



**Minutes of the Faculty Council
Meeting of February 27, 2019
Michael E. Charles Council Chamber (GB 202)**

PRESENT: Doug Reeve (Speaker), Ravi Adve, Grant Allen, Cristina Amon (Dean), Julie Audet, Giselle Azimi, Raunaq Bagchi, Joe Baptista, Evan Bentz, Markus Bussmann, Warren Chan, Samantha Cheung, Leo Chou, Jim Courtney, Tom Coyle, Levente Diosady, Khuong Doan, George Eleftheriades, Greg Evans, Jennifer Farmer, Carolyn Farrell, Zahir Firoze, Jason Foster, Jacob Foster, Diane Giang, Krisztina Harmath, Ali Hooshyar, Jane Howe, Dawn Kilkenny-Rocheleau, Deepa Kundur, Antonio Liscidini, Don MacMillan, Heather MacLean, Alexandre Milovanoff, Emily Moore, Farid Najm, Wai Tung Ng, Elodie Passeport, David Philpott, Nelly Pietropaolo, Daniel Posen, Jonathan Rocheleau, Lisa Romkey, Jonathan Rose, Patricia Sheridan, Lily Shu, Craig Steeves, Kenneth Tallman, David Taylor, Deborah Tihanyi, Hamid Timorabadi, Alvin Virya, Peter Weiss, Victor Xin, Li Hao Zhang, Yu Zou

REGRETS: Karen Chu, Ziquan Deng, Bryan Karney, Elias Kyriacou, Susan McCahan, Mahyar Mozaffari, Shivani Nathoo, Mindy Thuna

GUESTS: Helen Bright, Sharon Brown, Chris Brown, Mikhail Burke, Emzhei Chen, Dani Couture, Leanne Dawkins, Sonia de Buglio, Leslie Grife, Cathy Grilo, Cori Hanson, Phuong Huynh, Victoria James, Ezzat Jaroudi, Hans Kunov, Dan Pettigrew, Cindy Rottmann, Myeong Hun Song, Allison Van Beek, Geoff Wichert, Tracy Zahradnik, Caroline Ziegler (Secretary)

1. Speaker's Welcome and Adoption of the Agenda

Council Speaker Doug Reeve welcomed members to Faculty Council and acknowledged the university's use of traditional land. He related Indigenous rights to social justice and quoted a passage from the book, *Engineering Justice: Transforming Engineering Education and Practice* by Jon Leydens and Juan Lucena, on how the failure of levees in New Orleans during Hurricane Katrina "affected residents who were poor, mostly black, and some with disabilities more than other social groups". The notion that engineering is apolitical is a myth that should be challenged; engineering justice is an important path forward for our Faculty. Juan Lucena will be co-presenting a seminar, "Listening as Leadership: Engineers in Community Development and the Extractive Industries", on March 5, 2019 in GB202.

The agenda and documents were distributed on February 15, 2019, and the memorial tribute to Professor Emeritus William Charles Winegard and a revised Curriculum Committee report were distributed on February 26, 2019. The Speaker proposed amendments to the agenda: the minutes

of the December 18, 2018 Faculty Council meeting will come forward at the April 11, 2019 meeting, and a second discussion item, on academic integrity, has been added.

On a motion duly moved, seconded and carried, it was resolved –

THAT the revised agenda be adopted.

2. Introduction of New Faculty Members

The following new faculty members were introduced by their chair or director and welcomed to Council: Leo Chou of the Institute of Biomaterials & Biomedical Engineering, Jane Howe of the Department of Materials Science & Engineering, and David Taylor of the Department of Civil & Mineral Engineering.

3. Memorial Tributes

(a) Keith G. Balmain

Farid Najm of The Edward S. Rogers Sr. Department of Electrical & Computer Engineering read the following memorial tribute.

Be it resolved –

THAT the Council of the Faculty of Applied Science & Engineering record with deep regret the death on January 2, 2019 of Professor Emeritus Keith G. Balmain.

