UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Council of the Faculty of Applied Science & Engineering
Minutes of the Meeting of February 18, 2022

PRESENT: Javad Mostaghimi (Speaker), Chris Yip (Dean), Ravi Adve, Dionne Aleman, Barbara Alexander, Danita Allick, Cristina Amon, Philip Asare, Julie Audet, Jason Bazylak, Timothy Bender, Evan Bentz, Archit Bhargava, Raymond Bhushan, Shlomo Bibas, Eric Bryce, Markus Bussmann, Michael Chan, Warren Chan, Heba Chehade, Alan Chong, Sam Chowdhury, Will Cluett, Sinisa Colic, Michael Collins, Tom Coyle, Daire Crawford, James Davis, Ali Dolatabadi, Natalie Enright Jerger, Greg Evans, Saima Fancy, Jennifer Farmer, Ayleen Farnood, Ramin Farnood, Jacqueline Fleisig, Diane Giang, Piyush Gupta, Angela Henshilwood, Glenn Hibbard, Ken Hilton, Muktar Homam, Najmus Ibrahim, Charles Jia, Andrew Kidd, Dawn Kilkenny, Donald Kirk, Deepa Kundur, Jonguk (Justin) Lee, Seungjae Lee, Heather MacLean, Don MacMillan, Sam Mantenuto, Elham Marzi, Liz Michez, Emily Moore, Shivani Nathoo, Jun Nogami, Thea Perez, Doug Perovic, Khoman Phang, Doug Reeve, Mark Rittinger, Sanjana Seerala, Peter Serles, Shamim Sheikh, Brent Sleep, David Steinman, Marisa Sterling, Ken Tallman, Purushoth Thavendran, Chris Twigge-Molecey, Tony Vanvari, Chirag Variawa, Elizabeth Whitmell, Bernard Wong, Yu Zou

GUESTS: Katie Allison, Helen Bright, Sharon Brown, Khuong Doan, David Duong, Jennifer Fabro, Adam Fox, Roger Francis, Leslie Grife, Cathy Grilo, Christina Heidorn, Cheryl Lee, Marit Mitchell, Don Newton, Zeeshan Rayees, Alex Tichine

SECRETARIAT: Caroline Ziegler (Secretary), Alex Schroen (Moderator), Anna Limanni (Technical Support)

1. Speaker's Welcome

Speaker Javad Mostaghimi called the third Faculty Council meeting of 2021-2022 to order at 12:14 pm. He welcomed members and guests, acknowledged the University's use of traditional land and reviewed protocols for the virtual meeting. There were no questions.

2. Approval of Agenda

The agenda and reports were distributed on February 10, 2022. The Adoption of the Minutes of the Previous Meeting was removed from the agenda and the December 16, 2021 minutes will go forward for approval at the April 27, 2022 Council meeting.

There was no discussion and on a motion duly moved, seconded and carried, it was resolved –

THAT the agenda be approved as revised.

3. Introduction of New Faculty

Brent Sleep, Chair of the Department of Civil & Mineral Engineering, introduced his new faculty member Ibrahim Ogunsanya.

4. Memorial Tributes

(a) Iain George Currie

Markus Bussmann, Chair of the Department of Mechanical & Industrial Engineering read the following memorial tribute in honour of Professor Emeritus Iain George Currie.

Be it resolved –

> THAT the Council of the Faculty of Applied Science & Engineering record with deep regret the death on December 25, 2021 of Professor Emeritus Iain George Currie.

Iain George Currie, born March 11, 1936, died peacefully with family by his side on Christmas Day, 2021, at his home in Oakville, at the age of 85.

Iain grew up in Scotland and attended the University of Strathclyde in Glasgow, where he earned a bachelor's degree in mechanical engineering (1960). He then ventured across the ocean for graduate work: a master's degree at the University of British Columbia (1962), and a PhD from the California Institute of Technology (1966). That same year he then joined the Department of Mechanical Engineering at the University of Toronto. Iain retired in 2001, but for many years afterwards remained actively engaged with the Department of MIE as Professor Emeritus. Iain is still well known and fondly remembered by many of us.

