



**Meeting of Faculty Council**  
**Monday, April 15, 2024 from 12:10-2:30 pm**  
**Michael E. Charles Council Chamber (GB202) and Zoom**

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**AGENDA**

1. **Speaker's Welcome and Approval of Agenda** N Yan  
*For approval as a regular motion*
2. **Adoption of Minutes of Previous Meeting** N Yan  
*For approval as a regular motion*
3. **Memorial Tribute (to be distributed)** R Farnood  
*Jane Philips (ChemE)*
4. **Report of the Dean** C Yip  
*For information/discussion*
5. **Major Curriculum Changes, 2024-2025 (Report 3764)** E Bentz  
*For approval as a regular motion*
6. **Information Reports**  
*For receipt for information*
  - a. **Engineering Graduate Education Committee Update (Report 3766)** L Romkey
  - b. **Undergraduate Assessment Committee Update for 2023-2024 (Report 3765)** A Chan
7. **Other Business**
8. **Service Presentations**
  - a. **Retiring Professors** N Yan  
*Murray Grabinsky (CivMin), Michael Stumm (ECE) – in absentia*
  - b. **Outgoing Academic Administrator** C Yip  
*Tom Coyle (Vice-Dean, Undergraduate)*
  - c. **50 Year Work Anniversary** R Farnood  
*Michael Sefton (ChemE)*
  - d. **Teaching Assistant Awards** C Yip  
*Kate Allison (EngSci), Katia Ossetchkina (CivMin)*
9. **Discussion Item: FASE Facility Master Plan Update** H MacLean,  
A Vaz  
*For information/discussion*
10. **Date of Next Meeting** N Yan
11. **Adjournment** N Yan



**Minutes of the Faculty Council Meeting of February 27, 2024**  
**Michael E. Charles Council Chamber, Galbraith Building and Online**

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**MEMBERS:** Ning Yan (Interim Speaker), Chris Yip (Dean), Dionne Aleman, Cristina Amon, Brohath Amrithraj, Philipp Asare, Julie Audet, Mohammed Basheer, Chris Beck, Irina Belaya, Evan Bentz, Shlomo Bibas, David Boroto, Helen Bright, Markus Bussmann, Ron Chiong, Alan Chong, Will Cluett, Shai Cohen, Tom Coyle, Stark Draper, Matthew Du, Natalie Enright Jerger, Ade Fakolade, Ramin Farnood, Aleksandra Fomina, Adam Fox, Diane Giang, Leslie Grife, Sarah Haines, Marianne Hatzopoulou, Angela Henshilwood, Jenny Hill, Ken Hilton, Jane Howe, Hamed Ibrahim, Sepehr Javidan, Charles Jia, Parker Johnston, Julie Kang, Dawn Kilkenny, Donald Kirk, Deepa Kundur, Maggie Laidlaw, Freeman Lan, Anna Limanni, Antonio Liscidini, Qin Liu, Jess MacInnis, Allison MacKay, Heather MacLean, Caitlin Maikawa, Sam Mantenuto, Katy Mezei, Kasra Modares, Erika Narimatsu, Milos Popovic, Madhi Ramesh, Jonathan Rocheleau, Lisa Romkey, Matthew Roorda, Cindy Rottmann, Philipp Seiler, Peter Serles, Arianna Skirzynska, Theodore Soong, David Steinman, Marisa Sterling, Ajay Talbot, Hamid Timorabadi, John Walker, Elizabeth Whitmell, Edmond Young, Elena Yijia Zhu, Yu Zou

**SECRETARIAT:** Silvia Delgado, Rocky Petinakis, Alex Schroen, Caroline Ziegler (Secretary)

**GUESTS:** Olenka Baron, Sharon Brown, Leanne Dawkins, Sonia De Buglio, Roger Francis, Shilpa Gantotti, Sania Hameed, Selena Li, Teresa Miniaci, Don Newton, Asma Pathan, Dan Pettigrew, Adham Ragab, Zeeshan Rayees, Tess Seip, Lisa Simpson, Alex Tichine, Adriano Vissa, Geoff Wichert, Nefeteria Wickham

### **1. Speaker's Welcome and Approval of Agenda**

Interim Council Speaker Ning Yan called the third Faculty Council meeting of 2023-2024 to order at 12:10 pm and welcomed all present. The Dean and Secretariat introduced themselves. 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 13. There was no discussion and on a regular motion duly moved, seconded and carried, the agenda was approved.

### **2. Introduction of New Faculty Member**

Marianne Hatzopoulou, chair of the Department of Civil & Mineral Engineering, introduced her new faculty member, Hamed Ibrahim.

### **3. Adoption of the Minutes of Previous Meetings**

No errors or omissions were noted in the minutes of the December 7, 2023 Council meeting and on a regular motion duly moved, seconded and carried, the minutes were approved.

### **4. Memorial Tributes**

#### **(a) Donald Mackay**

Ramin Farnood, chair of Department of Chemical Engineering & Applied Chemistry, read the following memorial tribute in honour of Professor Emeritus Donald Mackay.

Be it resolved –

THAT the Council of the Faculty of Applied Science & Engineering record with deep regret the death on October 20, 2023 of Professor Emeritus Donald Mackay.

Professor Mackay grew up in Glasgow, Scotland, and entered Chemical Engineering at the Royal Technical College in Glasgow in 1954, graduating with a BSc in 1958 and PhD in 1961. He and his wife Ness met in Toronto when he started what would become an almost 30-year working career at the Department of Chemical Engineering & Applied Chemistry here at the University of Toronto — first working as a postdoctoral fellow with Professor Olev Trass and eventually earning his appointment as Professor in 1967.

