

**FACULTY OF SCIENCE
Meeting of Faculty
Tuesday, 10 January, 2017
Leacock Council Room - L232**

ATTENDANCE: As recorded in the Faculty Appendix Book

DOCUMENTS: S-16-18 - S-16-19

Dean Lennox called the meeting to order at 3:00 p.m.

1) ADOPTION OF AGENDA

Prof. Damha **moved**, seconded by Prof. Gyakum, that the Agenda be adopted.

The motion carried.

2) MINUTES OF 15 NOVEMBER, 2016

S-16-18

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

The motion carried.

3) BUSINESS ARISING FROM THE MINUTES

Dean Lennox informed that the RVH proposal has been sent to Quebec for consultation and approval. He said this proposal is a high-level document that has the academic plan at its core and that he will share this plan with the Faculty Council once it is approved.

Dean Lennox said that the Stewart Biology project is also proceeding. He said that official notification of funding was received in December of 2016 from both the federal and provincial governments and that the architects are undertaking plans to create new Stewart-West wing of the building. He noted that the current plan is to empty Stewart-West in mid-to-late April.

4) REPORTS OF COMMITTEES

- Academic Committee

S-16-19

The Academic Committee approved the following on Tuesday, 12 December 2016:

SECTION A: NEW COURSES

(1) Biology

BIOL 219

Introduction to Physical Biology of the Cell
4 credits

**AC-16-29
PRN 11699**

Associate Dean Western explained that this course was important for students in the interdisciplinary programs who need a basic grounding in cell and molecular biology, but have

limited credit space and, as such, take fewer higher level courses in Biology than a student following a single biological or biomedical program.

In response to members' questions, Associate Dean Western explained that BIOL 219 is meant to replace the essential aspects of BIOL 200 and BIOL 201 and that the creation of this course was done in consultation with the appropriate Biology professors who agree that BIOL 219 is a sufficient replacement for BIOL 200 and BIOL 201. Associate Dean Western also said that BIOL 219 will be restricted to only students in joint programs.

Associate Dean Western **moved**, seconded by Professor Fussmann, that the new course be approved.

The motion carried.

(2) Geography

GEOG 425	Southeast Asia Urban Field Studies 3 credits	AC-16-43 PRN 11475
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Associate Dean Western said that a 3-credit field studies course is required to graduate with a major in Geography. She said that, to date, all geography field studies courses held overseas or outside of Montreal (e.g. Panama, Barbados, etc.) focus on physical geography rather than human, and more specifically, urban geography. She added that Urban Studies is currently the most popular major in the Geography Department and while the department currently offers an urban field studies course (GEOG 494) that fulfills the field studies course requirement, it is based in Montreal. She explained that the proposed course seeks to offer the department's first opportunity for students to do an overseas field course with an urban focus. The proposed course would have space for about 12 students, and would last for 2 weeks, one week in Singapore and one week in Malaysia. She said that GEOG 494 is currently offered twice per year (once in the Fall taught by Professor Kevin Manaugh and once in the summer taught by Professor Sarah Moser). She said that GEOG 425 Southeast Asia Field Studies would be offered every other May, alternating with the GEOG 494 Urban Field Studies summer course in Montreal. GEOG 425 would fulfill the field course requirement for Geography majors and is open to both Urban Studies majors and minors. Associate Dean Western said that prerequisites include GEOG 217 and GEOG 325 and that Geography majors who are not majoring in Urban Studies may take this course if they have completed the prerequisites. Finally, Associate Dean Western said that additional fees have been approved by the Fee Advisory Committee.

Associate Dean Western **moved**, seconded by Professor Lerner, that the new course be approved.

The motion carried.

(3) Physics

PHYS 329	Statistical Physics with Biophysical Applications 3 credits	AC-16-30 PRN 11924
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Associate Dean Western explained that statistical physics is currently booming in biophysical sciences and that, as such, the Department of Physics proposes the creation of a new statistical physics course introducing classical concepts of statistical physics next to most modern examples of biophysics, where they naturally apply. She said that compared to a traditional statistical mechanics course, the focus is much more on kinetics rather than thermodynamics, with a much stronger "soft" component. While this is a physics course, it is naturally interdisciplinary, and will

become an integral part of most of the current biophysics streams created in many departments (physics, chemistry and biology).

Associate Dean Western **moved**, seconded by Professor Mittermaier, that the new course be approved.

The motion carried.