Iain's research focused on experimental studies of fluid structure interaction, in particular the use of Laser Doppler Anemometry (LDA) and Particle Image Velocimetry (PIV) to characterize the flow-induced vibration of tube bundles, work that was supported by agencies including Atomic Energy of Canada Limited and Ontario Hydro. Iain also taught fluid mechanics to both undergraduate and graduate students, and was well known as the author of the popular graduate textbook *Fundamental Mechanics of Fluids*, first published in 1993. A fourth edition was released in 2012, and still serves as the textbook for our course in Advanced Fluid Mechanics.

From 1993 to 1998 Iain served as Chair, first of the Department of Mechanical Engineering, and beginning in 1996, of the new Department of Mechanical & Industrial Engineering, the result of a merger that wasn't popular with faculty from either department at the time, but that Iain somehow made work, relying on strong leadership and people skills, plus a dash of good humour. A colleague recalls that Iain at the time had t-shirts printed for everyone that read, "I survived the MIE merger", or words to that effect. And Iain liked to say that after a bad day, he'd go home and complain to his dog, who would always agree with him. The collegiality of the Department of MIE today is in no small part due to Iain's early leadership.

Iain officially retired in 2001, but remained active within the Department, and was eventually instrumental in establishing and leading an MIE Honours & Awards Committee, organizing many award nominations on behalf of colleagues. That dedication was ultimately recognized in 2017 when Iain was named an Honorary Alumnus of U of T Engineering, one of just a few ever to be so recognized.

Iain Currie was a distinguished teacher and professor, an elegant, generous, gracious, gentle and warm colleague, and a good friend to many of us. He was also a very proud husband, father and grandfather, and will be greatly missed by his beloved wife Catherine, his children Brian, Karen, and the late David, and six beautiful grandchildren: Zander, Izabella, Bisola, Evan, Quinn and Gwynne.

Be it further resolved –

> THAT this tribute to Iain George Currie 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) Frank Clements Hooper

Markus Bussmann then read the following memorial tribute in honour of Professor Emeritus Frank Clements Hooper. This memorial tribute was prepared by Professor Emeritus Ron Venter with input from Professor Emeritus James S. Wallace.

Be it resolved –

> THAT the Council of the Faculty of Applied Science & Engineering record with deep regret the passing on May 2, 2021 of Professor Emeritus Frank Clements Hooper.

Frank Clements Hooper, born in 1924, lived to the ripe old age of 97 years. His first association with the Faculty was in 1942 when he enrolled in Engineering Physics; he graduated four years later in 1946. In 1955, following the completion of post-graduate studies at Imperial College, London, Frank accepted an academic position within the Department of Mechanical Engineering, from which he formally retired in 1989 as Professor Emeritus. It was during his tenure at Imperial College that Frank met the love of his life, Gay Hooper, who sadly passed away in 2016. Frank is survived by their two children, Della and Jeffrey, and three grandchildren.

During his extended academic career from 1955 to 2021, Frank was an active participant on many fronts within the Faculty, and was well respected and appreciated by colleagues across all departments. He chaired or served on numerous Faculty & University committees, and being an effective communicator, was always willing to constructively challenge and debate issues within our Faculty Council, for our collective benefit. Through many years of service Frank demonstrated an unparalleled devotion to the Department, the Faculty and the engineering profession at large.

On the administrative front, Frank first served as the Graduate Secretary in the Department of Mechanical Engineering from 1953 to 1969. Following the revision of the Constitution of Faculty Council in 1972, which transferred the chairship from the Dean to an annually elected Office of the Speaker, Frank Hooper was appointed the first Speaker of Faculty Council; by all accounts he served with distinction until 1976. A year later, Frank was invited to serve as Chair of our prestigious Engineering Science Division, through to 1985.

Frank loved the classroom as much as he did the supporting laboratory experiences in MC120; he enjoyed teaching and the interaction with both undergraduate and graduate students. Students too enjoyed Frank's teaching prowess as he creatively linked the basic fundamentals with real world applications to fully demonstrate the excitement of the practical engineering experience.