In the early stages of his career, he spent many summers conducting research on the behaviour and remediation of oil spills in the Arctic. Some of these experiences were later reflected in his hobby of soapstone carving. His later research focused on developing a better understanding and representation of the environmental behaviour of toxic substances.

Through the course of his illustrious career, Professor Mackay authored numerous books and over 650 scientific research papers. He developed the fugacity-based "Mackay Models," which provided valuable insight into the behaviour of chemicals in the natural environment, as well as a framework for understanding their transport and degradation. These models are still used to help guide regulatory and environmental policy decisions worldwide.

In 1995, he left U of T to pursue the role of Founding Director of the Canadian Environmental Modelling Centre at Trent University in Peterborough. In 2001, he was the first Canadian recipient of the prestigious Honda Prize for his work on eco-technology. He received the title of Professor Emeritus in 2002 from both U of T and Trent. In 2003, he was appointed Officer of the Order of Canada, followed by the Order of Ontario a year later.

Throughout his life, Professor Mackay was relentlessly curious and had a passion for both nature and travel. He had the good fortune to have explored many regions of the world, from pole to pole. He was a beloved teacher, colleague, mentor and friend who is remembered for his wonderful sense of humour and ability to distill complex concepts into memorable lessons. His

research has left a tremendous legacy within our Faculty and Department, and his work has undoubtedly made the world a safer and cleaner place for all.

Be it further resolved –

THAT this tribute to Professor Emeritus Donald Mackay 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) Kenneth Carless (K.C.) Smith**

Deepa Kundur, chair of The Edward S. Rogers Sr. Department of Electrical & Computer Engineering, read the following memorial tribute in honour of Professor Emeritus Kenneth Carless (K.C.) Smith.

Be it resolved –

THAT the Council of the Faculty of Applied Science & Engineering record with deep regret the death on October 29, 2023 of Professor Kenneth Carless Smith.

Professor Kenneth Carless Smith — known to friends and colleagues as “K.C.” — was born in Toronto in 1932. He is survived by his wife and life partner of 40 years, Laura Chizuko Fujino, sons Kenneth David Smith and Kevin Anthony Smith, both alumni of U of T Engineering, and granddaughter Sophia Moore Smith.

After graduating from Lawrence Park Collegiate in 1950, Professor Smith joined the Engineering Physics program (now known as Engineering Science). Upon graduation he embarked on an MSc and later a PhD, both from the University of Toronto.

Professor Smith joined U of T’s Department of Electrical Engineering, now The Edward S. Rogers Sr. Department of Electrical & Computer Engineering (ECE), as an Assistant Professor in 1960 before leaving for the University of Illinois where he became an Associate Professor.

At the University of Illinois, he was a member of the design team and later chief engineer of the Illiac II and Illiac III computers. Here, Professor Smith recognized that with the need to design complex transistor circuits, heavily physics-based models were too cumbersome. In response to this challenge Professor Smith developed simple and intuitive transistor models that could be used in the rapid design of complex circuits.

When he returned to U of T, where he reached the rank of Full Professor, Professor Smith used these simple models and design approaches in a highly innovative course on digital circuit design. This course was taught to generations of graduate students, helping to position ECE at U of T as an international leader in circuit design. Professor Smith notably co-invented, along with Professor Adel Sedra — K.C.’s former graduate student — the current conveyor: a groundbreaking circuit component akin to an operational amplifier.

In 1982 with Professor Sedra, he coauthored a seminal textbook called Microelectronic Circuits. Better known as Sedra/Smith, this book established a new way for teaching electronic circuits to undergraduate engineering students. Sedra/Smith has been translated into ten languages and is currently in its eighth edition. With more than one million copies in print, it remains the most widely used textbook on the subject.

“K.C. was well known for his eloquent and insightful speech. I specifically recall an occasion where he held forth on the multiple levels of abstraction in electrical engineering. He described how we connect and traverse a vast knowledge hierarchy, spanning from quantum mechanics in transistors to the complexities of global communication networks. It profoundly impacted and inspired me as a young engineer. I continue to draw on that idea in my teaching and research.” said Professor Tony Chan Carusone, who co-authored the 8th edition of Sedra/Smith in 2020.

Professor Smith’s gift of simplifying the abstract, as well as his articulacy and ability to make connections, served him well in his research and teaching as well as in various administrative roles both in the University and through his professional organizations. He served as Chair of ECE from 1976 to 1981 and was the Chair of the Engineering Science Advisory Board from 2012 until his passing. “K.C. brought not just his insightful perspectives, but also a generous spirit that uplifted us all,” said Professor Deepa Kundur, who served as Chair of Engineering Science from 2017 to 2019 and currently serves as Chair of ECE, “His dedication to EngSci and ECE was unwavering and wisdom profound.” After he retired, he remained actively involved with both the University of Toronto and the International Solid-State Circuits Conference (ISSCC).

At ISSCC meetings, “K.C. would always listen to all sides on any debate, recognize the pros and cons in everyone’s arguments, then come back with the most convincing argument that all sides would agree on. This was a true characteristic of K.C.,” said Professor Ali Sheikholeslami.

