



**Council of the Faculty of Applied Science & Engineering
Minutes of the Meeting of December 6, 2022**

MEMBERS: Jun Nogami (Speaker), Chris Yip (Dean), Ravi Adve, Dionne Aleman, Danita Allick, Cristina Amon, Brohath Amrithraj, Julie Audet, Evan Bentz, Shlomo Bibas, Chris Bouwmeester, Eric Bryce, Jeremy Bryce, Markus Bussmann, Hay Shun Chan, Heba Chehade, Alan Chong, Shai Cohen, Daire Crawford, Michelle Deeton, Stark Draper, Feras Elsaid, Natalie Enright Jerger, Greg Evans, Jennifer Farmer, Seyedreza Fattahi Massoum, Daniel Frances, Diane Giang, Ashvin Goel, Aidan Grenville, Piyush Gupta, Marianne Hatzopoulou, Angela Henshilwood, Glenn Hibbard, Randa Higazy, Ken Hilton, Muktar Homam, David F. James, Parker Johnston, Kyle Juliao, Mustafa Kanchwala, Dawn Kilkenny, Daeho Kim, Deepa Kundur, Jiahao (Terry) Li, Antonio Liscidini, Heather MacLean, Don MacMillan, Saf Mahmood, Paul Milgram, Kasra Modares, Ibrahim Ogunsanya, Joseph Paradi, Elodie Passeport, Milos Popovic, Daniel Posen, Mark Rittinger, Scott Sanner, Agrim Sharma, Naman Sharma, Brent Sleep, David Song, Marisa Sterling, Micah Stickel, Chris Twigge-Molecey, Tony Vanvari, Chirag Variawa, Carmela Versace, Peter Wei, Elizabeth Whitmell, Paul Yoo, Edmond Young, Sherry Zhang, Jenny Zhou

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

GUESTS: Irina Belaya, Inga Breede, Helen Bright, Chris Brown, Sharon Brown, Jessica Chow, Shai Cohen, Carolyn Farrell, Pierina Filippone, Jenn Galley, Shilpa Gantotti, Rodney Gensell, Leslie Grife, Sania Hameed, Sa'diyya Hendrickson, Andrea Luna Yong, Jess MacInnis, Estelle Oliva-Fisher, Sadiyya Parnell-Hendrickson, Anna Limanni, Fabian Parsch, Dan Pettigrew, Nelly Pietropaolo, Zeeshan Rayees, Cindy Rottmann, Ingrid Schvarczkopf, Frank Scornaienchi, Alex Tichine, Sean Uppal, Allison Van Beek, Aaron Wang, Geoff Wichert, Nefeteria Wickham

1. Speaker's Welcome

Speaker Jun Nogami called the second Faculty Council meeting of 2022-2023 to order at 3:10 pm. He welcomed members and guests and reviewed protocols for the hybrid meeting.

Before acknowledging the land on which the University of Toronto operates, the Speaker mentioned recent news of the discovery of the bodies of three or four Indigenous women near Winnipeg, adding that it is estimated that over 4,000 Indigenous women and girls have gone missing or have been murdered in Canada over the last 30 years.

2. Approval of Agenda

The agenda and reports were distributed on November 22. Agenda item 04(b), the memorial tribute to Professor Emeritus Frederic Anthony DeLory, was distributed on November 29.

On a regular motion duly moved, seconded and carried, the agenda was approved.

3. Adoption of the Minutes of Previous Meetings

No errors or omissions were noted in the minutes of the October 13, 2022 Council meeting and on a regular motion duly moved, seconded and carried, the minutes were approved.

4. Memorial Tributes

(a) Frederic Anthony DeLory

Brent Sleep, Chair of the Department of Civil & Mineral Engineering, read the following memorial tribute in honour of Professor Emeritus Frederic Anthony DeLory.

Be it resolved –

THAT the Council of the Faculty of Applied Science & Engineering record with sincere regret the death on Wednesday, September 28, 2022 of Professor Emeritus Frederic Anthony DeLory.