SECTION B: NEW PROGRAMS

(1) Chemistry

Major in Chemistry - Biophysical Chemistry Option
Honours in Chemistry - Biophysical Chemistry Option

AC-16-34
AC-16-35

Associate Dean Western said that, in order to fully capitalize on the large and ongoing investments in biophysical research and education made by many of the Departments in the Faculty of Science, the departments of Chemistry, Biology, Physics, Physiology, Math, and Computer Science have developed an integrated Biophysics undergraduate teaching and recruitment strategy. She further explained that, as part of this initiative, the Department of Chemistry is proposing a new Biophysical Chemistry Option for its Majors program. She said that the admissions standards are identical to those of the Regular Chemistry Major program. Finally, Associate Dean Western said that Chemistry Department recently reviewed its programs and retired the BSc Liberal Program – Chemistry – Physical, which was under-utilized but that all other programs in the Chemistry Department were found to have healthy enrollment.

Associate Dean Western **moved**, seconded by Professor Mittermaier, that the two new program options be approved.

The motion carried.

(2) Physics

Major in Physics - Biological Physics Option
Honours in Physics - Biological Physics Option

AC-16-38
AC-16-39

Associate Dean Western said that the Physics Department has recently hired several biological physicists, and there is a growing interest, among both students and faculty, in a program that prepares students of physics with the specific training required work in this exciting and rapidly expanding area. She said that, through conversations among students and professors, there is anecdotal evidence that we are currently losing many gifted students to similar biophysics/biological physics based programs at other universities in Canada. She therefore said that, using existing courses, we can create a Biological Physics Option that will give excellent preparation for this field, while still allowing continuation in other areas of physics. Finally, Associate Dean Western said that the admission requirements are the same as the existing Major Physics program and that the Department of Physics has recently conducted a review of programs and is satisfied that there are no programs that need to be revised or retired due to low enrollment.

In response to a question from a member, Associate Dean Western clarified that these new programs are options within the Physics degree – not joint programs.

Associate Dean Western **moved**, seconded by Professor Zuroff, that the two new program options be approved.

The motion carried.

SECTION C: COURSE REVISIONS

(1) Geography

GEOG 504	Advanced Economic Geography Title, Description 3 credits	AC-16-44 PRN 11767
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Associate Dean Western said that the existing course name (Industrial Restructuring: Geographic Implications) reflects the main theme of economic geography back in the 1980s. She said that the discipline has changed significantly since then and the new, more simple title of 'Advanced Economic Geography' reflects the fact that we have moved on to other things than 'industrial restructuring'. She said the course will deal with more contemporary topics, debates and concepts in economic geography such as evolutionary economic geography, innovation and technological change, global production networks and geographies of inequality.

Associate Dean Western **moved**, seconded by Professor Lerner, that the course revision be approved.

The motion carried.

(2) Chemistry

CHEM 603	Fundamentals of Spectroscopy Title, Description, Prerequisites 5 credits	AC-16-42 PRN 11842
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Associate Dean Western said that students are very interested in a course on the fundamentals of spectroscopy, but that the very narrow focus on just vibrational spectroscopy does not reflect where the field and interest have moved over time. She therefore explained that the Department would like to broaden the focus a bit while retaining the aspects of the course that worked well.

Associate Dean Western **moved**, seconded by Professor Mittermaier, that the course revision be approved.

The motion carried.

SECTION D: PROGRAM CHANGES

(1) Biology

Major in Biology - Quantitative Biology Option	AC-16-31
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Associate Dean Western explained that this revision combines two types of changes. She said the first is the harmonization of the program organization with the new Bio-physical umbrella in order to better highlight the relationships and commonalities among multidisciplinary life-science programs. This includes that BIOL 200 and 201 are replaced with the more interdisciplinary BIOL 219, that BIOL 301 has been made a required course for both streams, that PHYS 333 is replaced with the more interdisciplinary PHYS 329. She also said that MATH 324 has been moved into the required list and that, as the prerequisites have been changed for the complementary course, COMP 251, its prerequisites MATH 235 and MATH 240 have been added to the complementary courses.

Associate Dean Western **moved**, seconded by Professor Fussmann, that the program revision be approved.

The motion carried.

Honours in Biology - Quantitative Biology Option

AC-16-32

Associate Dean Western explained that this revision combines two types of changes. She said the first is the harmonization of the program organization with the new Bio-physical umbrella in order to better highlight the relationships and commonalities among multidisciplinary life-science programs. This includes that BIOL 200 and 201 are replaced with the more interdisciplinary BIOL 219, that BIOL 301 has been made a required course for both streams, that PHYS 333 is replaced with the more interdisciplinary PHYS 329. She also said that MATH 324 has been moved into the required list and that, as the prerequisites have been changed for the complementary course, COMP 251, its prerequisites MATH 235 and MATH 240 have been added to the complementary courses.