Keith G. Balmain, a world leading scholar in Electromagnetics, Antennas, Electromagnetic Compatibility and Antennas in Plasmas, passed away on January 2, 2019 at the age of 85. Keith had a sharp and clear mind, and could simplify and explain complex concepts with ease. He was a scholar of high integrity and a great mentor.

Keith was born in London, Ontario on August 7, 1933 and spent his teenage years on the Whaley family farm after his father passed away. He received the BAsC degree in engineering physics from the University of Toronto, Toronto in 1957. He received the MS and PhD degrees in Electrical Engineering from the University of Illinois, Urbana, in 1959 and 1963, with theses on printed-circuit dipole antennas and spacecraft-borne dipole antennas in anisotropic plasma. He was an Assistant Professor of Electrical Engineering at the University of Illinois until 1966. He then joined what is now The Edward S. Rogers Sr. Department of Electrical & Computer Engineering, University of Toronto, holding the positions of Professor, and later on Professor Emeritus. From 1991 to 2001, he was the Senior Chairholder of the NSERC/Bell Canada/Nortel Industrial Research Chair in Electromagnetics. He chaired the Division of Engineering Science for two and a half years until 1987, after which, for a three-year term, he chaired the University of Toronto's Research Board.

His research has included antennas in plasma, broadband antennas, electromagnetic compatibility, human electrostatic discharge, radio wave scattering from power lines and buildings, Space Shuttle EMC prediction, electrostatic charging and discharging in spacecraft dielectrics, and microwave metamaterials.

Keith Balmain co-authored (with EC Jordan) the second edition of *Electromagnetic Waves and Radiating Systems* (Englewood Cliffs, NJ: Prentice-Hall, 1968) which is a highly-regarded textbook in Electromagnetics and Antennas. He also co-edited (with GV Eleftheriades) one of the first books on metamaterials *Negative-Refraction Metamaterials: Fundamental Principles and Applications*, (John Wiley & Sons and IEEE Press June 2005). Professor Balmain was a Life Fellow of the IEEE “for contributions to the understanding of log-periodic antennas and antennas in plasmas.” He was the co-recipient of the IEEE Antennas and Propagation Society (AP-S) 1970 Best Paper Award, and was a co-recipient of a 1992 NASA Group Achievement Award for an “exceptional engineering assessment of plasma effects from electrical grounding for the Space Station Freedom program.” Keith Balmain’s scientific papers exude the ingenuity, precision and clarity that were the characteristics of the high-caliber researcher that he was. He was a member of AP-S AdCom (1974–77), an Associate Editor of *Radio Science* (1978–1980), chair of the Technical Program Committee for the Quebec City 1980 IEEE AP-S International Symposium, and chair of the local Organizing Committee for the Toronto 1999 General Assembly of the International Union of Radio Science (URSI).

Keith was predeceased by his beloved wife Shirley in 2011. He is survived by cousins Tanis, Lorie, Ross and Douglas, and their families. His intellect, integrity, humour, professionalism and humanity will be greatly missed.

Be it further resolved –

THAT this tribute to Professor Emeritus Keith G. Balmain 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 Charles Winegard

Jun Nogami of the Department of Materials Science & Engineering read the following memorial tribute.

Be it resolved –

THAT the Council of the Faculty of Applied Science & Engineering record with deep regret the death on January 31, 2019 of Professor Emeritus William Charles Winegard.

Bill Winegard was born in Hamilton, Ontario, but made it a point to say that he grew up in Caledonia, where his father was the mayor and the founder of Winegard Motors. Bill joined the Royal Canadian Naval Volunteer Reserve at the age of 17, and then served from 1942 to 1945 during World War II, becoming the youngest officer in the history of the Canadian Navy. After the

war, he received his Bachelor's degree (4T9) and PhD (5T2) in Metallurgical Engineering from the University of Toronto, as well as a Master's degree (5T0) in Mechanical Engineering. He was part of the faculty of the department of Metallurgy and Materials Science from 1952 to 1967. As a U of T professor, he was recalled as a gifted and enthusiastic teacher. His research centered on solidification and grain growth in metal alloy systems, and with other colleagues he elevated the department to become the undisputed world leader in physical metallurgy for several decades. He also served as Assistant Dean of the School of Graduate Studies in 1964, and became Acting Dean in 1966. Although he left U of T in 1967, he continued to publish with collaborators in the MSE department until the mid-eighties. In 1980, he was made a Fellow of the American Society for Metals (ASM).