Professor DeLory was a Second World War Canadian Army Volunteer (1943-1945), rising from Private to Lieutenant. He graduated from McGill University with a Bachelor of Engineering (Civil) in 1948, after which he worked for the Consolidated Mining and Smelting Company, Ltd. in Trail, B.C. as a Junior Engineer (1948-1950). Professor DeLory then graduated from the University of Toronto with a Master of Applied Science in 1951 following which he worked for the Aluminum Company of Canada, Ltd. in Arvida, Quebec and Kitimat, B.C. as a soils engineer (1951-1953).

Fred was awarded an Athlone Fellowship which he held at the Imperial College of Science and Technology, London, England, graduating with a D.I.C. in 1953 and a Doctor of Philosophy from the University of London in 1957. On returning to Canada, he was employed by H.G. Acres and Company in Niagara Falls, Ont., as a design engineer (1957-1958).

Professor DeLory joined the faculty of the University of Toronto as Assistant Professor in 1958, was promoted to Associate Professor in 1962, and later to full Professor. Since 1990, he has been Professor Emeritus. He supervised numerous undergraduate, masters and doctoral students over this time and taught courses in engineering geology, soil properties and behaviour, foundations and earthworks, soil mechanics and associated laboratories. Fred was a member of the Canadian Geotechnical Society, Engineering Institute of Canada, American Society of Civil Engineers, and the International Society for Soil Mechanics and Foundation Engineering. He served as both Associate Editor and Editor of the Canadian Geotechnical Journal. From 1973 to 1988, Fred chaired the Division of Geological Engineering.

Professor DeLory was simply a kind and virtuous man who was often sought for his wise counsel by students and faculty colleagues alike. He had an infectious enthusiasm for engineering artifacts, particularly those related to steam. He kept an operable steam engine in his office

about which he would offer tutorials to those with interest. In the early 1970s, Fred restored a 60-year-old Connecticut steamboat which he could be found sailing in Toronto Harbour and the Trent Canal system. After retiring, among several other projects, he was a volunteer driver for Meals on Wheels for 17 years. He moved to Halifax in 2008.

Fred maintained a strong connection with his birthplace in Prince Edward Island and frequently entertained colleagues and friends with stories of growing up in that colourful location.

After a lengthy illness, Professor DeLory passed peacefully in Camp Hill Veterans' Memorial Building, QEII, Halifax, at age 97. Fred was born in Georgetown, PEI on June 7, 1925, the son of the late Frederick and Mary (Cullen) DeLory. He is survived by his devoted wife of 62 years, June (Garrett) DeLory; daughters, Kathryn (James) Steele and Deni DeLory (Dan Macadam); siblings, Cullen (Barbara) DeLory and Bernice (William) Melanson; niece, Nicole DeLory; as well as numerous other nieces and nephews. He is predeceased by brothers, John, Dr. Maurice (Mike), Richard, Stephen and sister, Sheila.

It is difficult to express adequately the admiration his students and colleagues had towards Professor DeLory for his willingness to serve, his wisdom, and his friendship.

Be it further resolved –

THAT this tribute to Professor Emeritus Frederic Anthony DeLory be inscribed in the minutes of this Council meeting, and copies be sent to his family as an expression of the respect and gratitude of the members of Council.

(b) Charles Albert Ward

Professor Emeritus David F. James of the Department of Mechanical & Industrial Engineering read the following memorial tribute in honour of Professor Emeritus Charles Albert Ward.

Be it resolved –

THAT the Council of the Faculty of Applied Science & Engineering record with deep regret the death on October 12, 2022 of Professor Emeritus Charles Albert Ward.

Charles Albert Ward, born May 28, 1939, passed away on October 12, 2022, in Hennick Bridgepoint Hospital, Toronto. He leaves behind family members in Texas: brother, John and his wife, Cissy; nieces, Susan and Delinda; and nephews, David (Clara) and Johnny (Nell).

