

**FACULTY OF SCIENCE
ACADEMIC COMMITTEE**

Minutes of the meeting held on February 19, 2008, at 3:00 p.m. in Arts Council Room, Arts 160.

PRESENT: Dean Grant (Chair), Associate Dean Hendren (Vice-Chair), Associate Dean Leighton; Professors A. Baker, D. Baker, Bennett, Chmura, Hundemer, Levine, Panangaden, Ragan (in place of G. Moore), Ricciardi, Ronis, Stewart; A. Ashraf (in place of N. Winata), K. Howe, K. Maloney, C.M.C. Tong; J. D'Amico, L. Stanischewski.

REGRETS: Professors Baines, MacKenzie, Wechsler; L. Houle; M. Desgroseilliers, A. King, L. Shbat; Associate Dean Hendershot.

DOCUMENTS: AC-07-92, AC-07-94, AC-07-96, AC-07-97

Dean Grant called the meeting to order at 3:05 p.m.

(1) ADOPTION OF AGENDA

Prof. Panangaden **moved**, seconded by Prof. Bennett, that the Agenda be adopted.

The motion carried.

(2) MINUTES OF JANUARY 29, 2007

AC-07-92

- Minute 507.2, B.A. & Sc. Interfaculty Program in Cognitive Science

602.1 It was pointed out that in the B.A. & Sc. Interfaculty Program in Cognitive Science, for List A, under Computer Science, COMP 426 should be replaced with COMP 527.

Prof. Panangaden **moved**, seconded by Dr. Hundemer, that the amended Minutes be approved.

The motion carried.

(3) BUSINESS ARISING FROM THE MINUTES

- Minutes 508.1, 508.2, New Courses, COMP 401 and COMP 499

603.1 Associate Dean Hendren said that after discussions with the course coordinators for COMP 401 and COMP 499, it had been agreed that BIOL 495 or permission of instructor would be the prerequisite for COMP 401, and that BIOL 495 would be the corequisite for COMP 499.

**(4) REPORT ON MINOR COURSE CHANGES
(for information)**

AC-07-94

604.1 Associate Dean Hendren briefly went over the Minor Course Changes Report.

(5) SCHOOL OF COMPUTER SCIENCE

COMP 424 (Changes in title, description and prerequisites)

AC-07-95

This item was withdrawn from the Agenda.

(6) CHEMISTRY

CHEM 363	Physical Chem Lab 1 Change in prerequisites 2 credits	AC-07-96
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606.1 It was agreed that the following restriction be placed on CHEM 363:

Not open to students who are taking or have taken CHEM 253 and CHEM 263.

Prof. Ronis **moved**, seconded by Prof. Ragan, that the changes be approved.

The motion carried.

(7) BIOLOGY

New Option: Ph.D. in Biology; Developmental Biology Option	AC-07-97
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607.1 It was pointed out that the program description read rather like a rationale, and that it should be reworded.

607.2 Under Complementary Courses, it should be made clearer that "3 credits at the 500-level or higher in Biology or in other departments" referred to the listed courses and not to courses in general.

Prof. Levine **moved**, seconded by Prof. Chmura, that the new Option be adopted pending the above.

The motion carried.

(8) THE ROLE OF THE HONOURS PROGRAM

608.1 Associate Dean Hendren said that one of the issues arising from the undergraduate Academic Program Review was the precise role of the B.Sc. Honours program. She had devised a number of questions concerning the Honours program, and she asked representatives of the various units to answer the questions.

608.2 Associate Dean Hendren said she hoped that the Web pages of individual units would spell out the differences between the Major and the Honours program.

608.3 The questions were:

- (1) Are the requirements for the Honours program reasonable?
- (2) Too few or too many credits?
- (3) Is research required?
- (4) What is the main goal of the Honours program, and how is it different from the Major program?
- (5) Is there a CGPA requirement? If so, what is it?
- (6) Is the percentage of women in the Honours program different from that in the Major program?
- (7) At what stage do students enter the Honours program?

