which FASE constituents would be a subset. These include:

- 12 that collect undergraduate student data
- 7 that collect graduate student data
- 3 that collect staff and faculty employee data,
- 7 data sources are owned/managed by FASE and 11 data sources are owned/managed by others across the University.
- 10 are collected annually and 8 are collected biannually or less frequently

Types and Frequency of Data & Data Governance

- Types of data collected is demographic, student/staff experience
- Data is collected on a variety of timelines from annually to every few years
- Data is collected within FASE, by offices throughout the University and through national surveys, and these data owners decide what access is available to the data summaries

Emerging Gaps in EDI Data Coverage

- Lack of intersectionality in datasets: While individual demographic factors are assessed, few datasets comprehensively analyze overlapping identities (e.g., race & disability, gender & socioeconomic status)
- Limited longitudinal tracking: Most surveys capture snapshots rather than tracking changes over time
- Gaps in staff/faculty EDI data: Few datasets focus on workplace equity within UofT versus student experience.
- Community experience & retention data: While student diversity is measured, data on long-term retention, graduation outcomes, and post-graduation equity issues are less prominent.

Emerging Overall Observations

- Opportunity for centralized accessibility: Current EDI data sources exist in separate silos without a centralized platform for stakeholders. However, Student Life, for example, is moving towards a model where demographic indicators are not asked on

each survey but are linked through the Student Equity Census to limit demographic question fatigue.

- Opportunity to expand engagement: Summary communications could be designed to provide targeted equity insights for departments and external stakeholders (e.g., employers) that could benefit from them
- Consideration of survey transparency: Some datasets are less public than others, making it difficult to access and assess for completeness and usefulness or for advocacy or working towards EDI-related goals.
- Limited action-based communications: Most communication focuses on data sharing, but could go beyond that to analyses to substantiate taking EDI-related actions and to guide those actions.

Revising Committee Manual to Better Align with Current Work

Background

As mentioned previously the IDEA committee evolved from the Community Affairs and Gender Issues (CAGI) committee with new domain focused more broadly on EDI. This transition started in the 2019-2020 cycle and was partially completed in the 2020-2021 cycle. While the new domain and membership structure were resolved, the duties were not resolved. The last update to the CAGI manual was in 2011 and there have been no updates to the duties of the committee since so IDEA continues to operate under the CAGI manual, interpreting its duties for the current context.

After two years learning from working on various issues (some highlighted in this report), in the 2023-2024 cycle the committee updated its duties.

Committee Actions

As part of updating its duties, the committee reviewed its past work, its mode of operation, and its current understanding of the state of EDI work within the Faculty. The committee then had a series of robust discussions about how to best approach its duties and sought to develop a succinct set of duties as well as leadership and transition structures that supported its current work, with the understanding that as the state of EDI within the Faculty evolved, the duties of the committee would be updated to reflect the new state and its implications for the work of the committee.

Outcomes & Learnings

The committee identified the following points that guided the development of its proposed duties:

- The committee needed to be more proactive in identifying opportunities for committee action and lean more into its reporting and policy and procedure recommendation functions as a standing committee.
    - The committee tended to operate in a more reactionary fashion. While it was important to continue to provide avenues for matters to be brought to the committee's attention to act on, it was important to also be forward looking.
    - In addition, the committee recognized that some of its work cuts across governing cycles and needed structures to ensure continuity of work and retaining institutional memory.
- A key role the committee can play is facilitating/supporting on-going EDI work (e.g. supporting work the faculty has already committed to and is working towards or helping to identify new goals) by creating synergies and foregrounding common challenges.
    - Part of this is due to IDEA committee structure and membership which positions it to do integrative work with administrative partners such as the Assistant Dean for Diversity Inclusion and Professionalism, the various Vice Deans, and heads of offices who are ex-officio members of the committee.
    - The committee has identified some of these areas of collaboration and for creating synergies in previous sections.
- Situational awareness is important in the work of the committee and there are challenges the committee has with situational awareness.
    - One challenge we have realized as we have worked on some of these matters is that not all our members are positioned advantageously within their departments (and not all departments have EDI working groups), so IDEA's situational awareness about happenings within the faculty related to EDI is limited.
    - Situational awareness is important to the committee's work because a better across-the-faculty view of EDI work and challenges helps create better synergies (e.g., through "spreading" information, best practices, and successes not widely known) and foregrounding common challenges as part of IDEA's identified key role as facilitators of on-going EDI work.