Charles was born in Bailey, Texas and after graduating from Magnolia High School he studied Mechanical Engineering at the University of Texas. He later earned his PhD from Northwestern University in 1967 at which time he embarked on his academic career. He first joined the Department of Mechanical Engineering at the University of Toronto on July 1, 1967. He became a full professor in the department in 1977. While on paper Charles retired in 2004, he remained active in the Department teaching graduate-level courses, including MIE1101 Advanced Classical

Thermodynamics and MIE1107 Statistical Thermodynamics, and continued with his research for a number of years.

Charles was a renowned researcher in his field and the Director of the Thermodynamics and Kinetics Laboratory. The Statistical Rate Theory – a theory for predicting the rate of molecular transport across phase boundaries – developed in his lab has been cited in the open literature over 400 times. During his career he and his students published over one hundred papers in peer-reviewed journals. His studies of interfacial kinetics led to the measurement of a temperature discontinuity at the liquid-vapour interface during evaporation and to the measurement of a new property of water: the surface thermal capacity. This property defines the energy transport by surface-tension-driven flow.

Charles was recognized with many prestigious awards throughout his career including two Alexander von Humboldt Fellowships, the Canadian Society of Mechanical Engineering Robert W. Angus Medal and the Canadian Society for Mechanical Engineering Jules Stachiewicz Medal.

Outside of his academic career, Charles was a loving husband to his wife Barbara with whom he built a happy life in Toronto. They were known for hosting dinner parties, which showcased Barbara's excellent cooking skills and Charles' expert wine pairings. They enjoyed attending opera performances and visiting the Art Gallery of Ontario.

Greatly admired by students and colleagues alike, the Department remembers Charles as kind, thoughtful and well-spoken, and he will be dearly missed by all who knew him.

Be it further resolved –

THAT this tribute to Charles Albert Ward 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 DeLory and Ward.

5. Report of the Dean

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

(a) National Day of Remembrance and Action on Violence Against Women

Today on the National Day of Remembrance and Action on Violence Against Women, the University of Toronto joined communities across Canada in remembering the 14 women killed in a devastating act of misogyny at the engineering school at the École Polytechnique de Montréal in 1989. The University's memorial was held at Hart House from 12:00 to 2:30 pm, and at 5:00 pm today, a group of female Engineering students will unveil a monument outside the Galbraith Building featuring 14 transparent, life-sized silhouettes – each inscribed with the name of a victim – gathered around a fleur-de-lis. All are invited to attend the unveiling.

(b) Staying Healthy

We are in cold, flu and Covid season at a time when our health-care systems are overwhelmed. We all have a part to play in protecting ourselves and others against these respiratory illnesses by masking up, staying home when ill, and remaining current on seasonal vaccines. Thank you to our Faculty Operations Team for organizing a successful Covid pop-clinic in the Bahen Centre on December 1. Students, faculty and staff can also be vaccinated at the Discovery Pharmacy in the Leslie Dan Faculty of Pharmacy.

(c) Canada Research Chairs

Congratulations to our Canada Research Chairs: Aimy Bazylak of Mechanical & Industrial Engineering, in Thermofluids for Clean Energy (Tier II, new); Marianne Hatzopoulou of the Department of Civil & Mineral Engineering, in Transport Decarbonization and Air Quality (Tier 1, new); and Arun Ramchandran of the Department of Chemical Engineering & Applied Chemistry, in Engineered Soft Materials and Interfaces (Tier 2, renewal). This is a tremendous achievement for our Faculty.

(d) Engineering Alumni Network Awards

The U of T Engineering Alumni Network Awards recognize outstanding members of our community. Nominations opened November 4 and will close on February 3. Recipients will be selected in Spring 2023 and formally celebrated at the Fall 2023 Engineering Alumni Network Awards Ceremony. It is amazing to see what our alums are doing, whether early, mid or late career.