- (8) Are Honours students obtaining lower grades simply because of being in the Honours program?

Anatomy & Cell Biology:

(1) We feel that the requirements for the Honours program are reasonable. Possibly more 400 level courses should be required. Currently one can obtain the program with twelve credits of 400 level courses. Consideration is being given to changing ANAT 365 to a 400 level course.

(2) 73 credits – we feel that this is an appropriate number

(MIMM has 73, Physiology and Biochemistry have 75)

(3) Yes, Nine credits of research – we feel this is appropriate

(4) In the University Calendar, it is stated that “it is expected that...the students who wish to continue in the Honours Program will be those who feel that they are seriously interested in a career in Cell Biology”. The primary objective of many students in our Major and Faculty Programs is acceptance into Medical or Dental school – although only a fraction will achieve this goal).

(5) Yes. 3.2

We feel that this should be raised to at least 3.3 – the CGPA required for entrance into our graduate programs.

(6) We have 6/11 (55%) women in our Honours program, 119/179 (66%) women in our Major program, 183/273 (67%) in our Faculty program and 7/8 (88%) women in our Liberal Program.

(7) Students may register for the Honours Program at the beginning of U2 if they have a CGPA of 3.2. They may also enter the program at the beginning of U3.

(8) Are Honours students obtaining lower grades simply because of being in the Honours program?

We do not think so, although the sample size is small. In our program, there are no special courses reserved for Honours students. The one named required course for our Honours program is ANAT 432 (our nine-credit research course). This course requires a lot of work but the marks are generally quite high.

Atmospheric & Oceanic Sciences:

(1) Yes

(2) 70 credits.

(3) Yes. Three-credit research project. ATOC 480

(4) The students take the honours research project which allows them to undertake research under the supervision of a professor - not unlike graduate studies

(5) Yes. 3.30.

(6) Probably more women in Honours since the undergraduate programs are dominated by women. The number of honours students is typically of order 30% of the number of students in a majors program.

(7) After successfully completing year 1, with the required standing to allow admittance to the honours programme.

(8) (NO) Their grades are consistently high.

Biochemistry:

(1) We think they are - slightly more required biophysical content than the Majors program. But, of the 76 required credits, 6 are research.

(2) Okay as is.

(3) Absolutely. Six credits required (BIOC 460 or BIOC 462) with an option do six more credits (BIOC 491).

(4) The Honours program is designed as an optimum preparation for research. More biophysical content with mandatory research. The Majors program will also prepare for research but allows more flexibility. We would encourage professional school applicants to take Majors if their second choice is research or the B.Sc. Liberal program if research will not be their choice should health studies applications not be successful.

(5) Yes. Currently 3.2 with no Cs in required courses. Our cut-off for graduate student admissions is 3.2, and we think that these two numbers should be the same.

(6) Yes, but I don't think this is an issue. It might reflect the higher proportion of women going to medical school, and who prefer to take the Majors program.

(7) We prefer that they enter after U1, but they can after U2. The problem is spaces in BIOC 460 – we will allow a few Majors to take this course if there is room, so we need to know the Honors numbers as soon as possible.

(8) We don't think so.

Biology:

(1) Requirements for admission are reasonable (see 5, 6). Requirements for students in the program are reasonable, too: it is basically the courses to fulfill the requirements for the Biology Major plus a Biometry course plus a research component in the last year of studies plus the Honours seminar course. In a few cases, the supervisors' expectations regarding time commitment by the student to the research project have been exaggerated. It must be clear that Honours students are not graduate students and can commit about two full working days to their project. If this policy is adhered to the requirements are reasonable.

(2) The number of credits is all right.

(3) Yes, it is the most important component of the Honours program. As a distinguishing feature to the Major and Faculty programs a strong research component is obligatory.

(4) From the website: "The Honours Program in Biology is designed expressly as a preparation for graduate study and research. It provides students with an enriched training in Biology as well as some research and scientific reading experience in a chosen area. By building on the experience gained in Honours research, it may be possible to complete a Master's thesis within one and a half years of finishing a B.Sc." Differences to Major program: research component is obligatory; CGPA requirement.