Associate Dean Western **moved**, seconded by Professor Fussmann, that the program revision be approved.

The motion carried.

Joint Major in Biology & Mathematics

AC-16-33

Associate Dean Western explained that this revision combines two types of changes. She said the first is the harmonization of the program organization with the new Bio-physical umbrella in order to better highlight the relationships and commonalities among multidisciplinary life-science programs. This includes that BIOL 200 and 201 are replaced with the more interdisciplinary BIOL 219, that BIOL 395 has been added, and that BIOL 301 has been moved from the complementary course list to the required course list. Secondly, Associate Dean Western said the program title has been corrected to read Joint Major in Biology and Mathematics as that is more appropriate.

Associate Dean Western **moved**, seconded by Professor Fussmann, that the program revision be approved.

The motion carried.

(2) Computer Science

Joint Major in Computer Science & Biology

AC-16-36

Joint Honours in Computer Science & Biology

AC-16-37

Associate Dean Western said that this revision combines three types of changes. First, she said that the harmonization of the program organization with the new Bio-physical umbrella in order to better highlight the relationships and commonalities among multidisciplinary life-science programs. This includes that, BIOL 200 and 201 are replaced with the more interdisciplinary BIOL 219, that COMP 499 is replaced by the similar, interdisciplinary BIOL 395, and that students are now given the choice between MATH 324 that is currently in the program and MATH 315 that is part of the common Bio-physical core. This affords students increased flexibility. Second, Associate Dean Western said that MATH 240 has recently become a co-requisite for COMP 251. She said MATH 240 is currently in the Complementary course list for this Joint Major CS/Bio program, but COMP 251 is in the Required list. The co-requisite change means that MATH 240 would effectively become a Required course. She said the Department therefore proposed to move MATH 240 from the

Complementary list into the Required list. Lastly, Associate Dean Western said that BIOL 316 and BIOL 495 are removed from the complementary courses as both are likely to be discontinued in the near future. Finally, Associate Dean Western pointed out that the program title is corrected to read Joint Major and Joint Honours, as is more appropriate.

Associate Dean Western **moved**, seconded by Professor Fussmann, that the program revisions be approved.

The motion carried.

(3) Physiology

Joint Major in Physiology & Mathematics

AC-16-40

Associate Dean Western said that this revision combines four types of changes. First, she said that the harmonization of the program organization with the new Bio-physical umbrella in order to better highlight the relationships and commonalities among multidisciplinary life-science programs. This includes that BIOL 200 and BIOL 201/BIOC 212 are replaced with the more interdisciplinary BIOL 219, the addition of interdisciplinary seminar course BIOL 395, and the addition of introductory programming courses as suggested as part of the Bio-Physical Sciences core. Second, she said that, due to the significant neurophysiology content of both PHGY 311 and PHGY 314, students now are only required to take one of these two courses (moved to complementary list). Third, Associate Dean Western said that MATH 317 has been added as a new required course to give students greater background for upper level courses, Finally, Associate Dean Western said that the program title is corrected to read Joint Major, as is more appropriate.

Associate Dean Western **moved**, seconded by Professor Fussmann, that the program revision be approved.

The motion carried.

Joint Major in Physiology & Physics

AC-16-41

Associate Dean Western said that this revision combines four types of changes. First, she said that the harmonization of the program organization with the new Bio-physical umbrella in order to better highlight the relationships and commonalities among multidisciplinary life-science programs. This includes that BIOL 200 and BIOL 201/BIOC 212 are replaced with the more interdisciplinary BIOL 219, that PHYS 333 is replaced with the more interdisciplinary PHYS 329, and the addition of interdisciplinary seminar course BIOL 395. She said that, due to the significant neurophysiology content of both PHGY 311 and PHGY 314, students now are only required to take one of these two courses (moved to complementary list). Finally, Associate Dean Western said that the program title is corrected to read Joint Major, as is more appropriate.

Associate Dean Western **moved**, seconded by Professor Fussmann, that the program revision be approved.

The motion carried.