It would be difficult to find a person with a larger or longer lasting presence and impact in the ECE department and in the IEEE Solid-State Circuits community than Professor Smith. “He was an engineer’s engineer, a circuit designer par excellence, and a man with deep insights, simply expressed,” said Professor Safwat Zaky.

Be it further resolved –

THAT this tribute to Professor K.C. Smith 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 Mackay and Smith.

## **5. Report of the Dean**

Dean Chris Yip welcomed all to Council and provided the following remarks.

### **(a) Provincial Budget and Financial Constraints**

The provincial budget was announced yesterday. It provides colleges and universities with \$1.3B over three years. This leaves us in a position of financial constraint, particularly when considering the tuition freeze over the next three years, constraint on domestic enrolment by the university, and the study permit freeze that limits international students.

Our departments and institutes are preparing their budgets for the next fiscal year. Fortunately, our application numbers are the highest ever and our international numbers remain strong, over 3,000 or so. Student desire to attend UofT Engineering bodes well for the overall demand for our programs and our ability to maintain a revenue stream that will flow into our programs. We can maintain this at both undergraduate and graduate levels as we do not want to be in a position where we have to reduce any courses or supports needed by our students.

A provincial working group has been struck to ensure universities are working to increase graduate student stipends. The Provost and a working group of deans are examining how the funding of graduate students is done across the university in order to support our graduate students.

### **(b) Dean's Travels in Asia**

Recent travels in Asia allowed the Dean to connect with a number of alumni. Engagement, especially around PEY opportunities, was strong in Shanghai. A meeting of the Global Engineering Deans Council in Hong Kong had only three deans from Canada attending (U of T, UBC and York) and two from the US. Despite the geopolitics, we will continue to support our many strong exchange programs with China. There were also many opportunities percolating with Taiwan involving Partnerships.

### **(c) Undergraduate Student Activities**

The Iron Ring ceremony is on March 3. This is a wonderful event and a major milestone for students. Those on campus on Sunday are encouraged to join in the celebrations.

Skule Night 2T4 is on March 13-16. Students have been working hard rehearsing and all are encouraged to participate.

The Speaker thanked the Dean for his presentation. There was no discussion.

## **6. Business Arising**

Edmond Young, associate chair, undergraduate curriculum in the Department of Mechanical & Industrial Engineering, updated Council on the MIE curriculum as discussed at the December 7 Council meeting where a member raised concerns about some of the proposed changes.

The department is moving MIE504 – Applied Computational Fluid Dynamics from 4W to 4F, and will be monitoring the enrollment of Fall courses next year to determine whether a Fall course will need to be moved to the Winter to accommodate this change. The mechanical engineering program is undergoing a larger curriculum review at the moment, and technical electives may be moved around to improve continuity between courses, which is the overarching goal.

CSC373 – Algorithm Design, Analysis & Complexity is being added as an exclusion to MIE245 – Data Structures and Algorithms. This issue stemmed from a misperception around what an exclusion means. Some understood that exclusions are bidirectional, and that if MIE245 is going to exclude CSC373, then MIE should engage with CSC and ensure that CSC also excludes MIE245 from CSC373. However, the Registrar’s Office provided definitions for “exclusion” and “equivalency”, which have subtle but important differences. Exclusions, in fact, do not need to be bidirectional, and each unit has the authority to declare another course as an exclusion without the other unit declaring the exclusion in the other direction.

The MIE department has asked the Registrar’s Office to add an official definition of what exclusions and prerequisites do in the engineering academic calendar to avoid similar misunderstandings in the future.

There was no discussion.

The following items were endorsed by the Executive Committee of Council at its February 5 meeting and are recommended for Council’s approval by regular motion, requiring a simple majority of members present and voting to carry.

## **7. Certificate in Electric Vehicle Design**

Dionne Aleman, associate dean, Cross-Disciplinary Programs, presented Report 3755 Revised, a proposal for a Certificate in Electric Vehicle Design. In recent years, electric vehicles (EVs) have become viable and popular alternatives to traditional internal combustion engines for passenger vehicles, commercial applications and other motorized equipment. Engineering is well positioned to advance EV technology, and the certificate may encourage students to explore careers or graduate programs in this area.

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

THAT the Certificate in Electric Vehicle Design be approved, effective September 2024, as described in Report 3755 Revised.

Members discussed the potential overlap between the proposed EV Design certificate and the Robotics & Mechatronics minor, as courses can only be counted twice. Students may have to decide between the two offerings.

Plans to create a minor in EV design in the future were discussed. Progress largely depends on securing lab space in electrical engineering. The minor will provide opportunities for specializations, such as in solid mechanics.

The motion was carried.

### **8. Major Curriculum Changes, 2024-2025**

Evan Bentz, chair of the Undergraduate Curriculum Committee (UCC), presented Report 3761, proposed changes to the curriculum in chemical engineering and in cross-disciplinary programs. Curriculum changes were also brought forward at the previous Council meeting in December. We are coming up to the CEAB snapshot year, so all departments are looking at their courses carefully.

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

THAT the proposed curriculum changes for the 2024-2025 academic year, as described in Report 3761, be approved.

Members discussed whether students would need to overload APS380 – Introduction to Electric Vehicle Design, and if it should be added as a minor elective; however, MIE is holding further curriculum changes while it conducts an overall review of its mechanical engineering curriculum.

The motion was carried.

### **9. Proposed Dates for the 2024-2025 Summer Session**

Evan Bentz, chair of the Undergraduate Curriculum Committee (UCC), presented Report 3760. Council has historically approved sessional dates for Fall and Winter terms but has recently adopted the standard sessional dates set by Simcoe Hall. It is, however, still required to approve our summer sessional dates.