(5) Yes: a minimum CGPA of 3.5 in U2 to be maintained in the U3 year for the Honours degree. We increased the requirement a couple of years ago from 3.2 because the department believes it should be a selective program. Between 6% and 15% of the annual cohort join the Honours program. I feel 10% of the cohort is a reasonable long-term target.

(6) This year we have 8 students of which 5 are women (63%); last year women were 12/18 (67%).

(7) At the end of U2.

(8) No.

Chemistry:

(1) Yes.

(2) Reasonable.

(3) Yes. Six-credit research course or summer research.

(4) To give students a more intense experience. Honours requirements are greater than Major requirements.

(5) Yes. 3.00.

(6) Not significantly. Over the last ca 7 years (2001-2007) our graduation statistics are:

Faculty - 17 Male (7.5% of total), 20 Female (8.8%)

Majors - 37 Male (16.4%), 58 Female (25.7%)

Honours - 49 Male (21.7%), 45 Female (19.9%)

Totals - 103 Male (45.6%), 123 Female (54.4%)

In my opinion, what this data shows is that the gender breakdown of Chemistry's total enrollments more or less parallel those of the university as a whole. However, this is slightly less so in the honors program, where the difference seems to be washed out, and a concomitant increase in the female/male ratio in majors. This is probably the first sign of the "leaky-pipeline". There are other differences that should be investigated. For example, what are the elective courses being taken by the two genders in the honors

pool? I'll bet that there are differences here, with the males probably being more narrowly focused on science/technology courses and females on the arts.

(7) From U1 to beginning of U3 year.

(8) No

Computer Science:

(1) Yes, but some required courses may be problematic.

(2) 72 credits

(3) Yes.

(4) To learn more, and to prepare students for graduate school.

(5) Yes. 3.00. This may be too low.

(6) More women should be encouraged to take the Honours program.

(7) U1 year.

(8) No. But, in the Joint Honours Program in Mathematics & Computer Science, the grades are lower.

Earth & Planetary Sciences:

(1) Yes.

(3) Yes. Six-credit research project.

(4) To prepare students for graduate school. To allow a degree of specialization because the variety of disciplines in Earth and Planetary Sciences ranges from studies of the Earth's core, through investigations of its surficial environment and peoples' affects on it, to the exploration of other planets.

(5) Yes. 3.20 CGPA.

(6) No.

(7) U2 year.

(8) No.

Geography:

(1) (3) Six-credit Honours thesis plus take a course on the discipline of geography.

(2) We find the credit level appropriate.

(3) Yes.

(4) The main goal is to provide intensive research experience and better prepare the student for graduate research.

(5) Yes. 3.30.

(7) Some students enter in the penultimate semester. They must have a research supervisor.

(8) No, but we have not examined this. We do not have special honours level courses.

Mathematics & Statistics:

(1) Yes. I haven't conducted a survey about this in our Department but I think it's fair to say that most members of our Department are quite happy with our Honours program.

(2) About right

(4) To prepare students for graduate school.

(3) Strongly recommended, not required.

(5) Yes. 3.00.

(6) Unfortunately, yes (e.g. roughly 40% of the students in the Major in Mathematics are female, compared to 33% in the Honours in Mathematics. In the Joint Major in Math and Computer Science about 38% of the students are female, compared to only 12% in the Honours program).

(7) U1 year.

(8) Probably.

McGill School of Environment:

(1) MSE Honours program requires 6 credits of Honours Thesis (ENVR 495D1D2 for Arts and Science, ENVR 496 and ENVR 497 for Mac) in addition to the regular program

requirements. This seems reasonable to me. It is similar to other depts' Honours, including Geography.

(2) 6 credits of Honours research does not place too heavy a load, and does not tend to extend the students' time in their degree.

(3) A research thesis is required. There is no set length or format, and the topics (and methodologies) can range widely through the natural and social sciences and humanities.