In 1970 it was Frank, working with Professor I.W. Smith and the student project leader, Doug Venn, who pioneered and built the very successful and internationally acclaimed U of T Miss Purity entry for the Clean Air Car Race that ran from MIT, Boston to Caltech, Pasadena, powered by an electric/propane hybrid engine! Frank was an inspiring educator, as his infectious enthusiasm and experience encouraged student interest and learning.

Through the years Frank built an enviable research portfolio that earned him broad international accolades and recognition for his contributions in various thermal energy applications, energy production/conservation, and pollution control. Particular career highlights include his Chairmanship of the 6th International Heat Transfer Conference which he hosted in Toronto in 1978; he served as the President of the Assembly of this august body for four years. Frank also had the distinction of serving as the President of the Council of the Royal Canadian Institute in 1981/82.

Frank's research and consulting accomplishments were extensive. He was an early pioneer in the development of the ground source heat pump. He was honored in May 2011 with an award from the Canadian Geo-Exchange Coalition for his pioneering research on ground source heat pump and cooling technology. In the 1980s, his research team installed a mechanized system of solar collectors/receptors on the roof of the Mechanical Building to automatically track and investigate the diffuse component of sky radiation, an initiative that generated the first comprehensive database on the subject. Frank also contributed to heat and mass transfer design for the Orenda engines that powered the Avro Aero, and was intimately involved in the conceptual design of the Toronto District Cooling System that employs deep lake cooling water. In 1991 the significant contributions and varied accomplishments of Frank Hooper were recognized when he was admitted into the Hall of Distinction.

Frank was an exceptional role model and a friendly and respected senior statesman within the Faculty, with a keen sense of humour and wit. He was always willing to go the extra mile to welcome and support new faculty with their teaching and research and to offer sincere advice or a few words of wisdom, as required. He will be remembered fondly by his many colleagues and students over the years for his positive attitude and smile, willingness to listen and assist, and extensive engineering experience and know-how.

Thank you, Frank and Gay. Rest in Peace. Together we enjoyed years of memorable times. For many this included an enjoyable afternoon sail on the lake followed by a beer at the RCYC.

Be it further resolved –

> THAT this tribute to Professor Frank Clements Hooper 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 Currie and Hooper.

5. Report of the Dean

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

(a) Winter Term

We continue to follow the latest public health information and governmental guidelines to inform our scenario planning for the terms ahead. Amongst many challenges, including the Omicron variant, truck conveys and roadblocks around Queen's Park, and a power outage in Myhal and other buildings, the Faculty returned to in-person activities on February 7. Thank you to faculty, instructors, TAs, the Registrar's Office, Facilities & Services and other staff who worked diligently and tirelessly to return to in-person activities despite the circumstances.

(b) Canada Research Chairs

Launched in 2000, the Canada Research Chairs (CRC) program invests up to $295 million annually to support research excellence in engineering, health sciences, natural sciences, social sciences and humanities across Canada. Seven U of T engineering researchers have been awarded CRCs, both renewals and new. These are Daniel Posen (CivMin), CRC in System-Scale Environmental Impacts of Energy and Transport Technologies; Elizabeth Edwards (ChemE), CRC in Anaerobic Biotechnology; Heather MacLean (CivMin), CRC in Sustainable Systems and Technology Assessment; Milica Radisic (BME, ChemE), CRC in Organ-on-a-Chip Engineering; Ning Yan (ChemE), CRC in Sustainable Bioproducts; Omar F. Khan (BME), CRC in Nucleic Acid Therapeutics; and Penney Gilbert (BME), CRC in Endogenous Repair.

(c) U of T Excellence Through Innovation Awards

The U of T Excellence Through Innovation Awards (ETIA) recognize exemplary staff and librarians and provide a platform for sharing outstanding practices across our campuses.

Congratulations to Engineering staff Laura Brown, Melissa Fernandes and Megan Tate, who have each earned this award for creating Identify, Assist, Refer (IAR). This online training program empowers students, staff and faculty across all campuses to actively connect students who may be experiencing mental health challenges to the help they need.

(d) University Professor Emeritus Michael Patrick Collins

University Professor Emeritus Michael Patrick Collins (CivMin) was named a Member of the Order of Canada in December 2021. He is among 135 new appointments and promotions to the Order, including more than two dozen members of the University of Toronto community. Professor Emeritus Collins was honoured for his seminal work as an internationally renowned structural engineer who has focused on the behavior of concrete subjected to shear force.

