



**Council of the Faculty of Applied Science & Engineering  
Minutes of the Meeting of April 26, 2023**

---

**MEMBERS:** Jun Nogami (Speaker), Chris Yip (Dean), Ravi Adve, Dionne Aleman, Danita Allick, Brohath Amrithraj, Susan Andrews, Gisele Azimi, Timothy Bender, Evan Bentz, Raymond Bhushan, Chris Bouwmeester, Helen Bright, Eric Bryce, Markus Bussmann, Roger Carrick, Warren Chan, Heba Chehade, Yu-Ling, Alan Chong, Paul Chow, Will Cluett, Shai Cohen, Sinisa Colic, Tom Coyle, Daire Crawford, Chris Damaren, Michelle Deeton, Stark Draper, Salma Emar, Natalie Enright Jerger, Greg Evans, Saima Fancy, Jennifer Farmer, Ramin Farnood, Diane Giang, Ashvin Goel, Piyush Gupta, Sarah Haines, John Harrison, Ben Hatton, Marianne Hatzopoulou, Angela Henshilwood, Glenn Hibbard, Randa Higazy, Ken Hilton, Muktar Homam, Robert Irish, Greg Jamieson, Charles Jia, Katherine Jia, Parker Johnston, Kyle Juliao, Mustafa Kanchwala, Dawn Kilkenny, Mark Kortschot, Deepa Kundur, Jiahao (Terry) Li, Keryn Lian, David Lie, Antonio Liscidini, Heather MacLean, Saf Mahmood, Elham Marzi, Kasra Modares, Emily Moore, Mohamad Moosavi, Hani Naguib, Jeffrey Packer, Vladimiro Papangelakis, Daniel Posen, Scott Ramsay, Aryan Rezaei Rad, Mark Rittinger, Jonathan Rocheleau, Matt Roorda, Jonathan Rose, Cindy Rottmann, Philipp Seiler, Patricia Sheridan, Tony Sinclair, Brent Sleep, David Song, Craig Steeves, Marisa Sterling, Micah Stickel, Steven Thorpe, Hamid Timorabadi, Chris Twigge-Molecey, Tony Vanvari, Julia Wagner, Peter Wei, Elizabeth Whitmell, Tobin Zheng

**SECRETARIAT:** Caroline Ziegler (Secretary), Alex Schroen (Moderator)

**GUESTS:** Chris Brown, Sharon Brown, Liane Catalfo, Leanne Dawkins, Matthew Du, Maryam Ebrahimiazar, Carolyn Farrell, Pierina Filippone, Roger Francis, Shilpa Gantotti, Rodney Gensell, Leslie Grife, Sania Hameed, Christina Heidorn, Minsoo Koh, Jonguk (Justin) Lee, Anna Limanni, Qin Liu, Jess MacInnis, Teresa Miniaci, Dan Pettigrew, Zeeshan Rayees, Frank Scornaienchi, Peter Serles, Sandra Walker, Geoff Wichert, Nefeteria Wickham

**1. Speaker's Welcome**

Council Speaker Jun Nogami called the final Faculty Council meeting of 2022-2023 to order at 12:10 pm, welcoming President-Elect Archit Bhargava and Vice-President-Elect, Academic Ken Hilton of the Engineering Society, and President-Elect of the Engineering Alumni Network, Liane Catalfo.

The Speaker reviewed protocols for the hybrid meeting, and before acknowledging the land on which the University of Toronto operates, encouraged Council members to take in the sakura [Japanese cherry blossoms] at Robarts Library or at High Park, which are a reminder that some pleasures in life are both transient and not under our control.

He went on to discuss the prescribed burn at High Park several weeks ago to preserve what is one of the few remaining examples of a black oak savanna ecosystem. In contrast to the current forest management practice of stamping out fires as soon as possible – popularized by the Smokey the Bear Wildfire Prevention campaign – Indigenous peoples would do controlled burns every 25-50 years in order to clear out underbrush and to strengthen remaining trees' resistance to fire. It was therefore appropriate that the burn in High Park was led by several Indigenous elders. As the CBC quoted, "Indigenous knowledge around this type of ecological preservation has been well understood in many Indigenous communities and passed down. It's long overdue that Indigenous methods of land preservation are taken seriously."

