UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Minutes of the Faculty Council of February 28, 2017 at 12:10 p.m. Michael E. Charles Council Chamber (GB 202)

PRESENT

Doug Reeve (Speaker)
Cristina Amon (Dean)
Grant Allen
Alexander Baker
Joe Baptista
Jason Bazylak
Christopher Beck
Tim Bender
Evan Bentz
Erin Bobicki
Merve Bodur
Olga Bondarev
Chris Bouwmeester
Esmeralda Bukuroshi
Markus Bussmann
Brittny Carter
Alan Chong
Tom Coyle
Ayesha David
Jim Davis
Levente Diosady
Stark Draper
Hannah Eng
Jennifer Farmer
Ramin Farnood
Marie Floryan
William Graydon
Krisztina Harmath
Sarah Hefferman
Fay Huang
M. Reza Iravani
Bryan Karney
Dawn Kilkenny
Deepa Kundur
Elias Kyriacou
Don MacMillan
Milan Maljkovic
Hani Naguib
Farid Najm
Jun Nogami
Nelly Pietropaolo
Ira Daniel Posen
Li Qian
Rafael Quintero-Bermudez
Jonathan Rocheleau
Shamim Sheikh
David Sinton
Brent Sleep
Gillian Sneddon
Micah Stickel
Samantha Stuart
Deborah Tihanyi
Marianne Touchie
Olev Trass
Shahrokh Valaee
Chirag Variawa
Zhexiang Wang
Victor Xin
Henry Xu
Xuchao (David) Yang
Matthew Zhang
Jean Zu
James Jin
Brenda McCabe
Graeme Norval
Jeff Packer
Doug Perovic
Katherine Rich
Jonathon Rose
Steven Thorpe

REGRETS

Mim Haque
Jane Illarionova
Bryan James

GUESTS

Chris Brown
Sharon Brown
Dani Couture
Shayni Curtis
Christina da Rocha-Feeley
Leanne Dawkins
Sonia de Buglio
Jennifer Fabro
Carol Finlay
Cori Hanson
Barrett Hooper
Carmen Horvath
Illan Kramer
Jennifer Lancaster
Gayle Lesmond
Patrick Marquis
Leigh McNeil-Taboika
J.D. Muir
Dan Pettigrew
Dianne Stathopoulos
Mindy Thuna
Geoff Wichert
Caroline Ziegler (Secretary)

1. Speaker's Welcome and Adoption of the Agenda

Council Speaker Doug Reeve welcomed members to the third Faculty Council meeting of the 2016-2017 academic year.

The agenda and meeting package were distributed on February 17, 2017. Council agreed by a show of hands to consider the Undergraduate Curriculum Committee's Report 3524 Revised, which was distributed on February 27, 2017, under Other Business.

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

> THAT the revised agenda be adopted.

2. Introduction of New Faculty

Jun Nogami, Chair of the Department of Materials Science & Engineering, introduced his new faculty member, Erin Bobicki.

Jean Zu, Chair of the Department of Mechanical & Industrial Engineering, introduced her new faculty member, Merve Bodur.

Grant Allen, Chair of the Department of Chemical Engineering & Applied Chemistry, introduced his new faculty member, Jennifer Farmer.

Brent Sleep, Chair of the Department of Civil Engineering, introduced his new faculty member, Daniel Posen.

The Speaker welcomed the new faculty members to Council and thanked them for attending.

3. Approval of Minutes of the Previous Meeting

No errors or omissions were noted in the minutes of the previous meeting. On a regular motion, duly moved, seconded and carried, it was resolved –

> THAT the minutes of the meeting of December 1, 2016 be approved.

4. Memorial Tribute

Brent Sleep, Chair of the Department of Civil Engineering, read the following memorial tribute in honour of Professor Emeritus S. M. (Mike) Uzumeri.

Be it resolved –

> THAT the Council of the Faculty of Applied Science & Engineering record with deep regret the death on January 19, 2017 of Professor S.M. Uzumeri.

Professor Uzumeri passed away peacefully, surrounded by family, on January 19, 2017, at the age of 86. He is survived by his wife Jean, children Vakur and Leyla, and grandchildren David and Emre.

Professor Uzumeri graduated from the University of Toronto with a B.A.Sc. in Civil Engineering in 1956 and completed an M.A.Sc. in 1958. He joined the Department as Lecturer the same year and became an Assistant Professor in 1962. He was promoted to Associate Professor in 1968 and to Professor in 1974. He was Assistant Chair of the Civil Engineering Department from 1968 to 1971 and Chair from 1984 to 1989. Professor Uzumeri retired from the University of Toronto in 1993. Following this, he was a faculty member at the Middle Eastern Technical University until 2005.

