

Academic Program Reviews 2004-2008

Final Program Review Summary Sheets – Faculty of Science

Undergraduate Programs

B.Sc. (Bachelor of Science) Faculty Programs in: Anatomy and Cell Biology; Biochemistry; Biology; Biology and Mathematics; Chemistry; Chemistry and Biological Sciences; Chemistry and Mathematics; Mathematics and Computer Science; Mathematics, Statistics and Computer Science; Mathematics, Chemistry and Physics; Microbiology and Immunology; Physics; Physiology; Psychology

B.Sc. (Bachelor of Science) Majors Programs in: Anatomy and Cell Biology; Atmospheric Sciences; Atmospheric Sciences and Physics; Biochemistry; Biology; Chemistry; Mathematics and Computer Science; Software Engineering; Computer Science; Earth and Planetary Sciences; Geography; Mathematics; Microbiology and Immunology; Physics; Physics and Computer Science; Physics and Geophysics; Physiology; Physiology and Mathematics; Physiology and Physics; Psychology

B.Sc. (Bachelor of Science) Honours Programs in: Anatomy and Cell Biology; Atmospheric Sciences; Biochemistry; Biology; Chemistry; Computer Science; Earth Sciences; Geography; Mathematics; Probability and Statistics; Applied Mathematics; Mathematics and Computer Science; Mathematics and Physics; Microbiology and Immunology; Immunology (Interdepartmental); Physics; Physiology; Psychology

Program Study Group Members:

Faculty Programs PSG

Laurie Hendren (Professor, Associate Dean, Academic), Chair
 Louis Hermo (Professor, Department of Anatomy and Cell Biology)
 Christopher Barrett (Associate Professor, Department of Chemistry)
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Major Programs PSG

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Honours Programs PSG

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 Anne Comeau (Staff, Department of Biology)
 Elizabeth Munro (Student, Departments of Physics and Mathematics and Statistics)

Strengths

- The reviews of the Honours and Majors programs found that the programs were well-defined overall and were serving the purposes for which they were intended.
- The Honours programs were particularly well suited for students preparing for graduate studies and the Majors programs provided a solid foundation as well. Since the review, the Honours programs have been further strengthened so that all Honours programs now include an undergraduate research component.
- The Faculty programs provided a good opportunity for broader studies, but due to weaknesses in the programs they have been replaced by the new BSc Liberal programs which are more structured and ensure a balance of breadth and depth.
- The review noted the excitement in the Faculty of Science about undergraduate research, coming from both the students and the faculty. The course enrolment numbers showed that undergraduate research is on the rise and more than half the recent B.Sc. graduating students have participated in at least one undergraduate research course. The Faculty of Science has undertaken many initiatives to further strengthen undergraduate research, including the Soup&Science events where professors present their research to undergraduates, the 396 series of research courses, the Dean's Multidisciplinary Research List, the SURA undergraduate research awards for summer research, the Undergraduate Research Conference held each fall, the student-led McGill Science Undergraduate Research Journal (mSURJ) and other activities supported by the Faculty of Science Office for Undergraduate Research.
- The review highlighted the internationality of the Faculty of Science, including both the diverse nature of the faculty members and students. The Science Internships and Field Studies Office supports both national and international internship and field experiences.

Recommendations

- Clarify the distinction between the Majors programs and the Honours programs and ensure appropriate recognition of the extra work required in an Honours program.
- Clarify the goals of the Major programs and study a reasonable range of program credits that should be required for a single-discipline, joint and interdisciplinary major program.
- Retire the Faculty Programs and replace with the new B.Sc. Liberal program, which provides a uniform framework for students who wish to have some depth in a discipline plus breadth in another discipline.
- Review the minimal requirements for upper-year courses, research requirements, and CGPA requirements for Honours programs.
- Clarify the goals and outcomes of the Majors programs.
- Explore ways to reduce the gender gap in some disciplines, to attempt to reduce the gender gap in the Honours programs, and to find ways to encourage female undergraduates to continue on to graduate studies.
- Explore ways of following their graduates in order to track their progress and to help evaluate how the programs could be improved.
- Review the grading in Honours courses to see if Honours students are disadvantaged in CGPA.
- Look at alternative teaching methods, particularly with respect to labs and work-study opportunities

April 2009

Graduate Programs

M.Sc. (Master of Science) Thesis Programs in: Atmospheric and Oceanic Sciences, Biology, Chemistry, Computer Science, Earth and Planetary Sciences, Geography, Mathematics and Statistics, Physics, Psychology

M.Sc. (Master of Science) Non-Thesis Programs in: Computer Science, Mathematics and Statistics

M.Sc.(A) (Master of Science, Applied) in Chemistry

M.A. (Master of Arts) Thesis Programs in: Geography, Mathematics and Statistics, Psychology

M.A. (Master of Arts) Non-Thesis Programs in: Mathematics and Statistics

Ph.D. (Doctor of Philosophy) Programs in: Atmospheric and Oceanic Sciences, Biology, Chemistry, Computer Science, Earth and Planetary Sciences, Geography, Mathematics and Statistics, Physics, Psychology

Program Study Group Members:

Atmospheric and Oceanic Sciences PSG

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Chemistry PSG

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Graduate Liaison Committee

Computer Science PSG

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Xiao-Wen Chang (Associate Professor, Ph.D Program Director)

Diti Anastasopoulos (Graduate Secretary)

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Earth and Planetary Sciences PSG

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Geography PSG

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Mathematics and Statistics PSG

Georg Schmidt (Professor), Chair

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Physics PSG

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Petter Grutter (Outgoing Grad. Chair, Physics)

Maria Kilfoil (Assistant Professor)

Andrew Cumming (Assistant Professor)

Aashish Clerk (Assistant Professor, Canada Research Chair Tier 2)

Robert Brandenberger (Professor, Canada Research Chair Tier 1)

Andreas Warburton (Assistant Professor)

Carolyn Young (student representative)

Psychology PSG

Barbel Knauper (Associate Professor), Chair

Giovanna Loscacio (Graduate Program Coordinator)

Crystal Holly (President of Graduate Student Association, Ph.D. candidate)

Strengths:

- Strong graduate programs in all Science units. All programs attract good students.
- Most faculty members are active graduate student advisors. The participation of faculty as advisors will continue to increase as the large number of new and active researchers hired in recent years build their research groups.
- Significant opportunities for students to “fast-track” from M.Sc. to Ph.D. programs.
- Most M.Sc. and **all** Ph.D. students in the Faculty of Science receive good funding support.
- A significant number of international students, close to 1/3rd of graduate students are international students.

Recommendations:

- Increase efforts at providing help for installation in Montréal, e.g. a “proper” welcome-to-McGill website and/or a guide for international students.
- Improve Graduate Student Experience, e.g. better space and equipment.
- Maintain or amplify recruitment efforts on the Quebec and international scene.
- Address gender imbalance in recruitment.
- Decrease bureaucratic obstacles and ‘red tape’ that exists or is perceived to exist to admission and registration of graduate students.

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