## **2. Approval of Agenda**

The agenda and reports were distributed on April 13. Report 3747: Revision of Undergraduate Assessment Committee Manual and the CEAB Accreditation Update slides were distributed on April 25. Typos in the agenda concerning the misnumbering of Report 3731 Revised and the misspelling of the name of a retiring professor were noted.

There was no discussion and on a regular motion duly moved, seconded and carried, the agenda was approved.

## **3. Introduction of New Faculty Members**

New faculty members Aryan Rezaei Rad of the Department of Civil & Mineral Engineering and Philipp Seiler of the University of Toronto Institute for Aerospace Studies were introduced by their respective chair and director.

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

No errors or omissions were noted in the minutes of the February 27 Council meeting and on a regular motion duly moved, seconded and carried, the minutes were approved.

## **5. Memorial Tribute to Professor Emeritus Subbarayan (Pas) Pasupathy**

Deepa Kundur, Chair of The Edward S. Rogers Sr. Department of Electrical & Computer Engineering, read the following memorial tribute in honour of Professor Emeritus Subbarayan (Pas) Pasupathy.

Be it resolved –

THAT the Council of the Faculty of Applied Science & Engineering record with deep regret the death on February 12, 2023 of Professor Subbarayan Pasupathy.

Professor Subbarayan Pasupathy, affectionately known as Pas, was born in Chennai, India, on September 21, 1940. His Indian heritage was always a source of pride to him, and later he would attribute his success as a researcher and teacher to the culture he inherited.

Pas was greatly loved by his wife Jaya Pasupathy and his daughter Vani Pasupathy. She and her husband, Suneil Sastri, have a son — Pas's grandson — Jayen Sastri.

In 1963, Pas earned his bachelor's degree in Telecommunications from the College of Engineering (now known as Anna University) in Guindy, Chennai, on the southwest coast of India. In 1966, he graduated with first rank in the first batch of MTech. students at the Indian Institute of Technology (IIT), Madras, continuing to work there as a research scholar and part-time lecturer.

In the late sixties, he moved to the United States to continue his studies at Yale University, receiving the M.Phil. and PhD degrees in engineering and applied science in the area of array processing of sonar signals. He worked as a Teaching Assistant in his time at Yale and in 1972 completed his doctoral dissertation under the supervision of Professor Peter Schultheiss.

Pas arrived in Canada as a postdoctoral fellow in 1972 to continue his work in sonar at the University of Toronto, and in 1973 joined the faculty as part of its Communications Group. From 1979 to 1982 he served as Associate Chair of what was then the Electrical Engineering Department and became a full professor in 1983. For many years, Pas was Chair of the Communications Group — or “gentle orchestrator,” as Professor Alberto Leon-Garcia says, of the three-member group that today numbers nearly two dozen faculty members. Pas's academic career spanned more than 35 years in undergraduate teaching and research at U of T.

Pas's early research interests were in active and passive sonar systems. His curiosity and talent led him to work in many areas throughout his career, eventually becoming an international authority on the application of statistical communication theory and techniques to the design of digital communications systems. He contributed to more than 275 articles and three books, and was the first Canadian professor in communications to be listed in ISI Web of Knowledge's prestigious “highly cited researchers” list. His contributions have been cited in more than 100 patent applications.

His specific area of expertise was on the theory and applications of “correlative coding,” more commonly known as “partial-response signaling,” and he wrote a highly cited article on this in 1975. But his interests were vast: continuous-phase modulation, minimum-shift keying, error-rate monitoring in line codes, trellis coded modulation, Nyquist's criteria, delay estimation, fading channels, and many other topics. His research over the years had a wide variety of applications, including array processing, computer algorithms for signal processing, advanced transceiver structures, mobile cellular networks, and coding algorithms and architectures. In collaboration with colleague Professor Frank Kschischang, he discovered the densest known lattice packing of 36-dimensional spheres, known as KP36 or the “Kschischang-Pasupathy lattice”: “I am proud to say that his name and mine will forever be intertwined,” says Professor Frank Kschischang.

In addition to teaching and research, Pas served as an editor for a number of IEEE journals as well as the Canadian Electrical Engineering Journal, notably coordinating the special IEEE issue on “Canadian Telecommunications” in 1981. In 1991, Pas was elected Fellow of the IEEE and he

received the 2003 Canadian Award in Telecommunications Research from the Canadian Society of Information Theory. He was elected Fellow of the Engineering Institute of Canada in 2004 and Fellow of the Canadian Academy of Engineering in 2007.