(e) Dean's Strategic Fund

We have finalized the Dean's Strategic Fund (DSF) round for 2021. This year we received 32 proposal submissions focusing on a variety of initiatives from research, infrastructure and education. We have committed just over $3.5M for this round of the DSF and currently have just under 100 active DSF projects.

(f) Renovations

Students returning to campus in early February were among the first to see the recently completed renovation to the Engineering & Computer Science Library, located in the Sandford Fleming building. The upgrades include more lighting, additional spaces for both quiet and group study, and improved HVAC for better air quality.

It was recently announced that the Engineering Society will partner with the Provost and Dean's Office to renovate The Pit space in the Sandford Fleming atrium.

(g) EMHSeed & XSeed Call for Proposals

The 2022-2024 Joint EMHSeed and XSeed funding program is currently accepting applications until March 7.

(h) Canadian Campus Wellbeing Survey

During the month of February, the University will participate in the Canadian Campus Wellbeing Survey (CCWS) for undergraduate students. This is a survey about mental health, wellbeing and the student experience. A subsequent CCWS survey will be held in April for graduate students. All students are encouraged to provide feedback so that U of T can better understand their experiences and benefit from their valuable insight to improve policies, resources, programs and services as they relate to wellbeing.

(i) Coffee with Chris

Please join the Dean and outgoing Engineering Society President Jacqueline Fleisig for the next *Coffee with Chris* for undergraduate students, online on March 14 from 1:00-2:00 pm.

Discussions

The Speaker thanked the Dean for his report. There were no questions.

The following items were endorsed by the Executive Committee of Council at its February 1, 2022 meeting and are recommended for Council's approval as regular motions, requiring a simple majority of members present and voting to carry.

6. Closure of Minor in Biomedical Engineering and Modifications to Minor in Bioengineering

Dionne Aleman, Associate Dean, Cross-Disciplinary Programs, presented Report 3715 Revised, a proposal to close the Minor in Biomedical Engineering and integrate its requirements and courses into the Minor in Bioengineering, and to modify the Minor in Bioengineering to include a requirement for a laboratory or hands-on experience and outline optional pathways and themes to help students focus their electives.

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

> THAT the Minor in Biomedical Engineering be closed and its requirements and courses be integrated into the Minor in Bioengineering, as described in Report 3715 Revised. Administrative suspension of enrolment in the program will be effective April 30, 2022 and full closure of the minor will be effective June 30, 2026.

A Council member asked if this change could be called a "merger" which sounds more positive than a "closure". Professor Aleman stated that the governance process requires the Minor in Biomedical Engineering to be formally closed before its requirements and courses can be integrated into the Minor in Bioengineering.

Council members also discussed the branding of the modified Minor in Bioengineering and whether "biomedical" can be retained in the name due to its currency and popularity. Professor Aleman said the merger will allow a more specific focus and a broader range for students than just biomedical engineering, and suggested that students mention the specific pathway they took (e.g., "Minor in Bioengineering with a biomedical pathway") in their CVs.

The motion was carried.

The second regular motion was then moved and seconded –

> THAT the Minor in Bioengineering be modified to include a laboratory or hands-on course requirement and optional pathways and themes, as described in Report 3715 Revised. Administrative suspension of enrolment in current program requirements will be effective April 30, 2022 and, for students newly enrolled in the minor, new program requirements will be effective May 1, 2022.

The modified Minor in Bioengineering has a required core course from ChemE. A Council member asked if core courses could be offered in the future from other departments to make the minor more attractive to a wider range of students. Professor Aleman said the minor's course list may be modified in the future as it evolves.

The second motion was carried.

7. Proposed Session Dates for the 2022-2023 Academic Year

Evan Bentz, Chair of the Undergraduate Curriculum Committee (UCC), presented Report 3710 Revised, proposed session dates for 2022-2023 and summer 2022. Since session dates from the Faculty of Arts & Science were not available when the report was being written, the committee voted on the start date of winter classes. January 5 (as opposed to January 9) received the majority of the votes, partly because it allows for a longer exam period in April.