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

THAT the summer session dates for the 2024-2025 academic year be approved as described in Report 3760.

Members discussed the conflict between FAS exams and the last day of classes in FASE. This has historically been true for fall and winter terms as well as summer, and although we do our best to facilitate FAS students, we cannot control their schedules.

The motion was carried.



## **10. Information Report**

The following item was approved by the Executive Committee of Council at its February 5 meeting and is recommended for Council's information.

### **(a) Engineering Graduate Education Committee Update**

Lisa Romkey, chair of the Engineering Graduate Education Committee, presented Report 3762, new BME and CIV courses approved, and minor modifications adding the aerospace MASc and PhD programs to the Collaborative Specialization in Psychology, Psychiatry and Engineering (PsychEng), and renaming the MEng Emphasis in Analytics as the Emphasis in Data Analytics and Machine Learning.

Professor Romkey also mentioned the SGS practice of removing courses that have been inactive for more than five years. Graduate programs were encouraged to contact SGS for their list of such courses for review.

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

## **11. Other Business**

Regarding a possible strike on Monday, it was confirmed that the university has contingency plans in place and that at this point students should plan to attend regularly scheduled classes and tutorials.

It was mentioned that there will be a second Iron Ring ceremony on Wednesday for students requesting religious accommodations, as March 3 coincides with a religious holiday for some.

## **12. Discussion Item: ECC/PEY Update**

The Speaker mentioned the EngSoc request to convert the ECC/PEY Advisory Committee (ECC AC) to a standing committee of Council, stating that the decision was for it to remain advisory. The Advisory Committee has been restructured to expand student representation and increased meeting frequency from 2-3 meetings each academic year.

Tom Coyle, vice-dean, undergraduate, and Roger Francis, executive director, Engineering Career & Experiential Learning, updated Council on the Faculty's Professional Experience Year Co-op Program. Mr. Francis reviewed the PEY Co-op roadmap, and discussed student enrolment as of January 15, 2024, as well as PEY Co-op registrations and work terms since 2019-2020. He reviewed statistics on employer and job postings by discipline, business development outreach, and other activities at the Engineering Career Centre such as collaborations with the Engineering Society, FASE graduate programming, Tri-Campus Partnership, Experiential Learning Commons, and cross-division support with UTM.

During discussions, a member asked about an Engineering Science statistic on the presentation slides: on slide 6, there are 237 EngSci students listed as being registered in a 2023-2024 work

term, while on slide 7, there is only one EngSci student listed in 2024-2025 work term progress. Mr. Francis was unsure why there was such a disparity in numbers and will discuss this with the Council member after the meeting.

Reminding Council that this is the last year of the former PEY structure, a member asked what students should do if they want to enrol in their second year instead of first year. They can sign up for the co-op until the beginning of winter term in second year because first year is not tightly programmed and focuses on peer advice and networking.

Members discussed supports for students who are under stress because they cannot get a work term earlier in the year due to a variety of circumstances. They are encouraged to book one-on-one appointments with staff to discuss their concerns. ECC/PEY engages with companies to try to bring in jobs, and new postings may come up over the course of the year. Also, some employers will wait until the Winter term to hold interviews. Finally, ECC/PEY is moving to a new database to filter jobs so students do not have to comb through so many. They are also ramping up business procurement because of the current job situation.

Mr. Francis confirmed that ECC/PEY tracks the number of postings-to-student ratio. They are committed to two postings per student and the current average is 4.8 postings per student. The MIN program has a 20:1 ratio. They have statistics that they can share with Council. Members were concerned with the disparity of postings relative to students in different programs. For example, the ratio for mechanical engineering students seems low in comparison to other programs, such as electrical and computer engineering. ECC/PEY is ultimately interested in having as many jobs as possible, but they are trying to make postings more consistent across programs. Their initial strategy is to “raise the floor” for programs with the lowest number of postings and they are adding more resources, such as another business development staff member.

ECC/PEY is working with the vice-dean, graduate studies to develop similar programs for graduate students. This includes leveraging relationships with existing employers to determine if any are interested in extending opportunities to graduate students. It is expected that additional details will emerge over the next two years.

Members discussed whether the current PEY program is achieving results that match the funding increase announced five years ago. Fees have always been a primary consideration. The ECC/PEY fee baseline was set at \$3,600, which placed us in the middle of the pack in Ontario, aligned with Metropolitan Toronto University and somewhat lower than competition such as York University. They try to set a base point efficiently and the value for students is the number and value of jobs. ECC/PEY conducts mid-term checks with employers to ensure the second half of students' co-ops are successful and it continues to work on other initiatives regarding value for money. Regarding transparency, it was mentioned that a draft breakdown of fees was presented at an ECC AC meeting last fall. A Council member asked when the final breakdown will be shared with students. Mr. Francis said that the report needs to be tweaked but that sharing this information is a high priority.

A member requested that statistics regarding job availability be broken down by industry as well as by student disciplines and recommended using StatsCan industry codes. Mr. Francis responded that in terms of industry breakdown, all jobs are available to all students and that when employers indicate disciplines, it is information for ECC/PEY. They categorize jobs based on the North American Industry Classification System (NAICS), and how LinkedIn breaks them down. They are moving to another database which will help students filter jobs based on industry instead of academic discipline.