(e) Administrative Staff Awards Program

We are now accepting nominations for our Faculty's 2023 Administrative Staff Awards. Nomination packages should be submitted to the Director, Awards and Honours by February 3.

(f) Travel Update

International travel has resumed. The Dean has recently returned from a trip to South Africa which he made with the engineering deans from York University and the University of British Columbia. It was fantastic to see engineering in South Africa with its amazing buildings and civil infrastructure and great to build international partnerships. Dean Yip and the U of T President are leaving tomorrow for Vietnam where they will work to strengthen connections in research and recruitment.

(g) Accreditation Update

The Dean and Vice-Dean, Undergraduate attended a *Futures of Engineering Accreditation (FEA)* foresight session in November, the first system-wide engagement hosted by Engineers Canada in three years to investigate and validate the purpose and scope of accreditation. Engineers Canada and Professional Engineers Ontario support substantial changes to the accreditation

process, including a “temporary easement variance” of accreditation requirements regarding international student exchanges.

(h) Celebration of Graduates

On December 13 we will celebrate our 2020-2021 graduates in Convocation Hall. Faculties across the university have been celebrating this past week, and we are the largest group with 1,300 graduates expected to attend. There are still seats available on stage for the 10:00 am ceremony (AER, BME and ECE), the 2:00 pm ceremony (CHE, CIVMIN and EngSci) and the 6:00 pm ceremony (MIE and MSE), and all are invited to attend.

The Dean wished Council all the best for the holiday season and good luck to students writing exams.

The following items were endorsed by the Executive Committee of Faculty Council at its November 15 meeting and are for Council’s approval.

6. Certificate in Public Policy and Engineering

Dionne Aleman, Associate Dean, Cross-Disciplinary Programs, presented Report 3728 Revised, a proposal to create a Certificate in Public Policy and Engineering that will provide students in the Core-8 engineering programs and Engineering Science with training in the extensive intersections between the two disciplines, and aims to inspire engineering students to pursue careers or graduate studies in policy-making.

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

THAT a Certificate in Public Policy and Engineering, as described in Report 3728 Revised, be approved effective September 2023.

The Dean thanked Professor Aleman for moving this proposal through consultations and governance so quickly and noted that the Munk School of Global Affairs & Public Policy, who will offer the three half-courses, has been very keen to participate. The Dean has also received enthusiastic feedback from several alumni who are interested in our progress in this sector.

The motion was carried.

7. Major Curriculum Changes for the 2023-2024 Academic Year

Evan Bentz, Chair of the Undergraduate Curriculum Committee, presented Report 3725 Revised, which lists proposed curriculum changes for the next academic year. Of particular note are the first of many changes to the industrial engineering program as a result of a multi-year curriculum renewal project.

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 3725 Revised, be approved.

During discussions, Professor Bentz confirmed that the use of “CGPA” instead of a percentage with regards to changes to MIE498H/Y1: Research Thesis is intentional.

A Council member commented that there are not enough elective spots for HSS/CS courses in the curriculum for students who are taking minors and certificates, and suggested that it would be ideal to have at least one more elective spot for non-technical courses. Professor Bentz noted that students can take courses as Extra if they like, even during PEY, but the Faculty will not change its programs to require it. The chair of the Undergraduate Scholarships & Awards Committee added that taking Extra courses may impact students’ standings on the Dean’s Honour List as well as scholarships.

Professor Bentz urged faculty to review their calendar entries to ensure they are correct and up to date.

The motion was carried.

8. Change to Faculty Calendar regarding Transfer Credits

Evan Bentz, Chair of the Undergraduate Curriculum Committee, presented Report 3727 Revised. The proposed amendment to the FASE calendar regarding post-admission transfer credit is intended to tighten up the ability of students to take summer HS/CSS or business minor credits at international institutions (with the exception of official U of T exchange partners), without receiving prior permission from the Registrar’s Office on a case-by-case basis. Many of these international courses are only loosely affiliated with the university, are aggressively marketed and are difficult to evaluate for quality.