In his 35 years at the University of Toronto, Professor Uzumeri made many contributions as a distinguished professor, administrator and mentor. He was on the University Wide Committee involved in drafting the new University of Toronto Act implemented in 1971. He served as President of the University of Toronto Faculty Association from 1972 to 1973 and President of the Association of Engineering Professors from 1975 to 1978. Professor Uzumeri was a member of Governing Council from 1981 to 1989, serving on several committees of Governing Council and finally serving as Chair of the Academic Board of the University of Toronto from 1988 to 1989.

With an absolute conviction that engineers have the ability to make the world a better place, Professor Uzumeri played a significant role in deepening the understanding of reinforced concrete behaviour. He was among the founding members of the Canadian Association for Earthquake Engineering and made significant contributions to earthquake engineering research and building code development, serving on several national and international technical committees dealing with building codes and seismic design. In 2002, he was recognized by the American Concrete Institute with a special Symposium named after him. He was a fellow of the American Concrete Institute and the Canadian Society of Civil Engineering.

As Civil Engineering Department Chair, Professor Uzumeri championed the modernization of the Department by introducing computerization to its administration along with the associated staff training, made academic teaching allocations transparent and introduced the concept of funding levels for the Department's graduate students. He encouraged and supported many students and young faculty members over the years. He was also instrumental in setting up a scholarship, which bore the name of his graduating year, the Class of 5T6 scholarship, awarded annually to an outstanding second year civil engineering student.

Professor Uzumeri was deeply proud of the University of Toronto and he was the embodiment of its 'Blue and White' spirit. Professor Uzumeri was truly a great citizen of the University of Toronto.

Be it further resolved –

> THAT this tribute to Emeritus Professor Uzumeri 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 this resolution, and Council stood to observe one minute of silence in honour of Professor Emeritus Uzumeri.

5. Report of the Dean

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

(a) CEIE and Infrastructure Update

We continue to make good progress with the CEIE, with a target completion date by October. Concrete pouring should be finished by the end of March and we expect to be able to pilot some classes starting January 2018.

Our Strategic Investment Fund (SIF) projects are underway, and we should meet the April 2018 deadline set by the federal government to be reimbursed for our costs. Thank you to all who are participating.

The Working Group to Review Makerspaces audited makerspaces and equipment in all departments over the summer. Their recommendations, along with a plan to communicate the availability of these spaces, will be released shortly and will complement the CEIE's student project and study spaces.

(b) External Review of Faculty

An external review of our Faculty took place from January 31 to February 2. The visiting team met with faculty, staff and students and at their exit meeting, commended our innovation, quality, and the commitment of our students.

The reviewers will submit their report to the Provost within the next couple of weeks. This report will help inform our next academic planning exercise, which will guide us for the next five years.

Thank you to all who took part in the process, from contributing to the Faculty's self-study to meeting with the review team.

(c) Undergraduate Applications

We have had another record-setting year for undergraduate applications. As of last week, we were at 13,195 applications for 1,060 places, compared to 12,742 this time last year; this is a 3.5 per cent increase.

Female applications have also risen by an estimated 4 per cent, and, as of today, international applications have risen by approximately 14 per cent.

Overall, the number of Ontario high school applications to our Faculty has decreased by 4.6 per cent. We are getting information on how this compares to other schools in Ontario. Since the drop-off appears to be among non-competitive applicants, we suspect it may be because the word is out how competitive our Faculty is, with average admission marks at 93.6 per cent last year. We should be very proud of the quality of students attracted to our programs.

Members discussed the impact of the recent US election on applications to FASE. The Chair, First Year said that there has been a 30 per cent increase of US applications to the University as well as to FASE, and that some are from Canadian citizens.

(d) Dean's Strategic Fund

The Dean's Strategic Fund was created to encourage ideas that might otherwise not get implemented, particularly across our Faculty, due to a lack of start-up funding. Proposals are submitted through Chairs and Directors or extra-departmental units, and successful initiatives are expected to become self-sustaining.

We are pleased to have received 27 letters of intent this year on a variety of initiatives from across the departments and institutes, with full proposals to be submitted by March 20.

(e) EIIP/TEAL Fellows

We will be sending out a call for proposals later this week for the fourth cycle of the Engineering Instructional Innovation Program (EIIP), as well as for a new Technology Enhanced Active Learning (TEAL) Fellows Program we are launching this year.

