



**Faculty of Science, including School of Computer
Science (Graduate)
Programs, Courses and University Regulations
2011-2012**

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Note: Throughout this publication, "you" refers to students newly admitted, readmitted or returning to McGill.

Publication Information

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1 Dean's Welcome

To Graduate Students and Postdoctoral Fellows:

I am extremely pleased to welcome you to McGill University. With over 250 doctoral and master's degree programs, McGill is committed to providing world-class graduate education and postdoctoral training in a full range of academic disciplines and professions. Graduate and Postdoctoral Studies (GPS) provides strategic leadership and works in collaboration with the Faculties and other administrative and academic units to deliver the very highest level of teaching and research across the University. GPS is responsible for the admission and registration of graduate students, disbursing graduate fellowships, supporting postdoctoral fellows, and facilitating the graduation process, including the examination of theses.

As a student-centred research institution, McGill places singular importance upon the quality of graduate education and postdoctoral training. As Associate Provost (Graduate Education), as well as Dean of Graduate and Postdoctoral Studies, I work closely with the central administration, Faculties, graduate students, professors, researchers, postdoctoral fellows, and staff to enhance the graduate and postdoctoral experience and provide a supportive, stimulating, and enriching academic environment.

McGill is ranked as one of Canada's most intensive research universities and among the world's top 25. We recognize that these successes come not only from our outstanding faculty members, but also from the quality of our graduate students and postdoctoral fellows - a community into which we are very happy to welcome you.

I invite you to join us in advancing this heritage of excellence at McGill.

Martin Kreiswirth, Ph.D.

Associate Provost (Graduate Education)

Dean, Graduate and Postdoctoral Studies

2 Graduate and Postdoctoral Studies

2.1 Administrative Officers

Martin Kreiswirth; B.A.(Hamilton), M.A.(Chic.), Ph.D.(Tor.)	Associate Provost (Graduate Education) and Dean (Graduate and Postdoctoral Studies)
Heather Durham; M.Sc.(W. Ont.), Ph.D.(Alta.)	Associate Dean (Graduate and Postdoctoral Studies) (until Sept. 2011)
Meyer Nahon; B.Sc.(Qu.), M.Sc.(Tor.), Ph.D.(McG.), Eng.	Associate Dean (Graduate and Postdoctoral Studies)
Lisa deMena Travis; B.A.(Yale), Ph.D.(MIT)	Associate Dean (Graduate and Postdoctoral Studies) (as of Sept. 2011)
Shari Baum; B.A.(C'neil), M.Sc.(Vermont), Ph.D.(Brown)	Associate Dean (Graduate and Postdoctoral Studies)
Charlotte E. Légaré; B.Sc.(Montr.), M.Sc.(Sher.), M.B.A.(McG.)	Director (Graduate and Postdoctoral Affairs)
Lissa B. Matyas; B.F.A., M.Sc.(C'odia)	Director (Recruitment and Retention)

2.2 Location

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Note: For inquiries regarding specific Graduate programs, please contact the appropriate department.

2.3 General Statement Concerning Higher Degrees

Graduate and Postdoctoral Studies (GPS) administers all programs leading to graduate diplomas, certificates and higher degrees. It is responsible for the admission of candidates, the supervision of their work and for recommending to Senate those who may receive the degrees, diplomas and certificates.

3 Important Dates 2011-2012

For all dates relating to the academic year, consult www.mcgill.ca/importantdates.

4 Graduate Studies at a Glance

McGill University offers graduate and postdoctoral programs in the following units (organized by their administering home faculty):

Agricultural and Environmental Sciences

- : *Agricultural Economics*
- : *Animal Science*
- : *Bioresource Engineering*
- : *Dietetics and Human Nutrition*
- : *Food Science and Agricultural Chemistry*
- : *Natural Resource Sciences*
- : *Parasitology*
- : *Plant Science*

Arts

- : *Anthropology*
- : *Art History*
- Classics, see : *History and Classical Studies*
- : *Communication Studies*
- : *East Asian Studies*
- : *Economics*
- : *English*
- : *French Language and Literature*
- section 11.6: *Geography*
- : *German Studies*
- : *Hispanic Studies*
- : *History and Classical Studies*
- : *Institute for the Study of International Development*
- : *Islamic Studies*
- : *Italian Studies*
- : *Jewish Studies*
- : *Linguistics*
- section 11.7: *Mathematics and Statistics*
- : *Philosophy*