(4) Geography

Major in Geography

AC-16-45

Associate Dean Western said that this Major has not been substantially changed since its creation over 20 years ago even though, in the last 10 years, many relevant new courses have been created, in Geography and other units, that cover highly relevant and program related topics in Sustainability Science, Earth System Science and human environment interactions at various scales. She said the changes to this program have 2 objectives: first, to broaden the program foci by adding to the program 15 credits in 2 new complementary blocks, including a selection of geography courses focusing on human-environment interactions as well as courses offered in other partner units on Sustainability, Earth System, Environment Sciences and second, to allow increased flexibility in student's training interests, by reducing the number of required core courses from 22 to 13 credits and increasing complementary credits from 36 to 45. Finally she noted that the total credits in the Major are unchanged.

Associate Dean Western **moved**, seconded by Professor McKenzie, that the program revision be approved.

The motion carried.

(5) Earth and Planetary Sciences

Major in Earth and Planetary Sciences (Retirement)
Honours in Earth Sciences (Retirement)

AC-16-46
AC-16-47

Associate Dean Western said that a revision of both programs were approved in 2015, and the two versions now appear in the calendar. She added that since the last cohort admitted to this program is now in its graduating year, it is timely to formally retire both of these programs.

Associate Dean Western **moved**, seconded by Professor McKenzie, that the program retirements be approved.

The motion carried.

(6) McGill School of the Environment

Major in Environment – Earth Sciences & Economics Domain

AC-16-48

Associate Dean Western said that these are minor revisions to bring course sets up to date.

Associate Dean Western **moved**, seconded by Professor Fussmann, that the program revision be approved.

The motion carried.

SECTION E: OTHER (For Information)

(1) McGill School of the Environment

B.A. Program Changes:
- Faculty Program in Environment – Economics & the Earth's Environment Domain

AC-16-49

Associate Dean Western said that these are minor revisions to bring course sets up to date.

Dean Lennox thanked Associate Dean Western for her report. He also congratulated the Task Force on Biophysical Sciences for their enormous effort noting what a big endeavor this was requiring cooperation

across six departments and said they were a wonderful example of the care required in creating new structures in response to student's interests. Associate Dean Western thanked all the committee members for their hard work. In addition to Associate Dean Western, these members are Professors Vogel in Biology, Mittermaier in Chemistry, Blanchette in the School of Computer Science, Kelome in Mathematics and Statistics, Francois in Physics and Khadra in Physiology. She also thanked Professors Guevara and Guichard who helped with specific programs. Finally, Dean Lennox said the Faculty of Science would need the help of both individual students and student societies to get the word out. He said the Faculty is open to organizing information session explaining this new structure should students be interested.

5) DEAN'S BUSINESS

a) Announcements

Dean Lennox gave his kudos to a number of his colleagues in the Faculty of Science who are recent award winners and who serve as further testimony to the excellence of our Faculty's professoriate.

First, Dean Lennox recognized Professor Kaspi in the Department of Physics who was named to the Order of Canada as a Companion of the Order on January 1st. He said this is a fitting recognition of Professor Kaspi's accomplishments in teaching and research. Dean Lennox also noted that, concomitant with this announcement, was the publication of a prominent paper by Professor Kaspi's research group which received worldwide attention including the front page of the New York Times and the Montreal Gazette.

Second, Dean Lennox recognized Professor Clerk also of the Department of Physics. He noted Professor Clerk has been named a Simons Fellow in the Theoretical Physics Program. Dean Lennox said the Simons Foundation is very active in recognizing world-class research in both physics and mathematics. Finally, he noted that Professor Clerk joins Professor Francois of the Department of Physics and Professors Wise and Oberman in the Department of Mathematics and Statistics as Simons Fellows.

Third, Dean Lennox recognized Professor Li who has been named a fellow of the World Academy of Science for his commitment to science's development in the developing world.

Fourth, Dean Lennox recognized Prof. Levitin of the Department of Psychology who was the recipient of the Mavis Gallant Prize for Non-Fiction for his book A Field Guide to Lies: Critical Thinking in the Information Age.

Fifth, Dean Lennox recognized Professor Radziwill of the Department of Mathematics and Statistics who received the prestigious Sastra University – Ramanirjan Prize for his work in analytical number theory.

Lastly, Dean Lennox recognized Professor Darmon of the Department of Mathematics and Statistics who received two major awards – the 2017 CRM-Fields-PIMS Prize awarded by the Fields Institute and the Cole Prize in Number Theory from the American Mathematical Society.

Dean Lennox's other announcement was in regards to the budget – he said the Faculty of Science is in the process of preparing its submission to the Provost for the FY18 Budget exercise. He said that, although the situation regarding the global budget from Quebec is improved such that there will not be cuts from the Quebec government this year (in fact a modest 1.2% increase), there are significant cuts facing the Faculty and its Departments. The Faculty is working on managing these cuts, which are on the order of about \$400K. He said that the Faculty is looking at this as a redistribution exercise and will also be making a number of requests in its budget. He will update members of various strategies the Faculty of Science is employing in making the case for redistribution.

