

FACULTY OF SCIENCE
Meeting of Faculty
20 March 2018
Leacock Council Room - L232

ATTENDANCE: As recorded in the Faculty Appendix Book

DOCUMENTS: S-17-26, S-17-27

Dean Lennox called the meeting to order at 3:05 p.m. and welcomed members to the Faculty of Science meeting.

1) **ADOPTION OF AGENDA**

Prof. McKenzie **moved**, seconded by Prof. Roulet, that the Agenda be adopted.

The motion carried.

2) **MINUTES OF 20 FEBRUARY 2018**

S-17-26

Prof. McKenzie **moved**, seconded by Prof. Roulet, that the Minutes be approved.

The motion carried.

702.1

Dean Lennox said that, with regard to the discussion that took place on 20 February 2018, on "What is a McGill Science Ph.D. in the 21st Century?", he encouraged members to bring the valuable points and suggestions (Item #4 of the Minutes, Page 1-4) back to their individual units for discussion. There will be a working group, to be convened by Associate Dean Nilson, to look at current practices and to recommend Faculty guidelines and policies on graduate education in the Faculty of Science for Fall 2018.

3) **BUSINESS ARISING FROM THE MINUTES**

There was no business arising from the Minutes.

4) **DISCUSSION: ACADEMIC INNOVATION IN THE FACULTY OF SCIENCE**
PRESENTATIONS: FREZCA AND THE AAU-STEM PROGRAM

704.1

Dean Lennox said that, although the formal title of the discussion is "Academic Innovation in the Faculty of Science", this is actually a snapshot of many greater efforts that the Faculty is trying to organize internally. Decade after decade, the Faculty has led the University – and sometimes the University system as a whole – in teaching innovations, teaching methods, assessment innovations and innovations in undergraduate and graduate curricula. Dean Lennox said that, by rearranging the Faculty budget, he was formally recognizing this and setting up an Office for Science Education (OSE), to be formally staffed by professional educators or people with education-related professions. Associate Dean (Academic) Tamara Western is extremely interested and experienced in teaching methodologies, especially in undergraduate laboratories. Ms. Marcy Slapoff of Teaching & Learning Services, will be joining the Faculty of Science for a three-year period to set up the OSE. This partnership with TLS acknowledges their leadership on these topics in the University and also recognizes the "customization" needs in Science. One of the features of science education that is now prominent throughout Western Europe, the USA and, to some degree in Canada, is the recognition that methodologies, relationships between assessments, course delivery, instructors' expectations of students, and students' expectations of instructors, are changing significantly. Expectations have perhaps changed

over the last couple of decades, but reaction to these expectations often lags behind. Currently, the Faculty is undertaking a number of pilot experiments with individual departments. For the current meeting, there will be a few examples of how to engage students, not just with content, but also by developing critical thinking when teaching science courses. Dean Lennox said that one of the most interesting projects is that of Associate Dean (Academic) Tamara Western and Dr. Anita Parmar, who have written a successful seed grant (the AAU-STEM Program) to develop teaching innovations.