The ECC/PEY no longer holds career fairs, instead leaving this to student initiatives like the very successful You're Next Career Network (YNCN), one of two engineering events.

### **13. Date of Next Meeting**

The next Faculty Council meeting is on April 15, 2024.

### **14. Adjournment**

The meeting was adjourned at 1:48 pm.

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**UNIVERSITY OF TORONTO**  
**FACULTY OF APPLIED SCIENCE & ENGINEERING**

**Report No. 3764**

**MEMORANDUM**

**To:** Executive Committee of Faculty Council (March 26, 2024)  
Faculty Council (April 15, 2024)

**From:** Professor Evan Bentz  
Chair, Undergraduate Curriculum Committee

**Date:** March 12, 2024

**Re:** **Major Curriculum Changes for the 2024-2025 Academic Year**

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**REPORT CLASSIFICATION**

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

**BACKGROUND**

The Undergraduate Curriculum Committee is tasked with managing the curriculum change process for the Faculty.

**PROPOSED**

This report summarizes course changes proposed for the 2024-2025 academic year.

**CONSULTATION PROCESS**

These changes have been reviewed and approved by the Undergraduate Curriculum Committee, which is comprised of teaching staff representatives from the Faculty's departments and institutes; undergraduate student representatives; the Vice-Dean, Undergraduate; the Vice-Dean, First Year; the Director, First Year Curriculum; the Associate Dean, Cross-Disciplinary Programs; the Assistant Dean and Director, Diversity, Inclusion and Professionalism; and the Faculty Registrar. The Committee meets regularly to review and approve proposed changes to the undergraduate curriculum. The impact of these changes on students in the relevant programs has been considered.

**RECOMMENDATION FOR COUNCIL**

THAT the proposed curriculum changes for the 2024-2025 academic year, as described in Report 3764, be approved.

## PROPOSED CURRICULUM CHANGES

### 1. CHEMICAL ENGINEERING & APPLIED CHEMISTRY

1.1. Update AU distribution to 100% NS for the following technical elective courses:

**CHM415: Atmospheric Chemistry**

**CHM416: Separation Science**

**CHM456: Organic Materials Chemistry**

**CHM457: Introduction to Polymer Chemistry**

**FOR310: Bioenergy from Sustainable Forest Management**

**HMB201: Introduction to Fundamental Genetics and its Applications**

**IMM250: The Immune System and Infectious Disease**

**MGY377: Microbiology I: Bacteria**

**PCL201: Introduction to Pharmacology and Pharmacokinetic Principles**

**PCL302: Pharmacodynamic Principles**

**PSL300: Human Physiology I**

Note: These courses are listed as technical electives for chemical engineering students in the calendar. They are offered by the Faculty of Arts & Science (FAS)

- *In the Faculty's AU database, some of these courses have no AU breakdown, some are 100% NS, and some have different amounts of ES, NS and CS. Given that FASE has no control over the content of these courses, it is recommended that we set all 11 courses to 100% NS.*

1.2 Update course credit value for **CHE403: Professional Practice**

CURRENT course weight: 0.00

PROPOSED course weight: 0.15

- *This will bring CHE403 in line with the course weight for CHE191. Both are seminar courses, and both are CR/NCR. Because the weight is zero for CHE403, many students do not take this course seriously. Having the course zero weight is sending the wrong message to our students, given that the course covers the legal and ethical responsibility an engineer owes to an employer, a client and the public with particular emphasis on environmental issues.*

1.3 Remove **CHE470: Special Topics in Chemical Engineering** from calendar

- *This course has not been offered for a very long time and never had a specific syllabus. It was created many years ago to give instructors the opportunity to deliver material not found in other electives.*

**1.4 Remove CHE408: Data Analytics for Prediction, Control, and Optimization of Chemical Processes** from calendar

- *This course has never been offered because of significant overlap with CHE507: Data-based Modelling for Prediction and Control.*



**UNIVERSITY OF TORONTO**  
**FACULTY OF APPLIED SCIENCE & ENGINEERING**

**Report No. 3766**

**MEMORANDUM**

**To:** Executive Committee of Faculty Council (March 26, 2024)  
 Faculty Council (April 15, 2024)

**From:** Professor Lisa Romkey  
 Chair, Engineering Graduate Education Committee (EGEC)

**Date:** March 12, 2024

**Re:** **Engineering Graduate Education Committee Update**

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**REPORT CLASSIFICATION**

This is a routine or minor policy matter that has been approved by the Engineering Graduate Education Committee (EGEC). It will be considered by the Executive Committee for approval and forwarding to Faculty Council for information.