As in previous years, the EIIIP will target projects of larger scope involving the creation or substantial renovation of an undergraduate course, a closely-related group of courses, or innovative learning experience. Projects should have the potential to produce significant and sustainable impact on student engagement and learning outcomes, identify measurable results, and include a plan for collecting data on outcomes. Submissions that will result in a course suitable for delivery in the large auditorium of the CEIE are encouraged.

The new TEAL Fellows Program is soliciting proposals for the design or redesign of an undergraduate or graduate course that will include active learning principles and the effective use of the CEIE's TEAL rooms and design studios. Successful applicants will be known as TEAL Fellows for the two-year tenure of the award, and will form the core of a community of practice in active learning.

All are encouraged to develop or adapt courses to take advantage of the new environment in the CEIE, which will offer a unique 500-seat auditorium and six TEAL rooms with moveable chairs and tables that allow for a variety of configurations for small group work, and where instructors can roam.

Initial deadlines for submissions to both programs will be the end of March and details are included in the call for proposals.

(f) Town Hall

We held a student town hall on January 25 in partnership with the Engineering Society. It was well attended and students provided very valuable suggestions and input on mental health, TA support and design courses. We are in the process of reviewing that feedback for action items; some has already been incorporated into the mental health task force report that will be presented later at this meeting.

We have had tremendous engagement this year from the Engineering Society and students, at our town halls and here at Faculty Council, which is a testament to our students' interest in the Faculty and to the great work being done by the leadership of the Engineering Society. As a result, we will be holding a third town hall this year on March 23. Topics will be published in the next week.

(g) Convocation

Spring convocation will be held during the morning, afternoon and evening of June 13. This is the first year we have had three separate convocation ceremonies in one day to accommodate our growing graduating class.

Convocation for students in Electrical & Computer Engineering and Materials Science & Engineering will be from 10:00 am to 12:00 pm, with Catherine Lacavera, the current Principal, Litigation at Google and alumna of computer engineering and law at U of T as Honorary Graduand. Mechanical & Industrial Engineering, Civil Engineering and Mineral Engineering students will convocate from 2:30 to 4:30 pm. Students in Chemical Engineering & Applied Chemistry, Engineering Science, the Institute of Aerospace Studies, and the Institute of Biomaterials & Biomedical Engineering will convocate from 6:30 to 8:30 pm.

Please mark your calendars. As was done last year, each department and institute will host their own convocation reception for students and guests.

(h) Celebrating Engineering Excellence

Our ninth annual Celebrating Engineering Excellence awards reception for faculty and staff is scheduled for April 26 in GB202. This is a great opportunity to recognize and acknowledge the contributions of our colleagues to the Faculty.

(i) Vice-Dean, Research

I would like to take this opportunity to thank Dave Sinton for serving as our Interim Vice-Dean, Research for the past eight months. His term will end in mid-March so that he can begin his two-year Steacie Fellowship. I would also like to welcome and thank Ramin Farnood for taking on the interim role for a six-month term beginning March 1 while we continue our search for the next Vice-Dean.

6. FASE and South China University of Technology Dual Degree Program

Jean Zu, Chair of the Department of Mechanical & Industrial Engineering, presented Report 3528 Revised, a proposal to create a dual degree program that will allow outstanding third-year students at the South China University of Technology's School of Mechanical &

Automotive Engineering (SMAE) to apply to complete their fourth year of undergraduate studies enrolled in MIE as Visiting International Non-Degree Students, and receive a conditional offer of admission into the MEng program for their fifth year.

This program will allow SMAE students to seamlessly complete the requirements of two existing, approved degree programs, expose them to an enriched academic environment, and immerse them in a new culture. U of T MIE students, both fourth-year undergraduates and MEng, will benefit from interacting with students from a very different educational and cultural background.

The dual degree program is based on a 3+2 program created by U of T and South China University of Technology in 2013. Upon expiration of the memorandum of agreement in 2016, the success of the program, which has involved a small cohort of high-performing students, led the partner institutions to seek to continue their collaboration. At U of T, 3+2 programs are being replaced by the more standardized dual degree programs, which are approved by divisional councils and governed by a memorandum of agreement.

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

> THAT the creation of a dual degree program between the Faculty of Applied Science & Engineering's Department of Mechanical & Industrial Engineering and the South China University of Technology's School of Mechanical & Automotive Engineering, as outlined in Report 3528 Revised, be approved with the first cohort to be registered in September 2017.

There were no questions and the motion was carried.