From 1967 to 1975, he was President and Vice-Chancellor of the University of Guelph.

He was elected as a Progressive Conservative Party candidate in the riding of Guelph in the 1984 federal election. He was re-elected in the 1988 election in the riding of Guelph-Wellington. He served in the cabinet of the Mulroney government as the Minister of State (Science and Technology) from 1989 to 1990, and the Minister for Science from 1990 to 1993.

In 1998, he was made an Officer of the Order of Canada. Excerpts from the citation read: "His vocation as a volunteer extends from his experience during his varied and influential career as an educator, an administrator, a scientist and a federal politician. While President and Vice-Chancellor of the University of Guelph, he played a pivotal role in converting an agricultural, veterinary sciences and home economics institution into a broadly-based university. He also helped to advance international education and development research while a Member of Parliament and as a Minister of the Crown."

Bill remembered his days as a student at U of T with particular affection, recalling that he had the opportunity to interact with some of the leading figures in metallurgy as they passed through the department as visitors or seminar speakers. This led him to establish the Winegard Visiting Lectureship in New Materials Engineering, which ran from 2010 to 2016. In 2018, this gift was transformed into the William C. Winegard Award in Advanced Materials, created to recognize MSE graduate students with exceptional academic performance, who are committed to metallurgical and/or materials innovation and contributions to the advancement of fundamental knowledge.

Be it further resolved –

THAT this tribute to Professor Emeritus William Charles Winegard 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 stood to observe one minute of silence in honour of Professors Emeriti Keith G. Balmain and William Charles Winegard.

4. Report of the Dean

Dean Amon welcomed members to Faculty Council and provided the following remarks.

(a) Provincial Budget

Budgetary items are not typically discussed at Faculty Council, which normally focuses on academic programs. However, this is a unique year. There has been much discussion recently about the sudden decision of the provincial government to cut domestic student tuition by 10 per cent and to freeze graduate and undergraduate domestic student tuition for this and next year. This represents a \$7M loss in revenue for 2019-2020 for our Faculty. However, we are fortunate to be in a strong financial position. We have paid the remaining mortgages in the Bahen Centre and the Centre for Cellular & Biomolecular Research and have completed payment of the Myhal Centre construction. We have set aside funds for major infrastructure investment such as a new facility at the Gull Lake Camp, remodeling of the Engineering & Computer Science Library, and construction on the top of the Wallberg building. With these infrastructure projects and the ones recently completed throughout the Faculty, we do not expect that a substantial level of upgrading will be required in the next several years. This will make up for some of this loss in revenue.

However, we do not know how long tuition will be frozen, and the 10 per cent reduction will never be recovered. We will have to control expenses and are considering a variety of plans to balance this loss, such as slightly increasing our target for international undergraduate students for the fall of 2019. Departments are also expected to increase their intake of MEng students as appropriate. Regarding philanthropy, we have a very generous group of alumni that has contributed tremendously over the past 10 years, and is expected to continue to do so. The Boundless campaign ended in December 2018 and we surpassed by 20 per cent our Faculty's target, which some had initially considered aggressive, raising over \$240M. This was possible because of the hard work of many present at this Council meeting.

The Speaker complimented Dean Amon on her outstanding leadership in terms of fundraising, to the applause of Council.

A member asked if it is anticipated that the province will cut Engineering Society fees. Dean Amon responded that although this is unclear, we will support our engineering students.