**NEW COURSES APPROVED**

<p><b>MIE1135</b></p>	<p><b>Thermal Phenomena, Performance and Management of Electric Vehicles:</b>          This course describes the thermal phenomena in Electric Vehicles (EVs), including the primary cooling/heating circuits associated with the power train, cabin, and battery. The major focus is on thermal performance and thermal management of batteries, power electronics and electric motors, and it also includes thermal issues related to cabin electronic systems. Emphasis is on Lithium-ion batteries (LIB), which are expected to continue to be the most widely used battery for EVs in the next decade. This course will cover LIB cells and their fundamentals; principles of operation; electrochemical and heat transfer formulation, modelling and simulation; thermal-related effects on LIB performance and longevity, including aging, degradation, safety, and thermal runaway; thermal modelling of EV system- and component-level, LIB, electric drivetrain, cabin, and fast charger. Students in this course are expected to have a basic understanding of electrochemistry terminologies and undergraduate-level fundamental knowledge of fluid mechanics, thermodynamics, heat transfer and numerical methods.</p>
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<b>AER1404</b>	<b>Aerospace Materials:</b> This course focuses on materials used under extreme conditions for aerospace applications, mainly high-temperature materials (e.g. Ni-based superalloys), coating systems (especially thermal and environmental barrier coating systems), and lightweight materials (e.g. Al, Ti, and composites). These material systems for extreme conditions are compared to standard materials, which are already familiar to the students. The focus will be on materials for turbines, (reusable) rocket engines, and structural components for aerospace structures. For these applications, material selection is discussed, manufacturing routines are highlighted, and the understanding of fundamental material behaviour is deepened. In detail, creep mechanisms, diffusion, oxidation, high-temperature corrosion, failure mechanisms, and thermal stability of the microstructure are covered in this course.
<b>CIV1323</b>	<b>Pathways to Net-Zero Greenhouse Gas Emissions:</b> Faced with climate change and the necessity to reduce and ultimately eliminate human-generated GHG emissions, society must now drive the action mandated via the net-zero policies enacted by governments worldwide. This overarching goal can however only be implemented via individual sector policies that reflect the technical, economic and political realities of the day. Further, such actions can only take place and be effective once the impacted natural climate and biogenic systems are understood. This course will provide an overview of climate science before examining the technical, economic and political realities of potential climate change interventions across six major climate sectors. These range from energy to industry to farming and forestry. Students will apply this knowledge both via individual study efforts and by a group project tasked with setting a pathway to net zero for a chosen country.
<b>CIV1231</b>	<b>Indoor Air Quality – Moisture, Microbes and Materials:</b> We spend most of our time indoors exposed to a variety of organic and inorganic compounds. Accounting for and minimizing potentially harmful exposures is critical to indoor air quality. Through this course, students will gain new knowledge in the field of indoor air quality and develop skills to engineer solutions to create healthy, sustainable and equitable indoor environments. Focus will be given to moisture transport through materials, water activity, impact of moisture on organic indoor contaminants such as bioaerosols, and methodologies to prevent, remediate and monitor indoor mould growth. Further, this course will investigate tools, such as next-generation sequencing and bioinformatics, used to characterize indoor microbiomes and bioaerosols. Interest will also be given to issues in indoor environmental quality specifically in Indigenous housing as well as low-socioeconomic communities in Canada. Through a course project, students will engineer a solution using resources and skills developed throughout the course for a particular issue of interest in indoor air quality.



**RECOMMENDATION FOR FACULTY COUNCIL**

For information.



**UNIVERSITY OF TORONTO**  
**FACULTY OF APPLIED SCIENCE & ENGINEERING**

**Report No. 3765**

**MEMORANDUM**

**To:** Executive Committee of Faculty Council (March 26, 2024)  
Faculty Council (April 15, 2024)

**From:** Professor Arthur Chan  
Chair, Undergraduate Assessment Committee

**Date:** March 12, 2024

**Re:** **Undergraduate Assessment Committee Update for the 2023-2024 Academic Year**

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**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 brief summary of the activities undertaken by the Undergraduate Assessment Committee (UAC) during the current academic year.

**ACTIVITIES**

From August 2023 to March 2024, UAC has met approximately 22 times, for a total of approximately 30–35 hours of meeting time. For most of each academic semester, UAC meets regularly to discuss policies and review full committee petitions on a bi-weekly basis, with the exception of end-of-term petition and grade review meetings. In addition, UAC maintains an active Teams site, which includes regular discussion and e-voting for certain time-sensitive matters. UAC members also spend time outside of meetings to develop new policy proposals and communications to the Faculty. Undergraduate advisors have also met numerous times outside of UAC to review petitions prior to UAC meetings. A more detailed accounting of key UAC activities is described in the sections below.

**RECOMMENDATION FOR FACULTY COUNCIL**

For information.

### ***Faculty Grading Practices***

At the end of each term, UAC reviews undergraduate course grades for consistency and fairness across the Faculty and communicates with instructors about any concerns (see Report 3868 for more information about Faculty norms). For courses where grades fall outside of Faculty norms, departmental representatives work with course instructors to follow Faculty grading practices.

The committee also reviews proposed Composition of Final Marks (COFM) for all undergraduate courses, and adjudicates requests for deviations from the Faculty Grading Policies (Academic Regulations, Section XI). As a snapshot: in Winter 2024, approximately 80 out of 260 course codes deviated from the standard COFM, generally by exceeding 50% weight on not closely supervised work and/or by having no final exam. Sixty-two of these courses have either automatic or pre-existing exemptions from Faculty COFM rules – primarily design, seminar and laboratory courses. A majority of the COFM exemption requests were approved. UAC strongly encourages course instructors to discuss with their departmental curriculum committees and undergraduate associate chairs to ensure the proposed COFM exemptions are consistent with curriculum design.

### ***Policy Discussions***

Throughout the current academic year, UAC has discussed a number of policy items related to:

- Deferred Exams
- Composition of Final Marks (e.g., for design courses)
- Clarification of various existing Academic Regulations, including updates to Faculty approved calculator type
- Accommodations for participation in extra-curricular activities (e.g., Blue Sky Solar Racing, Skule Nite)

As relevant, policy proposals related to these topics have been / will be presented to Faculty Council.