7) REPORTS OF ASSOCIATE DEANS

a) Director of Advising Nicole Allard

Director Allard reminded instructors administering departmental Finals that some students may be simultaneously writing their exam with the Office for Students with Disabilities (OSD) and, if they notice errors on the exam or need to make any other announcements during the exam, they should notify the OSD office. She also said instructors should have their cell phones with them so that students in the OSD office could contact them with questions regarding the exam. Dean Lennox underscored the importance of working with the OSD and asked that Faculty members please pass this information along to their colleagues.

She also said that the graduation exercise would soon be underway and noted that, as such, the SOUSA office's response rate to inquiries may be slower than normal.

b) Associate Dean (Research) Doina Precup

Associate Dean Precup noted a number of Fessenden Awards for the Faculty of Science: first Prof. Lovejoy of Physics and Prof. Cosa of Chemistry, second Prof. Moitessier of Chemistry, and third Joshua Patel of Chemistry. Dean Lennox noted that the Fessenden initiatives to promote innovation are possible thanks to gifts by the family of Canadian inventor Reginald Fessenden, notably Dr. John Blatchford and his son Eric. Associate Dean Precup said the application process will be streamlined in the future.

Associate Dean Precup noted that, following the Lightning Talk events, the McGill Sustainability Sciences and Technologies Initiative (SSTI) is now soliciting suggestions for SSTI Grand Challenges. She said the SSTI will provide support and seed funding for transdisciplinary teams to address some of the most complex problems facing humanity as we strive to create a world that ensures the prosperity of people today without endangering the well-being of our neighbours or our future generations. Dean Lennox noted that these problems, which are far too complex and too wide in scope and scale to be addressed by existing discipline-based research structures, are sustainability's 'Grand Challenges' and that answering these questions requires working across disciplines in new institutional configurations.

Finally, Associate Dean Precup said there will be a town hall on January 30, 2017 for McGill's Healthy Brains for Healthy Lives program. She said this is a bold and ambitious plan that unites McGill's world-leading strengths in clinical and research neuroscience with pioneering work in neuroinformatics. She further said McGill is proud to have been awarded \$84 million over seven years under the federal government's Canada First Research Excellence Fund (CFREF) for the Healthy Brains for Healthy Lives program, enabling us to build on our leading position in neuroscience, and to make the university a global hub for brain research. She said the university is looking to fund research projects by trans-disciplinary teams on the order of about \$100K-per-year for three years.

7) REPORTS ON ACTIONS OF SENATE

Senate Meeting of 7 December 2016 - Senator David N. Harpp

- Acting VP Yalovsky provided an update on campus accessibility during the current construction projects.
- Principal Fortier indicated there are two working groups to map out the space allocation for the academic themes of Sustainability Systems and Public Policy for the possible RVH facility

- The Board of Governors approved the Policy Against Sexual Violence approved by Senate in November. She also indicated that the new REM project will eventually link the Mac Campus and the Univ. of Montreal saving much time for commuters.
- The Faculty internship programmer brought a question from Senators Ettlin and Sobat. It mainly concerned credit for Arts students and there was no clear conclusion.
- VP Yalovsky presented the annual report on the financial state of the University and more will be forthcoming from the new VP Finance in January.
- Senator Hebert requested more information on the operating grant revenue designated for the support of indirect costs. It was clear that it is likely only the Deans and the P-7 really understand how this money is allocated.
- Provost Manfredi presented the first of this academic year's three planned reports to Senate on budget planning for 2017-1018.
- Reports were presented about the Senate Nominating Committee and the Library Committee for information only.
- The meeting was adjourned earlier than normal, near 4 PM.

8) MEMBERS' QUESTION PERIOD

Professor Damha inquired as to whether the Faculty of Science was pursuing holding their midterm exams for larger classes at the McGill gym. Director Allard said she is in meetings with the Registrar's Exam Office reviewing the logistics that could make this possible. She said that, in addition to some hesitation from Athletics, the issues are mostly financial – the costs of setting up the gym for exams about \$10K – to which Dean Lennox expressed a willingness to cover some of these costs. Dean Lennox further expressed urgency around making sure some of the larger classes are centrally scheduled saying that the current condition in which some students write their midterms is quite lacking.

9) OTHER BUSINESS

There being no other business, the meeting adjourned at 4:40 p.m.