Pas's curiosity and creativity extended beyond technical subjects. He had numerous hobbies which excelled at: Tamil scholar, artist, poet, musicologist and storyteller. It was not a surprise to those who knew of his love of wordplay that he started a humour column for IEEE titled *Light Traffic*, which he continued to publish for over 14 years. He particularly enjoyed creating palindromes related to his technical interests, introducing a character, Dr. O. Lord, first name Otto, who only spoke in palindromes and was an expert in, you guessed it, "radar." In these articles, Pas mused about metrics, made jokes about codes, created quizzes and games. Pas said he saw his column as "declarations of the endless challenge and personal happiness I have discovered in the fascinating world of words." To find humour in the subject most dear to you is an expression of your love for it.

In May 2007, a workshop in honour of Professor Pasupathy was held at the University of Toronto. The many colleagues, former students and postdocs in attendance attest to his great impact on the ECE community, and he received a standing ovation after his closing speech on what it means to do research. The following year, the IEEE published a number of profiles of him in various publications. In April 2010, he was honoured by his alma mater IIT Madras as a Distinguished Alumnus, and in 2019 he won a Lifetime Achievement Award from *Tamils' Information Magazine*.

Pas was universally beloved by his colleagues. Described as "a deep well of wisdom and friendliness," by Professor Jonathan Rose, he was always open to a chat or to dispense advice to junior faculty. He instructed Professor Ravi Adve, early in his academic career, on how to set up a research program in Canada, offering to pay for and co-supervise a student or two, saying, "Do not worry about the money. We will collaborate and make sure you can get started." There was the time that he called Professor Shahrokh Valaee into his office to say, "You are new here and will need a few good books" and gave him hard-to-find textbooks that Professor Valaee uses frequently to this day. And ECE staff could always count on him for a kind smile, a word of wisdom — and a Garfield joke.

In addition to his mentorship of so many faculty members, one of his lasting accomplishments is the great number of graduate students and postdoctoral students he trained, who were fortunate to benefit from his insights and passion and who have gone on to distinguished academic and industry careers of their own. How many PhD theses and papers began as sketches or equations that Pas scribbled!

Pas's warmth and smile was a beacon to all. A beloved husband, father, community leader and distinguished academic, his impact in our department is immeasurable. His wise, brilliant, gentle and humorous nature will be much missed by all who interacted with him and will be deeply felt by the many who cherished him as a friend.

Be it further resolved –

THAT this tribute to Professor Subbarayan Pasupathy 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 Professor Emeritus Pasupathy.

## **6. Report of the Dean**

Dean Chris Yip welcomed and thanked all present for an amazingly successful year, the first since Covid that has felt normal. He provided the following remarks.

### **(a) FASE Provostial Review and Dean's Term**

The Faculty will be undergoing a provostial review in the fall of 2023. The creation of the Faculty's self-study has begun with stakeholder consultations. The Vice-President and Provost has struck an advisory search committee for the Dean of Engineering, whose first term ends in June 2024.

### **(b) Convocation**

The Office of Convocation will welcome graduating students in person at the Spring Convocation in June. Our Faculty's ceremonies are on June 20. ChemE, CivMin, EngSci and MEngCEM graduates will convocate at 10:00 am, ECE and MSE graduates at 2:30 pm, and MIE, UTIAS and BME graduates at 6:30 pm. The Provost's deadline for faculty and staff to register to participate in the academic procession is May 18.

### **(c) Engineering Excellence Awards**

Faculty and staff recipients of the 2023 Engineering Excellence Awards will be announced in the news section of the Faculty website today. Details of the fall celebration will be provided at a later date.

### **(d) Engineering Society Leadership Transition**

The outgoing Engineering Society leadership team was acknowledged for its tremendous contributions this year, including the SKULE™ 150th Anniversary celebration. The incoming 2023-2024 leadership team members were announced and thanked for committing their time and skills to the benefit of our undergraduate students.

### **(e) Engineers Canada Update**

The Dean recently returned from Engineering Deans Canada's spring meeting. It has been a successful year for engineering schools across the country.

The group met with Engineers Canada and learned of some changes coming forward that may be challenging for us and our students.