Arts

: *Political Science*

section 11.9: Psychology

: *Russian and Slavic Studies*

: *Social Studies of Medicine*

: *Social Work*

: *Sociology*

Dentistry

: *Dentistry*

Desautels Faculty of Management

: *Desautels Faculty of Management*

Education

: *Educational and Counselling Psychology*

: *Information Studies*

: *Integrated Studies in Education*

: *Kinesiology and Physical Education*

Engineering

: *Architecture*

: *Chemical Engineering*

: *Civil Engineering and Applied Mechanics*

: *Electrical and Computer Engineering*

: *Mechanical Engineering*

: *Mining and Materials Engineering*

: *Urban Planning*

Law

: *Law*

McGill School of Environment

: *Environment*

Medicine

: *Anatomy and Cell Biology*

: *Biochemistry*

: *Bioethics*

: *Biomedical Engineering*

: *Communication Sciences and Disorders*

: *Epidemiology and Biostatistics*

Experimental Medicine, see : *Medicine, Experimental*

: *Human Genetics*

: *Medical Physics*

Medicine

: Microbiology and Immunology
: Neuroscience (Integrated Program in)
: Nursing
: Occupational Health
: Otolaryngology – Head and Neck Surgery
: Pathology
: Pharmacology and Therapeutics
: Physical and Occupational Therapy
: Physiology
: Psychiatry
: Surgical Research

Religious Studies

: Religious Studies

Schulich School of Music

: Schulich School of Music

Science

section 11.1: Atmospheric and Oceanic Sciences
section 11.2: Biology
section 11.3: Chemistry
section 11.4: Computer Science
section 11.5: Earth and Planetary Sciences
section 11.6: Geography
section 11.7: Mathematics and Statistics
section 11.8: Physics
section 11.9: Psychology

4.1 Graduate Diplomas and Certificates

Graduate diplomas and graduate certificates are programs of study under the academic supervision of Graduate and Postdoctoral Studies. They have as a prerequisite an undergraduate degree in the same discipline.

McGill University offers other diploma and certificate programs under the supervision of the relevant faculties and their Calendars should be consulted for further details.

Graduate Diplomas are offered in:

Clinical Research (Experimental Medicine)	Primary Care Nurse Practitioner
Epidemiology and Biostatistics	Professional Performance
Islamic Studies	Public Accountancy (C.A.)
Library and Information Studies	Registered Dietician Credentialing (R.D.)
Mining Engineering	School and Applied Child Psychology (post-Ph.D.)
Nursing	Surgical Health Care Research

These diploma programs consist of at least two terms of full-time study or the equivalent.

Graduate Certificates are offered in:

Assessing Driving Capabilities	Educational Leadership 2
Air and Space Law	Library and Information Studies
Bioresource Engineering (IWRM)	Post-M.B.A.
Biotechnology	Teaching English as a Second Language
Comparative Law	Theory in Primary Care
Educational Leadership 1	Theory in Neonatology

All graduate regulations apply to graduate diploma and certificate candidates.

4.2 Master's Degrees

Two categories of programs lead to higher degrees at McGill University, master's programs, and doctoral programs.

The following master's degrees are offered (see below for more information about sub-specializations):
Prerequisites:

Master of Architecture (M.Arch)	M.Arch. (professional degree) – McGill B.Sc.(Arch.) degree, or equivalent; M.Arch. (post-professional degree) – an M.Arch. (professional degree) or equivalent professional degree.
Master of Arts (M.A.)	Bachelor of Arts in the subject selected for graduate work. See appropriate unit.
Master of Business Administration (M.B.A.)	An undergraduate degree from an approved university. See Management.
Joint program: Master of Business Administration (M.B.A.) with integrated Bachelor of Civil Law (B.C.L.) / Bachelor of Laws (LL.B.)	See Management.
Concurrent Master of Business Administration with Doctor of Medicine / Master of Surgery (M.B.A. with M.D.,C.M.)	See Management.
Master of Manufacturing Management (M.M.M.)	See Management.
Master of Education (M.Ed.)	A bachelor's degree with specialization related to the subject chosen for graduate work, plus a Permanent Quebec Teaching Diploma or its equivalent for some of the above degrees. See appropriate department.
Master of Engineering (M.Eng.)	Bachelor of Engineering or equivalent, with specialization appropriate for the subject selected for graduate study. See appropriate department.
Master of Laws (LL.M.)	An acceptable degree in Law or equivalent qualifications. See Law.
Master of Library and Information Studies (M.L.I.S.)	At least a bachelor's degree from a recognized university. See Library and Information Studies.
Master of Management (M.M.)	See Management.
Master of Music (M.Mus.)	Bachelor of Music or Bachelor of Arts with concentration in the area selected for graduate study. See Music.
Master of Sacred Theology (S.T.M.)	B.A. with specialization in religious studies or theology. See Religious Studies.
Master of Science (M.Sc.)	Bachelor of Science in the subject selected for graduate work. See appropriate unit.
Master of Science, Applied (M.Sc.A.)	A bachelor's degree in the subject selected for graduate work. See appropriate unit.
Master of Science, Applied (OT) (M.Sc.A. (OT))	A bachelor's degree in the subject selected for graduate work. See appropriate unit.
Master of Science, Applied (PT) (M.Sc.A. (PT))	A bachelor's degree in the subject selected for graduate work. See appropriate unit.
Master of Social Work (M.S.W.)	Bachelor's degree in Social Work including courses in statistics and social science research methods. See Social Work.
Joint program: Master of Social Work (M.S.W.) with integrated Bachelor of Civil Law (B.C.L.) / Bachelor of Laws (LL.B.)	See School of Social Work.
Master of Urban Planning (M.U.P.)	Bachelor's degree in any one of the following: Anthropology, Architecture, Economics, Civil Engineering, Geography, Law, Management, Political Science, Social Work, Sociology or Urban Planning, with adequate knowledge of quantitative techniques. See Urban Planning.

Master of Architecture Degrees

M.Arch. programs offered:

- M.Arch. (professional degree) (Non-Thesis) in Design Studio and Design Studio – Directed Research
- M.Arch. (post-professional degree) (Non-Thesis); specializations in Architectural History and Theory, Cultural Mediations and Technology, Urban Design and Housing

Master of Arts Degrees

Programs leading to the degree of Master of Arts are offered in the following areas:

- Anthropology (Thesis and Non-Thesis); options in Development Studies, Environment, Gender and Women's Studies, Medical Anthropology
- Art History (Non-Thesis); option in Gender and Women's Studies (Non-Thesis)
- Classics (Thesis and Non-Thesis)
- Communication Studies (Thesis and Non-Thesis); option in Gender and Women's Studies
- Economics (Thesis and Non-Thesis); options in Development Studies (Non-Thesis) and Social Statistics (Non-Thesis)
- Education (Thesis and Non-Thesis)
- English (Thesis and Non-Thesis)
- French (Thesis and Non-Thesis); option in Gender and Women's Studies
- Geography; options in Development Studies, Environment, Gender and Women's Studies, Neotropical Environment, Social Statistics
- German Studies (Thesis and Non-Thesis)
- Hispanic Studies (Thesis and Non-Thesis)
- History (Thesis and Non-Thesis); options in Development Studies (Thesis and Non-Thesis), European Studies (Thesis and Non-Thesis), Gender and Women's Studies (Thesis and Non-Thesis), History of Medicine (Non-Thesis)
- Islamic Studies; option in Gender and Women's Studies
- Italian Studies (Thesis and Non-Thesis)
- Jewish Studies (Thesis and Non-Thesis)
- Kinesiology and Physical Education (Thesis and Non-Thesis)
- Linguistics (Non-Thesis)
- Mathematics and Statistics (Thesis and Non-Thesis)
- Music (Thesis and Non-Thesis)
- Philosophy; option in Bioethics
- Political Science (Thesis and Non-Thesis); options in Development Studies (Thesis and Non-Thesis), European Studies (Thesis and Non-Thesis), Gender and Women's Studies (Non-Thesis), Social Statistics (Non-Thesis)
- Psychology
- Religious Studies (Thesis and Non-Thesis); options in Bioethics and Gender and Women's Studies
- Russian
- Sociology (Thesis and Non-Thesis); options in Development Studies (Thesis and Non-Thesis), Environment, Gender and Women's Studies (Thesis and Non-Thesis), Medical Sociology (Thesis and Non-Thesis), Social Statistics (Non-Thesis), Neotropical Environment

Master of Business Administration Degrees

A program leading to the degree of Master of Business Administration (M.B.A.) is offered in the following concentrations:

- Finance
- Global Strategy and Leadership
- Marketing
- Technology and Innovation Management

An E.M.B.A. is also offered (joint with HEC).