7. Undergraduate Minor in Advanced Manufacturing

Evan Bentz, Chair of the Undergraduate Curriculum Committee, presented Report 3530 Revised, a proposal to create an undergraduate minor in advanced manufacturing. This minor will allow students to build a strong foundation in the field and provide them with the option to pursue a recognized specialization in advanced manufacturing for a career in industry or graduate degrees. Similar to the recently-approved graduate emphasis in advanced manufacturing, the minor recognizes the value of the engineering skills and multidisciplinary knowledge that can be leveraged in a wide range of sectors, including biomedical, automotive, aviation, aerospace, energy.

To complete the minor, students must take two core courses, one complementary studies course, and three elective courses that are offered by various departments, including new advanced manufacturing-focused courses, and/or a thesis design project.

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

THAT the Advanced Manufacturing Minor, as described in Report 3530 Revised, be approved and introduced in the 2017-2018 academic year.

There were no questions and the motion was carried.

8. Major Curriculum Changes for 2017-2018

Evan Bentz, Chair of the Undergraduate Curriculum Committee, presented Report 3531 Revised, which describes curriculum changes for the 2017-2018 academic year. These will affect programs in Chemical Engineering & Applied Chemistry, Engineering Science, and Mechanical & Industrial Engineering, as well Cross-Disciplinary Programs and the Engineering Communication Program.

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

THAT the proposed curriculum changes for the 2017-2018 academic year set out in Report 3531 Revised be approved.

There were no questions and the motion was carried.

9. Reports and Recommendations of Standing Committees

The following reports were approved by the Executive Committee of Faculty Council at its January 23, 2017 meeting and are being presented for Council's information.

(a) Engineering Graduate Education Committee: Update

Markus Bussmann, Vice-Dean, Graduate Studies and Chair of the Engineering Graduate Education Committee, presented Report 3533, which lists new and modified courses.

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

(b) Examinations Committee: Changes to the Final Mark Recheck Policy

Jim Davis, Chair of the Examinations Committee, presented Report 3532 Revised, proposed changes to the Final Mark Recheck Policy. The current mark recheck policy serves as a request for term and exam mark rechecks and as an unofficial request for an examination regrading. The proposed changes will separate these two functions, making the process more transparent to both instructors and students, and more consistent with the process in Arts & Science.

Professor Davis confirmed that to reduce "fishing expeditions", a recheck or regrade may result in a raised mark, a lowered mark, or no change. He explained that although it is not necessary for students to purchase a copy of their exam before requesting a recheck or regrade, they must first view their exam to identify possible errors. The Faculty Registrar added that the number of requests to view exams has doubled this year.

The report was received for information.

10. Discussion Items

The following updates are for discussion purposes only.

(a) Proposed Major in Engineering Science: Machine Learning/Artificial Intelligence

Deepa Kundur, Chair of the Division of Engineering Science, informed Council that the Division has struck a working group with faculty members from Engineering Science, Electrical & Computer Engineering, Mechanical & Industrial Engineering, Aerospace Studies, the Department of Computer Science, and an Engineering Science alumnus to prepare a proposal for the creation of a new major in machine learning/artificial intelligence (ML/AI).

Interest from stakeholders such as students, the Engineering Science Board, alumni and potential employers was confirmed, as was a growing interest in ML/AI and application areas among our faculty. External support is demonstrated by increased venture capital funding in ML/AI and the creation of machine learning technology centres in Ontario.

ML/AI aligns well with our Faculty's expertise in information theory, signal processing, control theory, optimization, algebra and probability, and divergent and convergent design thinking. The undergraduate major will reside naturally within Engineering Science, with the Division's first principles approach, emphasis on hardware/software and systems, promotion of application modeling and problem framing, and design experience.

The working group will consider how to position the new major as distinct from the Division's existing majors, as well as MIE's information engineering stream, the Department of Computer Science's research areas, and iSchool's Bachelor of Information program.

In addition to completing the proposal, the working group will develop curriculum for core and elective courses, consult with Engineering Science stakeholders, and solidify external partnerships. Accreditation issues and relationships with other divisions at the University, such as Arts & Science, will also be considered.

The working group plans to submit the proposal for approval by Engineering Science and the Faculty's Undergraduate Curriculum Committee in the spring or summer of 2017, and advertise it in the summer of 2017. It will go forward for Faculty Council approval in the fall of 2017, and, if approved, will be launched in September 2018.