Students were reminded of Engineers Canada's recent approval of the "Temporary Exemption for Students Going on International Exchange" policy which removes accreditation barriers for students going on international exchanges. The clause requiring the exemption to sunset in 2017 has been removed. We will begin tracking our student exchanges in September so that we can demonstrate to Engineers Canada that we are taking full advantage of these opportunities, as we do not want to lose this provision.

There was no discussion and the Dean wished everyone a great summer.

## **7. Bylaws Revisions**

The following item was endorsed by the Executive Committee of Council at its February 7 meeting and is for Council's approval as a special motion, requiring a two-thirds majority of members present and voting to carry.

Deepa Kundur acted as Council Speaker while Jun Nogami presented Report 3731 Revised, an update of the Faculty's Bylaws to revise the Research Committee's and Executive Committee's membership compositions.

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

THAT the Bylaws of the Faculty of Applied Science & Engineering be revised to reflect changes to the Research Committee's membership composition (section B4.3.3.2), and to the Executive Committee of Council's membership composition (section B4.2.2(d)), as described in Report 3731 Revised, effective immediately.

There was no discussion and the motion was carried.

The following items were endorsed by the Executive Committee of Council at its April 4 meeting and are for Council's approval as regular motions, requiring a simple majority of members present and voting to carry.

## **8. Closure of Dual Degree Program involving Mechanical & Industrial Engineering and the South China University of Technology**

Craig Steeves, Acting Vice-Dean, Graduate Studies, presented Report 3741, a proposal to close the dual degree program involving the Department of Mechanical & Industrial Engineering and the South China University of Technology due to declining enrollment.

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

THAT the Dual Degree Program between the Department of Mechanical & Industrial Engineering and the South China University of Technology, as described in Report 3741, be closed effective August 31, 2023.

Members discussed how this program has been struggling with low enrollment even before Covid.

The motion was carried.

## **9. Computer-Based Exams and Non-Standard Exams**

Daniel Posen, Chair of the Undergraduate Assessment Committee, presented Report 3742, which introduces “Type O (Other)” and “Type CPU\_[ ]: Examinations” exam types. These are meant to provide clarity around non-standard exam formats and computer-based exams that often arises during the final exam period.

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

THAT new exam types as described in Report 3742 be approved, effective September 2023.

It was confirmed that by definition “Type O (Other)” exams will require approval from the Undergraduate Assessment Committee, while all other exam types – including “Type CPU\_[ ]: Examinations” – do not.

Open internet access is not permitted in “Type CPU\_[ ]: Examinations” to prevent communication among students or between students and outside parties. Members discussed how this will affect students who may need to access online resources such as Quercus. Professor Posen recommended that instructors contact the Engineering Computer Facility to discuss access and restrictions, and reminded members that invigilators will be present at exams to help ensure academic integrity. He reiterated that this exam type is not intended to restrict internet access, just communication.

The motion was carried.

## **10. Major Curriculum Updates for the 2023-2024 Academic Year**

Evan Bentz, Chair of the Undergraduate Curriculum Committee, presented Report 3743, which describes changes to the Engineering Science curriculum and to courses managed by the Cross-Disciplinary Programs Office.

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

THAT the proposed curriculum changes for the 2023-2024 academic year, as described in Report 3743, be approved.

There was no discussion and the motion was carried.

## **11. Reports for Information**

The following reports were approved by the Executive Committee of Council at its April 4 meeting and are for Council's information.

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

Marianne Hatzopoulou, Chair of the Engineering Graduate Education Committee, presented Report 3744 Revised. This report lists a new ECE course, a name change to an MIE course and a code change to a TEP course, a new CHE MEng emphasis in Environmental Engineering Consulting, and the closure of the previously-mentioned dual degree program involving MIE and the South China University of Technology.

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

### **(b) Undergraduate Assessment Committee Update for 2022-2023**

Daniel Posen, Chair of the Undergraduate Assessment Committee, presented Report 3745, a summary of activities undertaken by the committee during the academic year. These include meetings, discussing and voting on time-sensitive matters, reviewing petitions, developing policy proposals, updating the committee's manual and communicating with the Faculty.