- 704.2** Dean Lennox introduced Dr. Anita Parmar, Ph.D. in Physics, The University of New Mexico, who is formally working in the Office of the Deputy Provost (Student Life and Learning) and is involved with special initiatives. Dr. Parmar is the Associate Director of Building 21 (B21), located at 651 Sherbrooke Street in the Royal Victoria College. B21 is described as a “place where students, staff, and faculty can undertake experiments for the sake of experimentation. A sandbox, a theatre studio, a playground, and a 21st-century renaissance workshop.” The Faculty has been discussing how to organize, nourish, and sustain teaching innovations in the Faculty of Science. Dr. Parmar, along with some of the AAU-STEM team, will present a couple of example initiatives in their current state of development.
- 704.3** Dr. Parmar said that B21 ties in very closely with the Faculty of Science projects that will be discussed at today's meeting. A couple of the projects will be provided simply as snapshots, but all have the same spirit. The spirit somewhat involves taking a physicist's first-principle approach in looking at something that is done time and time again, but without giving further thought to whether or not it can be done better, because of a lack of time, and because everything is goal-driven (i.e., getting a good grade, getting funding, meeting deadlines, etc.). The concept of B21 involves trying to expand outside the boundaries to allow students to pursue research that interests them, and not necessarily something that falls within their particular domain. She is very pleased that, within the Faculty of Science, interesting ideas have been completely embraced, and have received support, funding, space, and unique collaboration, all in the interest of teaching students better. In her experience as a teacher, it was a bit daunting to do something completely out of the box, but taking a risk is a little easier when working in a team or with collaborators; indeed, this is the rationale for the idea of pairing undergraduates with graduate students in a classroom.
- 704.4** Pierre-Francois Duc, Ph.D. candidate in Physics, has been involved in the creation of the Freshman Residence Cafeteria (FrezCA), the residence cafeteria for first-year science tutorials. The first tutorial was launched for Physics 101/131, but it became evident that there was also a demand from freshman students in Biology, Chemistry, and Math courses. However, given that there are no large classrooms or space available at McGill to accommodate everyone, the only available space was the RVC cafeteria from 2:30-4:30 p.m., Monday to Thursday. With more resources, TAs, undergraduate mentors, space, and with collaboration of the instructors, it could also be possible to set up tutorials for U1, U2 and U3 courses.
- 704.5** Dr. Parmar added that Freshman students often arrive with different academic background levels, which is difficult for professors as well as students in very large classes. With FrezCA, the TAs and team mentors work together to achieve the same goals. A number of departments have become willing participants by repurposing the TAs and team mentors, etc., making it much more comfortable for their students.
- 704.6** The second initiative that was launched was the SCI CRAM review sessions. Dr. Parmar showed a slide presentation in which Prof. Kenneth Ragan gave the Physics 131 CRAM session; it was evident that there was definitely a demand for it. The hope is that it will be more popular than the alternative, which involves students paying about \$120 to an external agency.

704.7

Dr. Parmar illustrated how the AAU-STEM project is envisioned, involving the integration of students into the freshman STEM course in redesigning and implementation. Pedagogical reform will occur through collaboration and idea-sharing among professors and students across the different subject matters. The goal for Winter 2019 will be to implement the program in four courses.

704.8

STEM Teaching Fellows, Ms. Emilie Parent and Mr. OuLin Yu, and Ms. Sisi Wang, T-PULSE undergraduate mentor, are working with Prof. Ragan on the AAU-STEM project for Physics 101/131. The focus is on the lab component, rather than just the lecture portion, of Physics 101/131 in trying to make some improvements. The aim is to replace the "cookbook" style by something more exploratory to help students build their intuition and develop the students' understanding of physical concepts. In Fall 2017, a survey was conducted on students' viewpoints about the labs, and the response rate from students was about 10% for both courses. Some of the issues that were raised by students were that there was lack of time to complete experiments, that the laboratories were not challenging enough, and that they were not based on the course content. For Fall 2018, the "cookbook" lab component will be replaced by a wireless lab system device named IOLAB. It is a device that displays data in real time on a laptop and has been used in first-year physics courses in many U.S. universities. IOLAB has many sensors which can measure force, acceleration, voltage, magnetic field, rotation, light, temperature, pressure, displacement and velocity. The design of the experiment flowchart will be: 1) design the labs; 2) hold a group discussion with the instructor; 3) make any necessary modifications; 4) test it out with the T-PULSE undergraduate mentor, Ms. Wang, who has previously taken the course, and, with her feedback, finalize the experiment accordingly. The experiments currently under development are: 1) kinematics; 2) Newton's law; 3) friction; and 4) simple harmonic motion.

704.9

The goal is to develop all the experiments using the IOLAB device by the start of classes in Fall 2018. There will be no cost to students for the IOLAB. Dr. Parmar and her team will be working on three other projects: courses in biology, chemistry, and mathematics.

704.10

Dean Lennox thanked Dr. Parmar and the entire team for their interesting and informative presentation. He said he is very much interested in hearing about the project next year.

5) REPORT OF COMMITTEE

- Academic Committee **S-17-27**

The following proposals were approved at the Academic Committee meeting on 27 February 2018:

I. New Course

- **Mathematics & Statistics**

MATH 594	Topics in Mathematics & Stats 4 credits	AC-17-75
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705.1

Associate Dean Hundemer introduced a new topics course that is intended to cover advanced material that is infrequently taught, and does not warrant the introduction of a separate course.