(4) The goal is to train students to do research, and to give them experience in working closely with a professor. While the Environment programs incorporate a senior research project (ENVR 401), that is group work, and is not done to the same depth (3 credits in one semester vs 6 credits in two semesters for Honours). Note that Honours students still have to do ENVR 401.

(5) Taken from http://www.mcgill.ca/mse/programs/ug_programs/honours/ (You can also see the Calendar page 429 section 14.10.)

To be eligible for Honours, students must satisfy the requirements set by their home Faculty (Science, Arts, or Agricultural and Environmental Sciences). Arts students should especially note the requirement of a Minor in a subject other than Environment.

In addition they must satisfy the following:

* Students apply for the Honours program in March or April of their U2 year. This deadline is not firm, but since many professors leave town during the summer, it can be hard to contact potential supervisors after April.

* Applicants must have a minimum Program GPA (GPA of all required and complementary courses for the Environment program taken at McGill) of 3.3 to enter the Honours program.

* Students must earn a B grade (3.0) or higher for either ENVR 495 Honours Research or both ENVR 496 and ENVR 497 Honours Research Parts 1 and 2.

* Students are required to achieve a minimum overall CGPA of 3.0 at graduation, and a minimum Program GPA of 3.3 to obtain Honours.

These requirements are not that hard for our students to meet. We currently have 21 Honours students out of a U3 cohort of 114 students.

Many more than that meet the requirements.

(7) Students apply in U2 year.

Microbiology & Immunology (Honours in Microbiology & Immunology, and Interdepartmental Honours in Immunology):

(1) The only requirement is a B⁺ average (3.30) in our Major program (or equivalent). We can accommodate almost all of the applicants to the Honours programs that comprise about 15-17% of our total enrolment. The only limitation is the number of undergraduate research students that our professors can accommodate in their laboratories.

(2) Considering that the Microbiology and Immunology Honours program expects a student to be engaged in Honours research and related activities for 2.5 days per week for two terms, a 12 credit weighting is appropriate. For the Interdepartmental Honours Immunology (IHI) program, the project has a 9 credit weighting and the expectation is that the students will perform research work 2 days per week for two terms. As challenging research intensive programs there is little room for elective courses in our Honours programs (15-17 credits).

(3) Yes. Bench based research, a written report and an oral presentation of the results of their research project are all required / evaluated parts of the Honours programs.

(4) The Honours program is specifically designed to prepare our undergraduate students for graduate studies and careers in research.

(5) CGPA 3.30 or better to be admitted to, or graduate from the Honours program (Honours programs in Microbiology and Immunology and Interdepartmental Honours in Immunology).

(6) No. Our enrolment statistics indicate that all our programs are 51% female, but our Honours programs have often had a higher percentage of women students. (**Secretary's note:** An Excel file with the data is appended to the permanent copy of the Minutes.)

(7) Students first indicate their interest in the Honours Immunology program in U1 and are admitted following their U1 year but can also apply for admission at any time. For the Microbiology Honours program students are admitted in their U2 year. Any student in the major program or equivalent is eligible to enter at any time as we do not have a dedicated Honours stream or program.

(8) Students in both of our Honours programs graduate with an average CGPA of about 3.60 or higher. It has been several years since any students' cumulative grades have fallen below the 3.30 required to graduate from the Major program. Honours students are among the best in our departmental programs and it is inconceivable that their grades would fall and we see no evidence that this occurs.

Physics:

(1) Yes, we think so. The Honours program consists of a series of special courses tailored to highly-performing students, together with a GPA requirement.

(2) No. Major program has 60 credits, Honours has 78 credits.

(3) Yes. The Honours program has two-terms of research. The joint Honours programs (Math/Phys and Chem/Phys) do not, although a research project can be taken as a complementary course.

(4) Graduates of the Honours program should be able to do physics in the best labs.

(5) Yes. 3.00.

(7) U1 year. Students self-select, usually going into U1. There is a possibility for Majors students to transfer into the Honours program after U1.

Physiology:

(1) Yes, we believe so, and the feedback from the students reflects that, as well.