Special programs:

- M.B.A. with M.D.,C.M.
- M.B.A. with B.C.L. and LL.B.
- Master of Manufacturing Management (see Management and Mechanical Engineering)

Master's Degrees in Education

Three types of master's degrees are offered: M.A. (Thesis and Non-Thesis), M.Ed. (Non-Thesis) and M.Sc. (Thesis and Non-Thesis).

The M.A. may be taken in the following areas:

- Counselling Psychology (Thesis and Non-Thesis): Counselling Psychology – Professional/Internship (Non-Thesis), Counselling Psychology – Project (Non-Thesis)
- Education and Society (Thesis and Non-Thesis); options in Gender and Women's Studies (Thesis and Non-Thesis) and Jewish Studies (Thesis and Non-Thesis)

Educational Psychology (Thesis and Non-Thesis)
 Educational Leadership (Thesis, Non-Thesis, and Non-Thesis Coursework); option in Gender and Women's Studies (Thesis and Non-Thesis)
 Kinesiology and Physical Education (Thesis and Non-Thesis)
 Second Language Education (Thesis and Non-Thesis); option in Gender and Women's Studies (Thesis and Non-Thesis)
 Teaching and Learning (MATL) (Non-Thesis)

The M.Ed. may be taken in the following area:

Educational Psychology

The M.Sc. may be taken in the following area:

Kinesiology and Physical Education (Thesis and Non-Thesis)

Master's Degree in Engineering

Programs leading to the degree of Master of Engineering are offered in the following areas:

Aerospace Engineering (Project)
 Biomedical Engineering; option in Bioinformatics
 Chemical Engineering (Thesis and Project); option in Environmental Engineering (Project)
 Civil Engineering and Applied Mechanics (Thesis and Project); option in Environmental Engineering (Project)
 Electrical Engineering (Thesis and Project); option in Computational Science and Engineering
 Mechanical Engineering (Thesis and Project); option in Computational Science and Engineering
 Mining and Materials Engineering (Thesis and Non-Thesis); options in Environmental Engineering (Non-Thesis), Mining (Non-Thesis), and Metals and Materials (Non-Thesis)

Other degrees:

Master of Management (M.M.) is offered in Manufacturing Management (see Department of Mechanical Engineering and Faculty of Management).
 Master of Science (M.Sc.) is offered in Chemical Engineering, Civil Engineering, Mechanical Engineering, and Mining and Materials.

Master's Degrees in Law

The degree of Master of Laws is offered in:

Law (Thesis and Non-Thesis); options in Bioethics, Comparative Law (Thesis and Non-Thesis), Environment (Thesis and Non-Thesis), and European Studies
 Air and Space Law (Thesis and Non-Thesis)

Master of Library and Information Studies Degree

The Graduate School of Library and Information Studies offers a postgraduate professional program in librarianship. Two years of full-time study or the equivalent are required.

Master's Degrees in Music

Programs leading to the degrees of Master of Arts and Master of Music are offered in the Faculty of Music.

The M.A. may be taken in:

Music Technology
 Musicology (Thesis and Non-Thesis); option in Gender and Women's Studies
 Music Education (Thesis and Non-Thesis)
 Theory (Thesis and Non-Thesis); option in Gender and Women's Studies

The M.Mus. may be taken in:

Composition
 Performance (various options) (Non-Thesis)
 Sound Recording (Non-Thesis)

Applicants to the Performance program are required to pass auditions in their speciality.

Master's Degrees in Nursing

Two types of master's degrees are offered: Master of Science (Applied) and Master of Science (with thesis). These two-year programs are designed to prepare clinicians and researchers for the expanding function of nursing within the health care delivery system.

Master's Degrees in Religious Studies

A program leading to the degree of Sanctae Theologiae Magister (S.T.M.) is given in the Faculty of Religious Studies. This degree is primarily for those who intend to enter the ministry of the Christian Church or another religious institution, or to proceed to teaching in schools. A Master of Arts program (thesis and non-thesis) is also available.