(b) Dean's Strategic Fund

Requests for the eighth round of funding from the Dean's Strategic Fund (DSF) are invited. The DSF is intended to encourage ideas that will have a broad impact within the Faculty that might not otherwise be implemented due to lack of start-up funding. Initiatives that could further our 2017-2022 Academic Plan goals, such as enhancing diversity and inclusivity, or developing multi-departmental and collaborative cross-faculty initiatives, are particularly welcomed.

Proposals must be submitted by the chair or director of the sponsoring department, institute or EDU:C by April 2, 2019. A DSF Advisory Committee will be convened to review the submissions and recommend awards.

Funded projects will be required to prepare an annual report on progress made against their stated milestones. For multi-year projects, this progress will be assessed prior to releasing the next installment of approved funding. Projects must plan to become financially self-sufficient.

(c) Academic and Administrative Leadership

Several searches are underway in our Faculty at the leadership level, including searches for chairs of Electrical & Computer Engineering, and Materials Science & Engineering. The MSE chair search will begin shortly and invitations to the Advisory Committee have been issued. The department's external review is scheduled for February 25-26, 2019. The search for the ECE chair is ongoing. With input from the Advisory Committee, the decision has been made to consider both internal and external candidates. A search for the director of the Institute for Studies in Transdisciplinary Engineering Education and Practices (ISTEP) is soon to start.

In terms of administrative leadership positions, the Faculty is hiring for the recently-created positions of Director, Diversity, Inclusion and Professionalism, and Director, Information Technology; and for the replacement of the recently-vacated Executive Director, Communications position.

A 12-month position for a Faculty Health & Safety Coordinator has also been created. Among other duties, this role will ensure that FASE labs comply with relevant health and safety standards and will develop and implement occupational health and safety programs and procedures, including training and presentations to graduate and undergraduate students.

(d) Convocation

Spring convocation for Engineering is scheduled for June 19, 2019, with ceremonies during the morning (CHE, CIV, MIN, EngSci), afternoon (UTIAS, IBBME, MIE) and evening (ECE, MSE). William (Bill) Troost will be one of our honorary graduands. He is a Chemical Engineering alumnus and a great champion of the Faculty and our leadership programs, in particular the Troost Institute for Leadership Education in Engineering, of which he is an Advisory Board member. Bill Troost will speak during the morning ceremony; suggestions for speakers for the afternoon and evening ceremonies are welcome.

5. Proposed Session Dates for the 2019-2020 Academic Year

Evan Bentz, chair of the Undergraduate Curriculum Committee, presented Report 3614. The committee selects the Faculty's session dates after Arts & Science chooses theirs to minimize overlap between FAS exams and FASE classes. This year there is a four-day overlap, which the committee will try to minimize by having FASE exams scheduled carefully.

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

THAT the session dates for the 2019-2020 academic year be approved as described in Report 3614.

There was no discussion and the motion was carried.

6. Major Curriculum Changes for the 2019-2020 Academic Year

Evan Bentz, chair of the Undergraduate Curriculum Committee, presented Report 3615 Revised, major curriculum changes which affect cross-disciplinary minors and certificates, the Engineering Communication Program, and undergraduate programs in Chemical Engineering & Applied Chemistry, Electrical & Computer Engineering, Mechanical & Industrial Engineering, Engineering Science, Civil & Mineral Engineering, and Materials Science & Engineering.

The report was initially sent to Faculty Council on February 15, 2019. The report was subsequently revised to rename JRE500H as APS500H, and to remove section 1.4 which pertains to BME498H: Biomedical Engineering Capstone Design. A reference to Report 3617: Inclusion of the Undergraduate Certificate in Global Engineering in the U of T Global Scholar Program was also added. The revised report was distributed on February 26, 2019.

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

THAT the proposed curriculum changes for the 2019-2020 academic year, as described in Report 3615 Revised, be approved.

There was no discussion and the motion was carried.

The following items were approved by the Executive Committee of Council at its February 5, 2019 meeting and are for Council's information.

7. University of Toronto Global Scholar Program

Evan Bentz, chair of the Undergraduate Curriculum Committee, presented Report 3617 on behalf of Bryan Karney.