(2) Given the nature of the training (see point (4) below), the number of credits is appropriate: 75 credits total (including 15 credits of complementary courses).

(3) Yes, a 9 credit Research Project course (PHGY 461) taken in U3 as well as the required practical U2 course PHGY 351, in which: students do experiments, analyse data and learn different laboratory techniques.

(4) To provide a small number of students (10-12) with mentoring (PHGY 359), with a more intense exposure to challenging biomedical courses, to obtain additional practical laboratory training and to be introduced to basic issues in research ethics (PHGY 359), to develop literature analysis skills (through a 6 credit seminar course PHGY 459), and to carry out an independent Research Project (PHGY 461). We feel that this background prepares students effectively for either graduate work or professional school.

(5) Yes, a minimum of 3.3 to enter into the program and a 3.5 to graduate from it with First Class Honours.

(6) Probably not; in the current U3 class there are 8 females and 3 males. In the current U2 class there are 3 females and 5 males.

(7) At the beginning of U2.

(8) No, definitely not. In general the average cGPA of graduating Honors students is higher (~ 3.7) than that of graduating students in the Majors program (~3.5 -3.6).

Psychology:

(1) Yes, very close to those of the majors program.

(2) Just about the right number (60 credits v 54 for Majors)

(3) Yes.

(4) Research.

(5) Yes. 3.65 - 3.70.

- (6) Higher percentage of women. (I think this might vary from year to year.)
- (7) U2 or U3 year.
- (8) No.

608.4 Dean Grant thanked members for their comments.

(9) POSSIBILITY OF A B.Sc./M.Sc. PROGRAM

- 609.1** Dean Grant introduced the above item. He said that typically McGill B.Sc. students go on to graduate studies in other universities, where many McGill students are told they have a background similar to M.Sc. students from other universities. Dean Grant said that McGill B.Sc. students almost routinely engaged in research, and that McGill students may very much like the option of staying an extra year or 18 months to do a B.Sc./M.Sc. program. The course load for such an option would be light, since McGill B.Sc. students typically already have done most of the course work required for an M.Sc. at other universities. Entry into the B.Sc./M.Sc. program would likely be in December in the U3 year, and would be conditional on maintaining a high GPA. Students could do research during the summer following receiving the B.Sc., do course work and research during the regular academic year, and then if necessary continue with research during the next summer.
- 609.2** Dean Grant invited members' comments.
- 609.3** It was pointed out that it was a university regulation that students could not extend research from one degree to another.
- 609.4** The B.Sc./M.Sc. would provide an additional option for students who fail to get into professional schools.
- 609.5** The question was raised as to the relation between a student taking a B.Sc./M.Sc. and a student taking an M.Sc., and how these degrees would relate to the level at which students started a Ph.D.
- 609.6** The Dean mentioned that a B.Sc./M.Sc. degree would generate more money for the university.
- 609.7** A member suggested that since the Faculty was already producing good M.Sc. graduates, the proposed B.Sc./M.Sc. degree, requiring a shorter time, would basically result in a "watered-down" M.Sc. On the other hand, since students doing a B.Sc./M.Sc. would be McGill graduates, their theoretical background would be good and the M.Sc. would be research-intensive.
- 609.8** A number of members expressed approval in principle of the concept of a B.Sc./M.Sc. degree.
- 609.9** It was pointed out that no matter where students came from, they still had to do a certain number of courses for an M.Sc. Reducing this requirement for McGill students would create a "two-tier" M.Sc. However, McGill students would likely be able to obtain exemptions from M.Sc. courses by "loading up" on 500-level courses during their final undergraduate year.
- 609.10** It was questioned whether the B.Sc./M.Sc. would be considered to be an individual degree, distinct from a B.Sc. plus M.Sc.

609.11 Dean Grant said that it had been an interesting discussion and that he would raise the issue of the B.Sc./M.Sc. at the next Chairs' meeting.

(10) OTHER BUSINESS

There being no other business, the meeting adjourned at 4:35 p.m.