Prof. Devroye **moved**, seconded by Prof. Neslehova, that the course be adopted.

The motion carried.

II. Course Revisions

(1)	Mathematics & Statistics	MATH 356	Honours Probability Changes: prerequisites, corequisites 3 credits	AC-17-74
705.2			Associate Dean Hundemer explained that the prerequisites have been revised in order to better prepare students to succeed in MATH 356. Also, the corequisites were removed since the material covered in the corequisite courses was not adequate to successfully complete MATH 356.	
			Prof. Devroye moved , seconded by Prof. Neslehova, that the changes be approved.	
			The motion carried.	
(2)	Psychology	PSYC 427	Sensorimotor Neuroscience Changes: title, prerequisites 3 credits	AC-17-76
705.3			Associate Dean Hundemer said the change in title was to reflect the course content, and the changes in prerequisites were to ensure that psychology students had sufficient background to succeed in PSYC 427.	
			Prof. Lydon moved , seconded by Prof. Damha, that the changes be approved.	
			The motion carried.	
III. Program Revisions				
(1)	Computer Science			
	(i) B.Sc. Programs:			
	- Honours in Software Engineering			AC-17-70
	- Major in Software Engineering			AC-17-71
	- Liberal - Core Science Component in Software Engineering			AC-17-72
	(ii) B.A. & Sc. Programs:			
	- Major Concentration in Software Engineering			AC-17-73
705.4			Associate Dean Hundemer described the above Software Engineering Programs in the B.Sc. and B.A. & Sc. degrees. Two new Engineering courses (ECSE 326, ECSE 437) have been added, and relatively minor changes were made in the list of Complementary courses.	
			Prof. Devroye moved , seconded by Prof. Kemme, that the changes be approved.	
			The motion carried.	
(2)	Microbiology & Immunology			
	- Liberal – Core Science Component in Microbiology & Immunology			AC-17-53
705.5			Associate Dean Hundemer said that the proposal was the addition of a newly approved course, MIMM 301, Scientific Writing Skills-MIMM (approved at the Faculty of Science meeting that took place on 20 February 2018), thus increasing the program credit by one (from 49 credits to 50). In addition, two new research courses (also approved at the last Faculty meeting), were included in the program, as well as other Complementary courses, to allow for more flexibility and choice.	

Prof. Grüter **moved**, seconded by Prof. Damha, that the changes be approved.

The motion carried.

IV. For Information Only

- **Computer Science**
B.A. Program:
 - Major Concentration in Software Engineering

(6) DEAN'S BUSINESS

- **Announcements**

(I) Budget

The fiscal year 2019 Faculty budget was in the final stages of development. With the federal budget and the upcoming provincial budget, it was likely that it would be a positive budget in many regards. Nonetheless, McGill is under constant pressure in trying to manage its expenditures, especially with respect to huge infrastructure costs, renovation costs and deferred maintenance costs. What we are looking at is a pretty conservative university budget; this will most likely have an impact on the Faculty of Science.

- The Faculty will be able to find financial resources to hire three account administrators in departments, even though the budget has not yet been approved.
- An undergraduate program coordinator position for one or more departments has been created to assist with undergraduate affairs, because one of the Faculty's highest priorities is student support.
- The Faculty also has funding for an education specialist for the OSE.

The budget is expected to be finalized somewhere between the middle and end of April 2018.

(II) Awards

(a) **Professor Catherine Potvin**, Department of Biology, has been awarded the **2018 Principal's Prize for Public Engagement through Media**. The value of the prize is \$5,000.

(b) **Professor Joe Schwarcz**, Department of Chemistry, Director of the McGill Office for Science and Society, is the winner of the **2018 Principal's Prize for Public Engagement through Media – Outstanding Achievement Award** – The value of the Prize is \$5,000.

(c) **McGill Chemistry Outreach Group**, a group of students, faculty and staff were honoured at the recent Annual Bravo Gala. The Chemistry Outreach Group was given **special recognition** for bringing chemistry to students of all ages.

Dean Lennox congratulated all of the above winners for their outstanding achievements and for continued success.

(III) Important Awards Deadlines: 30 March 2018

- (a) **Leo Yaffe Award for Excellence in Teaching**
- (b) **Principal's Prize for Excellence in Teaching**

Dean Lennox reminded members to submit nominations for the above two teaching awards for superior teaching. Dean Lennox thanked Prof. Edith Zorychta for her continued leadership in Chairing a very valuable committee.