Council members discussed potential reasons behind the increased number of term work petitions which may include a higher awareness among students of the availability of accommodations and the introduction of an easy to use online petition system. A department noted that it has had to hire a second undergraduate advisor to deal with this increase.

Any unusual grades will be flagged by the Undergraduate Assessment Committee and affected professors will be contacted by their departmental representative.

The report was received for information.

## **12. Revision of the Undergraduate Assessment Committee Manual**

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.

Daniel Posen, Chair of the Undergraduate Assessment Committee, presented the committee's updated manual. Some revisions were made to align the manual with the new template appended to the Procedures for Committees of Council, and some codify current committee practice. Of note is the ability for the committee chair to delegate petitions decisions to one or more subcommittees.

The Speaker thanked the Undergraduate Assessment Committee for the extensive work done to update its manual.

There was no discussion.

### **13. Canadian Engineering Accreditation Board Update**

Tom Coyle, Vice-Dean, Undergraduate presented slides and updated Council on Canadian Engineering Accreditation Board (CEAB) accreditation.

Our current accreditation was scheduled to expire in June 2025 but because of Covid the CEAB extended accreditation across Canada by a year. Our accreditation will now expire in June 2026 with a visit to be scheduled for the fall of 2025. Our "snapshot year" for data collection is the 2024-2025 academic year.

Professor Coyle reviewed the accreditation process and criteria (graduate attributes, continual improvement process, curriculum content and quality, relevant policies and program evaluation) and discussed changes since our last review in 2018-2019. These include higher expectations regarding graduate attributes and the continuous improvement process, University-wide changes to sessional dates that will affect the number of our instructional days, and changes to PEO licensure policy that have eliminated the Limited License for Faculty Members (LLFM) and Engineer-in-Training (EIT) options. In addition, CEAB will introduce an online system this fall that will reduce the amount of work required to submit accreditation information and data.

Professor Coyle then presented a detailed accreditation preparation timeline. Immediate steps include initial meetings of the Accreditation Preparation Working Group, which is comprised of at least two representatives from each undergraduate program and is tasked with revising, testing and rolling out the second version of El GATO, our Faculty's database for collecting graduate attribute indicator data.

Each undergraduate program must review their licensure status, curriculum, graduate attributes and continuous improvement process. They should back-fill any data that was difficult to collect before and during Covid, and submit any changes to their curriculum and graduate attribute indicators to the Undergraduate Curriculum Committee this summer so that the changes can be approved through governance in 2023-2024.

During discussions, a department chair brought forward serious concerns he and others have about the accreditation process imposed on us by CEAB. There are very high costs associated with an accreditation review and the benefits to our faculty and students of participating are

very low. He asked the Accreditation Preparation Working Group and Faculty to seriously consider the way in which we participate in accreditation and provide leadership in addressing these concerns.

It was reiterated that there are active and ongoing discussions with Engineers Canada about accreditation, including the amount of work imposed upon Higher Education Institutions. Chairs and Directors will be kept apprised of any new developments. The question of whether the Faculty as a whole wants to participate in accreditation can be discussed at a Chairs and Directors meeting.

#### **14. Recognition of Service and Teaching Assistant Award Presentation**

Dean Yip acknowledged and thanked Brent Sleep, who concludes his second term as Chair of the Department of Civil & Mineral Engineering Science this June.

Yu-Ling Cheng and Mark Kortschot of the Department of Chemical Engineering & Applied Chemistry; Paul Chow of The Edward S. Rogers Sr. Department of Electrical & Computer Engineering; Keryn Lian of the Department of Materials Science & Engineering; and Tony Sinclair of the Department of Mechanical & Industrial Engineering, who are retiring at the end of June, were recognized by their respective chairs.

The Dean congratulated Maryam Ebrahimiazar, postdoctoral fellow and recent PhD recipient in the Department of Mechanical & Industrial Engineering, for receiving the Faculty's 2023 Teaching Assistant Award.

Dean Yip presented the professors and Ms. Ebrahimiazar with gifts as tokens of the Faculty's appreciation.

#### **15. Other Business**

The Speaker acknowledged and thanked the standing committee chairs who will be completing their 2022-2023 terms.

There was no other business.

#### **16. Date of Next Meeting**

The schedule of governance meetings for 2023-2024 is being developed and will be shared with Council when available.

#### **17. Adjournment**

The meeting was adjourned at 2:13 pm.

/cz