The university has been working towards a number of global-focused certificate and emphasis programs for students to achieve recognition on their transcript as U of T Global Scholars. Our undergraduate certificate in Global Engineering was identified as being an appropriate program for inclusion in this initiative, thus the title of the certificate in the calendar entry and the notation of students' transcript will now read "Certificate in Global Engineering (U of T Global Scholar)".

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

8. Reports and Recommendations of Standing Committees

(a) Engineering Graduate Education Committee Update

Julie Audet, Vice-Dean, Graduate Studies and chair of the Engineering Graduate Education Committee, presented Report 3616 Revised, which includes new courses approved for AER, APS and CIV; code and name changes to BME and ECE courses; a new pre-requisite for the Analytics emphasis; the addition of Civil Engineering and Electrical & Computer Engineering master's and doctoral degree programs to the collaborative specialization in Psychology and Engineering; and the addition of a direct entry option to the doctoral program in Aerospace Engineering.

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

9. Discussion Items

The following items are for discussion purposes only.

(a) Troost ILead Update: Engineers Leading Change to Build a Better World

Emily Moore, director of the Troost Institute for Leadership Education in Engineering (Troost ILead), provided an update on the Institute's evolving mission, the Alumni Impact Survey conducted in the summer of 2018, the strategic review presented to the Institute's Board in January 2019, and the goal to create a detailed strategic plan by May 2019. Professor Moore explained how Troost ILead helps students develop their leadership capacity, (re)defines engineering leadership, and enables leadership in the profession. She described the Institute's programs, research themes and outreach initiatives, and concluded by describing its leadership philosophy and the ways in which it helps students as individuals and in the context of their teams, organizations and society.

Council members discussed the interest of graduate students in the Institute's programs, especially with regard to their research; how it can promote its programs to students in the classroom; and partnership opportunities with the Engineering Career Centre. Members also discussed the Institute's ability to integrate ethics into courses on an ongoing basis, and how it can link ethics and equity as a means of supporting the Faculty's Equity, Diversity and Inclusion initiatives.

(b) Academic Integrity

Professor Emeritus Hans Kunov, Dean's Designate on Academic Offences, presented on undergraduate student academic integrity. He described the various types of academic offences under the code, such as plagiarism, possession of unauthorized aids and altering, forging or falsifying academic records, and the types of offences that can be committed by faculty, for example, altering a student record, giving students an unfair advantage in admissions and when marking exams and assignments, and, in particular, failing to report student offences. Professor Emeritus Kunov described the types of sanctions that can be applied and closed by emphasizing the importance of faculty acting ethically when faced with academic offences, and the opportunity to use the academic integrity process as an effective teaching tool.

Members discussed the importance of reporting even seemingly minor offences, because if these are not tracked, students can continue to amass offences before they are entered into the system.

Academic offences involving graduate students fall under the same code, but are managed by the School of Graduate Studies instead of the Faculties.

The Faculty should inform students, professors and TAs about academic integrity in lab settings, as students may be inadvertently committing offences. It is important that research groups are aware of the potential consequences of academic offences, such as having a degree rescinded, even many years later. Members learned about a tutorial in a first-year course where student teams work through case studies, with the data they collect included as case studies in their second and third years. This is an excellent way to reinforce these concepts. The office of the Vice-Dean, Undergraduate has developed a series of four modules that focus on ethics. These were created with input from students and are publicly available on the Faculty's website. The Undergraduate office will look into expanding these modules to include training on offences in lab settings.

Fair process is another aspect of academic offences: during the investigation, instructors must inform students that they have the right to appeal their case.

A member expressed concern with the suggestion that academic offences committed by members of minority groups are underrepresented, however, Professor Emeritus Kunov stated that he had seen this practice first-hand.

10. Other Business

There was no other business.

11. Date of Next Meeting

The next Faculty Council meeting is on April 11, 2019.

12. Adjournment

The meeting was adjourned at 1:50 p.m.

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