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

> THAT the session dates for the 2022-2023 academic year be approved as described in Report 3710 Revised.

Professor Bentz confirmed that the proposed number of instructional days in Fall 2022 will meet CEAB requirements.

Some student members of Council stated their preference for starting the Winter term on January 9 instead of January 5 so that students can have a longer winter break and shorter exams period in April. This would be less stressful for them and would give out-of-city students a chance to move into residence halls. It was suggested that first and second year students, who are learning to manage courses, timelines, etc., would be most negatively impacted by a shortened winter break and, as most of them do not take Arts & Science courses, they would be less affected by any potential overlap between FASE courses and Arts & Science exams.

The UCC deliberated at length on the start date of the Winter term, and although the student members preferred January 9, the committee voted otherwise. A member of Council recommended that standing committees provide statistics regarding the consultations and deliberations that occur when developing a proposal, especially on issues that affect students, and asked to table this matter.

Because either start date will primarily affect students, it is important that Council hear what they have to say. Council should also remember that it has the power to overturn or modify standing committee's recommendation, so members should vote how they feel.

A motion to amend was duly moved and seconded –

> THAT Report 3710 Revised be amended to change the start date of the Winter term from January 5, 2023 to January 9, 2023.

A call for the question was supported by a show of hands, and the motion to amend was carried.

The original motion, as amended, was back on the floor –

> THAT the session dates for the 2022-2023 academic year be approved as described in Report 3710 Revised, as amended.

The motion was carried.

8. Major Curriculum Changes for the 2022-2023 Academic Year

Evan Bentz, Chair of the Undergraduate Curriculum Committee, presented Report 3711, curriculum changes involving programs in Chemical Engineering & Applied Chemistry and Biomedical Engineering.

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

> THAT the proposed curriculum changes for the 2022-2023 academic year, as described in Report 3711, be approved.

There was no discussion and the motion was carried.

9. Reports for Information

The following standing committee report was approved by the Executive Committee of Council at its February 1, 2022 meeting.

(a) Engineering Graduate Education Committee: Update

Julie Audet, Vice-Dean, Graduate Studies and Chair of the Engineering Graduate Education Committee, presented Report 3714 Revised. The report describes a new Concentration in Artificial Intelligence created by the Department of Computer Science in partnership with the Department of Statistical Sciences and our Faculty.

The report was received for information.

10. Discussion Item: FASE Guidelines for the Assessment of Effectiveness of Teaching in Tenure, Continuing Status and Promotion

The following item was presented for discussion and it is intended that the proposal return at a later date for Council's vote.

Ken Tallman, Chair of the Teaching & Resources Committee (TMRC), presented draft *Guidelines for the Assessment of Effectiveness of Teaching in Tenure, Continuing Status and Promotion*. These build on existing divisional guidelines at the University and establish norms and expectations for teaching in our Faculty. The guidelines are intended to be used by faculty preparing for review and promotion, faculty seeking ways to improve their teaching, and faculty sitting on review and promotion committees.

During discussions it was stated that high ranking universities should have effective teaching as a norm, not a requirement.

A Council member noted that the guidelines do not discuss whether students are actually learning and asked how this criterion can be included. Professor Tallman said the TMRC will consider various criteria that can show what students are taking away as a measure of teaching effectiveness.

Another Council member asked if we are setting a bar that makes it more difficult for teaching-stream professors to become full professors than tenure-stream professors. It was clarified that while the criteria to become full professors is close to identical for both, tenure-stream professors have more latitude in terms of how they can demonstrate teaching excellence, while teaching-stream professors must show superlative teaching skill and leadership, plus pedagogical development and professional development. The guidelines should clarify these three elements for teaching-stream candidates. Furthermore, it is an issue that teaching-stream faculty have a larger teaching load than do those in tenure-stream, who are given more time to research, and that we do not have a specific document for promotion in teaching stream.

11. Other Business

There were no other items of business.

12. Date of Next Meeting

The next and final Faculty Council meeting of 2021-2022 is on April 27, 2022.

13. Adjournment

The meeting was adjourned at 1:56 pm.

/cz