In response to a member's question of whether an existing major, such as electrical and computer engineering, can be expanded to include ML/AI, Professor Kundur explained that the new major will cover toolsets that are distinct from traditional ECE and will focus on the application of these tools to a multitude of problems. In addition, the hardware component of the curriculum will be focused on architectures that aid in big data processing. It also includes some human interaction that is not traditionally considered part of ECE. She pointed out, however, that ML/AI is multi-disciplinary and that ECE will be consulted and involved.

Professor Kundur assured students that they will be consulted on the creation of the major once the working group has developed a first draft of the proposal, to focus discussions.

Members discussed if the ML/AI major might impact enrolment in the existing majors, and if the working group expects current students to be redistributed or new students enrolled. Professor Kundur said the Division is not thinking of expanding enrolment at this time because the new major is expected to draw from students currently enrolled in the robotics major, as many have been taking robotics as a substitute for ML/AI. She further confirmed that, although there appears to be some overlap between ML/AI and the robotics major, there will be no reason to change the latter.

Dean Amon noted the impact of the application of ML/AI on many engineering fields and suggested the Faculty create an undergraduate minor in this area, with some joint courses with the major.

(b) Final Report of the Decanal Task Force on Mental Health

Tom Coyle, Vice-Dean, Undergraduate, presented the final report of the Decanal Task Force on Mental Health. The task force was created in July 2015 in response to the University's Mental Health Framework to propose a comprehensive mental health strategy consistent with best practices from across the University and fellow higher education institutions. Preliminary results of the task force report were presented at the February 29, 2016 Council meeting.

The task force was mandated to identify and review the mental health strategies and resources that the Faculty currently provides or facilitates, to review the current initiatives and strategies that promote mental health and their effectiveness within the University and beyond, to recommend mental health strategies and implementation plans for the Faculty that align with the University's new Mental Health Framework, and to recommend appropriate working groups to implement the proposed strategies and plans.

The task force and its four working groups met regularly between July and October 2015 to identify strengths within the Faculty that include our academic advisors, culture and community, educational technology, embedded advisors, Engagement & Development Network, First Year Office and APS100, among others.

Professor Coyle reviewed the twelve recommendations described in the report, which include: (1) improving the Faculty's webpages dedicated to student health and wellness resources; (2) developing and clarifying a communication and referral protocol for students in crisis; (3) developing a coordinated training program for staff and faculty on addressing students in distress and increase training for academic departments; (4) developing a quick reference guide on addressing students in distress for faculty and instructors; (5) developing a campaign to showcase engineering students who prioritize healthy habits and lifestyle; (6) developing a mental health statement to be included on all course syllabi; (7) utilizing universal design principles as a paradigm when proposing new academic programs or making changes to existing academic programs; (8) creating a committee to review and further develop academic and personal support services for

graduate students; (9) better communicating to students their program's academic objectives and how their program's requirements are designed to support them; (10) expanding the capacity for embedded personal counselling within the Faculty; (11) modifying the current Engineering undergraduate ranking system; and (12) facilitating a review of the Faculty's accessibility and accommodations policies.

Members discussed the use of universal design principles in the context of mental health, for example, when creating new courses. Professor Coyle said that it will be up to students to apply to Accessibility Services to explore specific accommodations, and that they would work with the individual professors. He recommended that instructors contact the Centre for Teaching Support & Innovation, which has developed an Instructor Toolkit to support departmental and individual needs related to online course design and development.

Members also discussed the review of policies that affect students, the need to more clearly map physical access to meeting rooms and classrooms, and the perception that it is a "badge of honour" in our Faculty to be able to handle stress, which may deter students from taking action to alleviate the stress.

The report can be found on the Faculty's Task Forces & Report webpage.

11. Other Business

Evan Bentz, Chair of the Undergraduate Curriculum Committee, presented Report 3524 Revised, a correction to the Faculty's session dates for 2017-2018. After the sessions dates were approved at the December 1, 2016 Council meeting, an error was discovered in the dates for Summer 2017. Revising these dates so that classes begin on May 8, 2017 and end on June 22, 2017 and so that the exam period runs from June 23-30, 2017 will provide a better schedule for students. It allows for a week-long break following April exams and removes an unnecessary week-long lag between the end of May-June classes and the May-June exam period, and better aligns with University add/drop dates and refund schedules.

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

> THAT the revised session dates for Summer (May-June) 2017 be approved as described in Report 3524 Revised.

Professor Bentz confirmed that the affected dates have shifted forward seven days.

The motion was carried. There was no other business.

12. Date of Next Meeting

The next Faculty Council meeting is on April 10, 2017.

13. Adjournment

The meeting was adjourned at 1:43 p.m.

/cz