Master of Science Degrees

Programs leading to the degree of Master of Science are provided in the following areas:

Agricultural Economics
 Animal Science
 Atmospheric and Oceanic Science; options in Computational Science and Engineering, and Environment
 Biochemistry; options in Bioinformatics, and Chemical Biology
 Biology; options in Bioinformatics, Environment, and Neotropical Environment
 Bioresource Engineering; options in Environment, Integrated Water Resource Management (Non-Thesis), and Neotropical Environment
 Cell Biology and Anatomy
 Chemical Engineering
 Chemistry; option in Chemical Biology
 Civil Engineering and Applied Mechanics
 Communication Sciences and Disorders
 Computer Science (Thesis and Non-Thesis); options in Bioinformatics, and Computational Science and Engineering
 Dental Science (Thesis and Non-Thesis); option in Oral and Maxillofacial Surgery
 Earth and Planetary Sciences; option in Environment
 Entomology; options in Environment, and Neotropical Environment
 Epidemiology and Biostatistics (Thesis and Non-Thesis); option in Environment (Non-Thesis)
 Food Science and Agricultural Chemistry (Thesis and Non-Thesis)
 Geography; options in Environment, and Neotropical Environment
 Genetic Counselling (Non-Thesis)
 Human Genetics; option in Bioinformatics
 Human Nutrition
 Kinesiology and Physical Education (Thesis and Non-Thesis)
 Mathematics and Statistics (Thesis and Non-Thesis); options in Bioinformatics, and Computational Science and Engineering
 Mechanical Engineering
 Medical Radiation Physics
 Medicine, Experimental; options in Bioethics, Environment, and Family Medicine
 Microbiology and Immunology
 Microbiology (Macdonald Campus); option in Environment
 Mining and Materials Engineering
 Neuroscience
 Nursing
 Otolaryngology
 Parasitology; options in Bioinformatics, and Environment
 Pathology
 Pharmacology and Therapeutics; option in Chemical Biology
 Physics
 Physiology; option in Bioinformatics
 Plant Science; options in Bioinformatics, Environment, and Neotropical Environment
 Psychiatry
 Psychology
 Rehabilitation Sciences (Thesis and Non-Thesis)
 Renewable Resources; options in Environment, Environmental Assessment (Non-Thesis), and Neotropical Environment
 Surgery, Experimental

Master of Science, Applied, Degrees

This degree was designed to provide postgraduate training of a professional and vocational character, with less emphasis on theoretical knowledge and research than in Master of Science programs, but with no lower standards either for admission or completion of requirements. Two years of full-time study or equivalent are normally required with an emphasis on coursework.

Programs are available in:

Animal Science
 Bioresource Engineering; options in Environment, Environmental Engineering, and Neotropical Environment
 Biotechnology
 Chemistry

Communication Sciences and Disorders
 Human Nutrition
 Nursing
 Occupational Health
 Occupational Therapy
 Plant Science
 Physical Therapy

Other degrees:

Master of Science, Applied (OT)
 Master of Science, Applied (PT)

Master of Social Work Degrees

The M.S.W. degree (Thesis and Non-Thesis options) represents a second level of professional study in which students build competence in a chosen field of practice.

Special program:

M.S.W. with B.C.L. and LL.B.

Master of Urban Planning Degree

The program requires a minimum of two years residence and a three-month internship with a member of a recognized planning association.

Options: Transportation Planning and Urban Design.

4.3 Doctoral Degrees

Two categories of programs lead to higher degrees at McGill University: master's programs and doctoral programs.

The following doctoral degrees are offered (see below for more information about sub-specializations): Prerequisites:

Doctor of Civil Law (D.C.L.)	B.C.L. or LL.B. and usually LL.M. See Law.
Doctor of Music (D.Mus.)	M.A. in Composition (D.Mus. in Composition) or an master's degree in Performance, and professional and teaching experience (D.Mus. in Performance). See Music.
Doctor of Philosophy (Ph.D.)	An undergraduate degree relevant to the subject chosen for graduate work. Some departments require all Ph.D. candidates to hold a master's degree in the same subject. Departments may recommend to Graduate and Postdoctoral Studies that candidates of undoubted promise should be allowed to proceed directly to the Ph.D. degree without being required to submit a master's thesis.

Doctor of Civil Law Degrees

Doctoral programs are offered in Air and Space Law and Law (Comparative Law). Both are predominantly research degrees awarded on the basis of a thesis that represents an original contribution to the development of legal science.