- (c) **Faculty of Science Excellence Award**

Dean Lennox said that the deadline to submit nominations for the Faculty of Science Excellence Award is also on 30 March 2018. This year is the first time that three awards will be offered to acknowledge outstanding performance by members of the clerical, technical and management staff. Dean Lennox encouraged members to nominate their staff. He thanked Prof. Jacques Hurtubise for Chairing this important committee, and thanked the members of the committee.

7) REPORTS OF DIRECTOR AND ASSOCIATE DEANS

- a) Director (Advising Services) Nicole Allard

There was no report for the current meeting.

- b) Associate Dean (Graduate Education) Laura Nilson

Associate Dean Nilson reminded members of the following:

- (a) that funding for recruitment visits was available for potential Canadian Ph.D. applicants, and possibly for recruitment visits for outstanding M.Sc. applicants who will most likely be fast-tracked to the Ph.D. level. For M.Sc. applicants, units should contact Associate Dean Nilson for details; and
(b) that funding was still available for the Graduate Mobility Awards (GMAs), and applications should be submitted by 1 May 2018.

- c) Associate Dean (Research) Doina Precup

Dean Lennox said that the analysis of the Federal budget in terms of the new allocation for Science is still being worked out in the Vice-Principal's (Research) Office. One important aspect is the reorganization within NSERC of all partnership programs. However, it is not yet known if there are any changes in the budget.

- d) Associate Dean (Academic) Tamara Western

There was no report for the current meeting.

8) REPORT ON ACTIONS OF SENATE

- Senate Meeting of 21 February 2018 - Senator Jeffrey McKenzie:

(1) The senate meeting was held on February 21, 2018. Possibly the most shocking aspect of the senate meeting was assigned seating. Yours truly, who prefers sitting in the back-left corner of this auditorium, was made to sit in the middle of the first row - an experience that will not soon be forgotten.

(2) Principal Fortier gave remarks, including:

- a) Her ongoing advocacy for the Provincial science budget focused on increased funding in higher education.
- b) Updated on RVH site. McGill is completing a feasibility study and important discussions with members of Government are advancing the case. University is starting discussions about financing of this 'potential' project.
- c) Marijuana will be legalized soon. The Principal continues to study how McGill should deal with pot on campus.

(3) Senate held an open discussion on the theme of "The Engaged Classroom in a Digital World", (hence the assigned seating).

- a) Small groups for 15 minutes, then reporting from the groups, and then presentations Professors Bhadra, Ragan and Youssef

- b) Am not sure there was a single particular outcome, but common themes were teaching space is important, the need for innovation, and the importance of reflection/adaptation.
- (4) There has been discussion regarding the composition of Senate. This has been tabled till it is revisited in the regular Senate cycle in 2019.
- (5) Progress Report on the Principal's Task Force on Respect and Inclusion in Campus Life by Professors Lennox and Ramanujam, with a mandate to McGill to ensure our core principles are represented. The committee is comprised of 3 students members, 4 faculty members, and 2 staff members. They have undertaken surveys, focus groups, an open forum, group submissions, task force consultations, and policy research and analysis.
 - a) The final report is due April 27 and will be presented to Senate on May 16.
- (6) Report by Professor Dimitrios Berk of the McGill University Ombudsman Office on activities from June 2015 to May 2017. The office provides formal dispute resolutions and grievance processes. Overall trend is decreasing usage of the offices services over past 5+ year. Dealt with 160 students (65% graduate students).
- (7) Annual Report from Student Life and Learning by Deputy Provost Dyens. In addition to a nice slide show on the office's activities, we learned that they have 7 units, 650 staff, and hire more than 1800 students per year. In future, will focus more on customer service and mental health.
- (8) The Annual Report of the Advisory Council on the Charter of Students' Rights had nothing to report.
- (9) Senate adjourned at 4:43 p.m.

9) MEMBERS' QUESTION PERIOD

There were no members' questions.

10) OTHER BUSINESS

There being no further business, Prof. Damha **moved**, seconded by Prof. Lydon, that the meeting be adjourned at 4:15 p.m.

The motion carried.