### ***Petitions***

Adjudicating petitions for special consideration and for final exams constitutes a majority of the committee meeting time. Straightforward petitions are reviewed and accommodated in separate meetings of the undergraduate academic advisors. In complex cases, including any that may impact a student's academic standing, petitions are reviewed by the full committee. On occasion, especially during the end-of-term review period, petitions are reviewed by sub-committees. Note that Term Work Petitions are generally evaluated at the departmental level by academic advisors, and policies for these term work petitions are occasionally discussed and decided on by UAC. Term Work Petitions are seen by UAC only in the event of a dispute.

As noted in a previous UAC report (Report 3745), there has been a large increase in the number of petitions compared to historical averages. During the COVID pandemic (until September 2023), self-declaration of illness without verification of illness (i.e., medical documentation) was sufficient for medically related absences. A large increase of all types of petitions was observed, and this increase persisted even after the return to in-person learning. Anecdotally (such as through communications with other university registrars), such increase has also been observed in other Faculties and universities, pointing to a shift in cultural norms around accommodations.

At the beginning of this academic year in September 2023, the Faculty returned to the accommodation policy in place immediately before Winter 2020. Undergraduate students are able to file one term-work petition per term without documentation (i.e., self-declare their own illness) for a period of three days for assignments worth less than 15%. Verification of illness is required for final exam petitions. We have seen a general decline in all types of petitions after the return to this policy, with more notable declines in final exam and special considerations petitions. The number of petitions remains somewhat higher than immediately prior to the pandemic (e.g. there were 238 final exam petitions in 2023F, compared to about 160 in an average fall semester between 2016 and 2019). It remains to be seen if this downward trend will continue. It should be noted that the Faculty opted out of the University's ACORN declaration tool, which would allow for a period of up to a week with no limit on the weight of the assignment.

So far, in the 2023-2024 academic year, approximately 70% of requests for Special Consideration were deemed valid and received some type of accommodation. Approximately 82% of final exam petitions received were deemed valid. Valid petitions received some type of accommodation, most often either an assessed mark or deferred exam. Decisions for deferred exams are not taken lightly: while a student's demonstrating mastery of the material is always the top priority, considerations around instructors' time and effort to create additional exams are also taken into account.

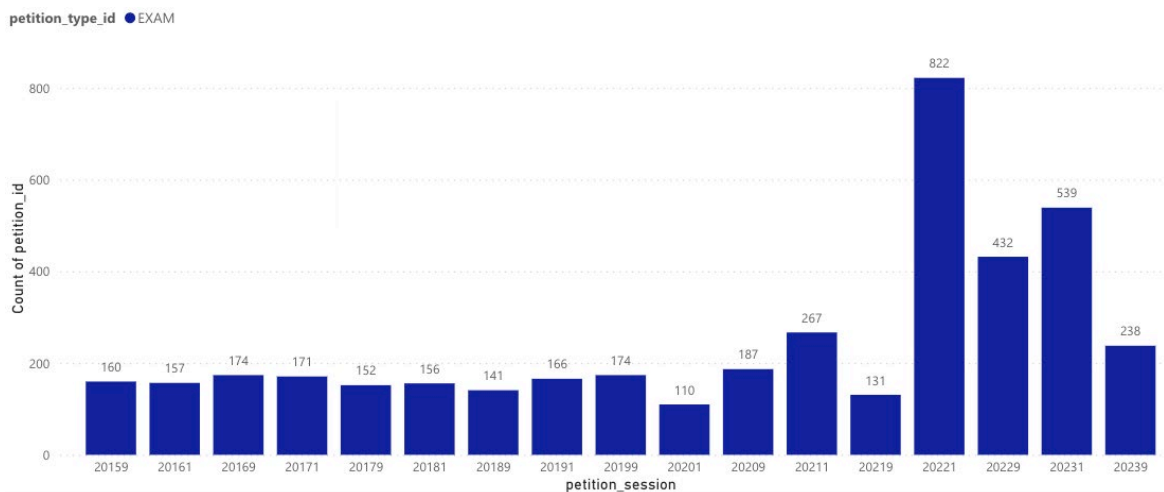


Figure 1. Petitions for Final Exams (e.g., missed exam, illness during exam). As of March 11, 2024.