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

THAT the FASE calendar be amended regarding transfer credits, as described in Report 3727 Revised, effective immediately.

There were no discussions and the motion was carried.

9. Reports for Information

The following reports were approved by the Executive Committee of Council at its November 15 meeting and are for Council’s information.

(a) Engineering Graduate Education Committee Update

Marianne Hatzopoulou, Chair of the Engineering Graduate Education Committee, presented Report 3726, which lists new courses approved in BME, MIE and ROB.

There were no discussions and the report was received for information.

(b) Admissions Cycle 2022

Ashvin Goel, Vice-Chair of the Undergraduate Admissions Committee, presented Report 3730, a breakdown of applications for admissions, offers of admission, registration figures and characteristics of the first-year class.

There has been a two percent increase in applicants but a drop in international applicants, likely because fewer international students attended high school in Ontario due to Covid. This trend may carry into the 2023 admissions cycle.

We have seen a high entering average, which is possibly due to Covid-related grade inflation. This is likely to drop, but will be monitored by the Undergraduate Admissions Committee. Professor Goel remarked that grade inflation is an administrative problem because it causes grade cut offs to increase.

Professor Goel confirmed that the Faculty has data on how Ontario Secondary School (OSS) applications have changed over many years and can share it across departments. He also stated that the Faculty has data that can correlate student averages between entry and first-year, and is considering how to use this information.

The report was received for information.

10. Other Business: Service Presentation

Dean Yip acknowledged and thanked Faculty Registrar Don MacMillan, who is retiring at the end of December, and presented him with a token of the Faculty's appreciation. He invited Council members to Mr. MacMillan's retirement party on December 14 from 3:00-5:00 pm in the Myhal Centre's 5th floor Atrium. There was sustained applause at the conclusion of the presentation.

There was no other business.

11. Discussion Item: Learning to Teach, Teaching to Learn – Modern First-Year Math Education in Engineering

The Speaker welcomed Shai Cohen, Assistant Professor, Teaching Stream in ISTEP; Fabian Parsch and Sean Uppal, Assistant Professors, Teaching Stream in the Department of Mathematics; and Sa'diyya Hendrickson, Sessional Lecturer in Engineering and Arts & Science. Unable to be present was Camelia Karimian Pour, Assistant Professor, Teaching Stream in the Department of Mathematics. The team described changes in first-year math courses over the past decade; showcased recent

changes and the direction in which they lead; and began discussions on what has worked and where improvements can be made. Detailed slides were projected at the meeting and are appended to these minutes.

Council members discussed the goal of students having both a computational and conceptual understanding of math, and the need to focus more on the conceptual side at this time.

Teaching faculty can successfully adopt some of the practices mentioned by introducing them gradually and iteratively and frequently seeking student feedback, especially with regard to engagement and workload. It would be helpful for upper year students who have benefitted from these changes to share their experiences with first year students, and for faculty to be attuned to changes in students' stress levels and mental health.

It was mentioned that many first-year math instructors are sessional and transient and can provide varied quality of teaching. We should use more teaching-stream professors and coordinate instruction for consistency of content across sections. It would also be beneficial for math instructors in upper year courses to provide their values, skills and insight into the first-year courses.

We should gauge how changes to first year math affect students' understanding of the subject as they progress through their programs. Professor Cohen stated his interest in supplementing the anecdotal feedback received with a formal study, but this has been delayed by Covid and other factors.

Professor Parsch has a table, based on surveys, that describes the time and workload required for students to complete each module of the active learning cycle displayed in the slides (PCEs, class, tutorials, self-study and homework). He encouraged instructors to discuss and coordinate their expectations of students, which can differ between courses.

Members indicated that they would like to continue this discussion with regard to the first-year curriculum.

The Speaker thanked Professors Cohen, Parsch, Uppal and Hendrickson for their presentation.

12. Date of Next Meeting

The next Faculty Council meeting is on February 27, 2023.

13. Adjournment

The meeting was adjourned at 4:58 pm.

/cz