Leadership and Transition Structures

To address the issue of continuity of work and institutional memory, the committee has approved these updates to is procedures (following advice mentioned in the Procedures for Committees of Council on the preferred terms for Chairs and Vice Chairs)

- The Chair shall serve a two-year term
- The Vice-Chair shall serve a two-year team

- The terms of the Chair and Vice-Chair shall be staggered. Should the current Vice-Chair, become the Chair, then next Vice Chair shall serve only a 1-year term to ensure terms are staggered appropriately.
- No more than half of voting members with 3-year terms should turn over in any given year.

The last point about turnover is meant to be a guide and does not have to be met exactly.

Duties

One way the committee identified it can play the role of facilitator is by acting as guide, gathering and reflecting information back to the FASE community and working on policy and procedure recommendations based on insights from this information gathering. With this current focus, the committee approved the following duties:

6.1 Policy Duties

- In collaboration with other standing committees and relevant entities within FASE, develop policies, procedures, frameworks that ensure that EDI considerations are central to the Faculty's mode of operation including decision-making. This includes holding the Faculty accountable to the collection of data and reporting on the status of EDI within the faculty (along multiple dimensions), and to integration of insights from data in decision making.
- Where necessary, be the consultative body in matters relating to EDI that arise within the Faculty (in standing committees or other entities).
- Where relevant, be one of the representatives for FASE at the university level in matters relating to EDI

6.2 Recurring Duties (Routine, Administrative).

None, currently

6.3 Reporting and Coordinating Duties

- Identify community needs and request/collect from the Faculty, on an annual basis (by the end of each Winter term), EDIA data and reports, and make bi-annual recommendations to Faculty Council, latest by the second meeting of the Fall term of academic year recommendations are made, on actions to take based on insights from data (along its multiple dimensions). To achieve these duties, IDEA will:
    - Collaborate with the Diversity Inclusion and Professionalism (DIP) Office to facilitate the collection and reporting on EDIA Reconciliation and a climate of belonging through surveys of faculty, staff, librarians, students and postdoctoral fellows at or near the end of each academic year.

- Facilitate the annual tracking and public progress reporting in the Faculty's Annual Report on EDIA initiatives and reports, including the Eagle's Longhouse Blueprint for Action and the Striving for Black Inclusivity Report.

We would like to note that the Faculty conducted a survey on climate of belonging in 2019 as a baseline and is yet to conduct a follow-up survey as comparison to understand how various EDIA and Reconciliation initiatives are affecting this indicator.

In addition, we would like to note that Faculty already tracks at a coarse level in the By the Numbers Report progress relative to recommendations in the Eagle's Longhouse Blueprint for Action (Figure 3.14 in By the Numbers) and Striving Towards Black Inclusivity (Figure 3.15 in By the Numbers). The committee recognizes that these are not the only areas of EDIA the Faculty needs to track and to support, but they are the areas that have the most concrete recommendations and are useful starting points for concrete action and learning to develop frameworks that can be adopted and adapted for other areas.

Status of Manual Revision

As approved in the Procedures for Committees of Council in 2021, and quoted when presenting recent committee manual updates "revisions to standing committee manuals no longer require approval of Council. Instead, they are approved by the relevant committee and the Speaker of Council, and are reported to Council for information." The committee has approved the changes above and forwarded the proposed changes to the Secretary of the Faculty to forward to the Speaker for review at the end of the 2023-24 governance cycle in June 2024. The changes are currently under review and IDEA is in conversation with the Speaker to clarify some of the duties as part of the process for approval.

Goals for the Committee 2024-2025 and 2025-2026

Given the information presented above, the committee has the following goals for the rest of the 2024-2025 governance cycle and for the 2025-2026 governance cycle:

- Continue to develop better situational awareness of EDI work and challenges within the faculty through consultations with constituents at the individual as well as standing committee, departmental, and office levels.
- Based on the developed situational awareness identify initial areas of focus on policy and procedure recommendations for Faculty Council approval.
- Collaborate with relevant standing committees and offices (e.g. UAC and TMRC) to launch Accessibility working groups and begin work on short-term goals.
- Continue work on EDI Data Working group and issue first report in the first meeting of the 2025-2026 governance cycle.