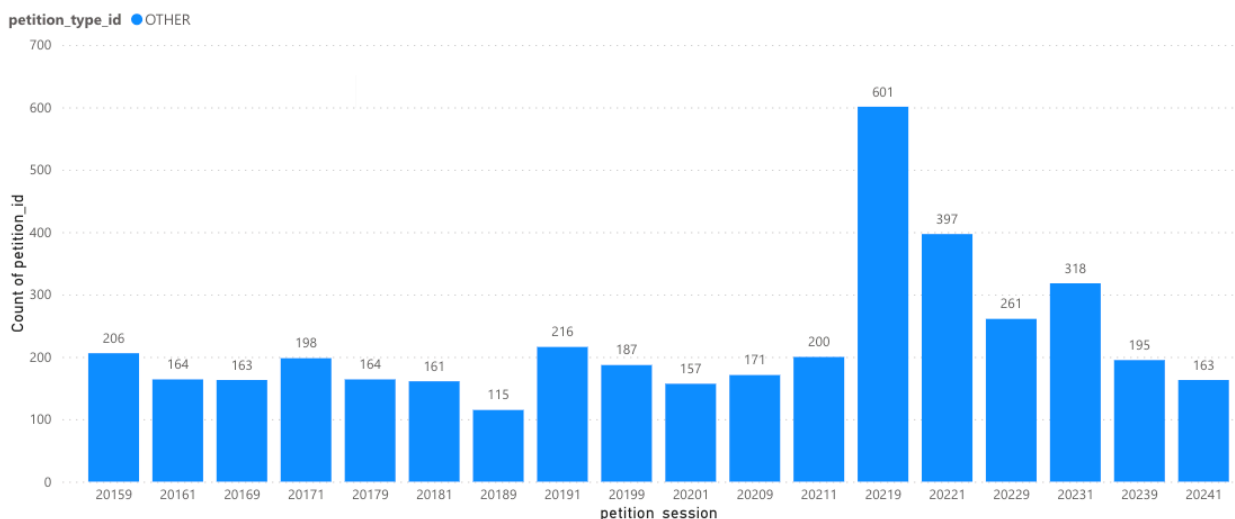


Figure 2. Petitions for Special Consideration. (e.g., retroactive withdrawals, probation relief, relaxation of nine-year rule for graduation). As of March 11, 2024.

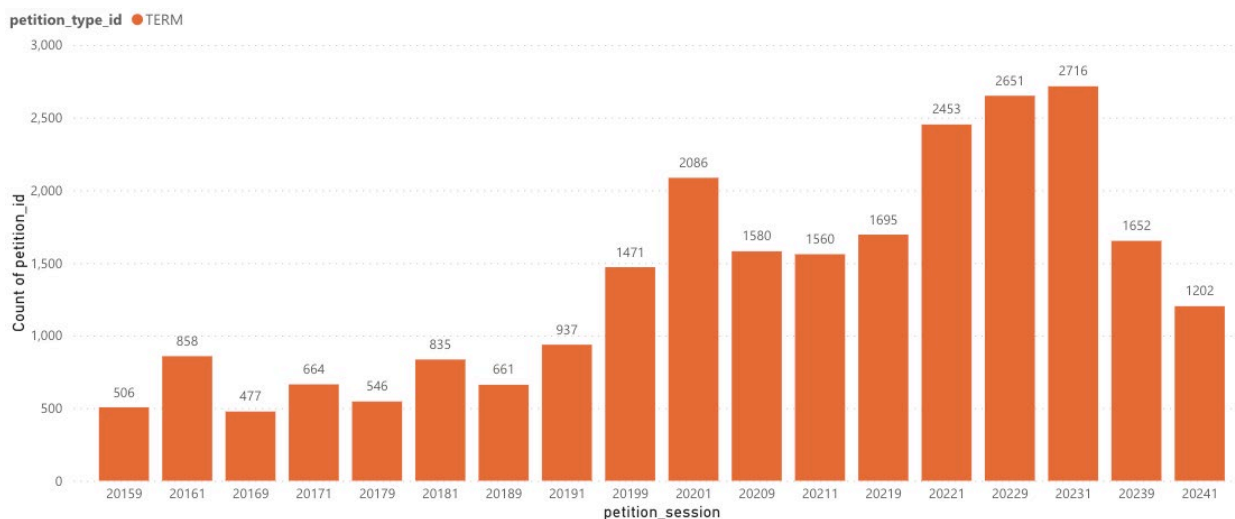


Figure 3. Petitions for Term Work Petitions (e.g. missed assignments, midterms). As of March 11, 2024

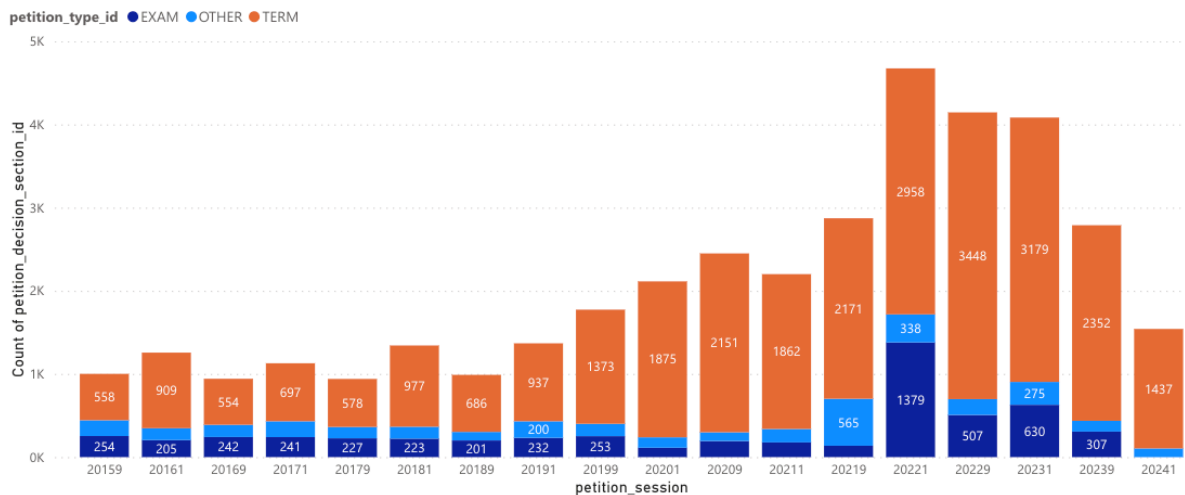


Figure 4. All Petition Types on a Common Scale. Dark blue = Final Exams; light blue = Special Consideration; orange = Term Work. As of March 11, 2024.