Doctor of Music Degrees

The Doctor of Music degree is offered in Composition. The Doctoral thesis consists of a musical composition of major dimensions together with a written analysis of the work. The composition is presented by the candidate in concert. The regulations set forth for the Ph.D. generally apply also to the D.Mus.

The Doctor of Music degree is also offered in Performance. It is offered to professional musicians who wish to teach at the university level and to develop a specialization in a particular repertoire, approach, or discipline (musicology, music theory, music education and pedagogy, or music technology).

Doctor of Philosophy Degrees

Programs leading to the degree of Doctor of Philosophy are offered in the following areas:

Anatomy and Cell Biology
 Animal Science; option in Bioinformatics
 Anthropology; option in Neotropical Environment
 Architecture
 Art History; option in Gender and Women's Studies
 Atmospheric and Oceanic Sciences
 Biochemistry; options in Bioinformatics, and Chemical Biology

Biology; options in Bioinformatics, Developmental Biology, Environment, and Neotropical Environment
 Biomedical Engineering; option in Bioinformatics
 Bioresource Engineering; options in Environment, and Neotropical Environment
 Chemical Engineering
 Chemistry; option in Chemical Biology
 Civil Engineering and Applied Mechanics
 Classics
 Communication Studies; option in Gender and Women's Studies
 Communication Sciences and Disorders; option in Language Acquisition
 Computer Science; option in Bioinformatics
 Counselling Psychology
 Earth and Planetary Sciences; option in Environment
 Economics
 Educational Psychology
 Educational Studies; option in Gender and Women's Studies
 Electrical Engineering
 English
 Entomology; options in Environment, and Neotropical Environment
 Epidemiology and Biostatistics
 Food Science and Agricultural Chemistry
 French; option in Gender and Women's Studies
 Geography; options in Environment, Gender and Women's Studies, and Neotropical Environment
 German
 Hispanic Studies
 History
 Human Genetics; option in Bioinformatics
 Human Nutrition
 Information Studies
 Islamic Studies; option in Gender and Women's Studies
 Linguistics; option in Language Acquisition
 Management
 Mathematics and Statistics; option in Bioinformatics
 Mechanical Engineering
 Medicine, Experimental; option in Environment
 Microbiology and Immunology
 Microbiology (Macdonald Campus); options in Bioinformatics, and Environment
 Mining and Materials Engineering
 Music; option in Gender and Women's Studies
 Neuroscience
 Nursing; option in Psychosocial Oncology
 Occupational Health Sciences
 Parasitology; options in Bioinformatics, and Environment
 Pathology
 Pharmacology and Therapeutics; option in Chemical Biology
 Philosophy; options in Environment, and Gender and Women's Studies
 Physics
 Physiology; option in Bioinformatics
 Plant Science; options in Bioinformatics, Environment, and Neotropical Environment
 Political Science
 Psychology; options in Language Acquisition, and Psychosocial Oncology
 Rehabilitation Science
 Religious Studies; option in Gender and Women's Studies
 Renewable Resources; options in Environment, and Neotropical Environment
 Russian
 School/Applied Child Psychology
 Social Work
 Sociology; options in Environment, and Gender and Women's Studies
 Surgery, Experimental

The following joint Ph.D. programs are offered:

Nursing (McGill/Université de Montréal)
 Management (McGill/Concordia/H.E.C./UQAM)
 Social Work (McGill/Université de Montréal)

4.4 Postdoctoral Research

See [section 8: Postdoctoral Research](#) for information about postdoctoral research at McGill University.

5 Program Requirements

5.1 Master's Degrees

Residence Requirements – Master's Degrees

Refers to the number of terms (or years) students must be registered on a full-time basis to complete their program. Students are NOT permitted to graduate until they have fulfilled the residence requirement (or paid the corresponding fees) in their program.

- The following master's programs have a minimum residence requirement of **three full-time terms**: M.Arch, M.A., M.Eng., LL.M., M.Mus. (**except** M.Mus. in Sound Recording), M.Sc., M.S.W., M.Sc.A. (**except** M.Sc.A. in Communication Sciences and Disorders).
- The following master's programs have a **minimum** residence requirement of **four full-time terms**: M.L.I.S.; M.Mus. in Sound Recording; M.U.P.; M.A. (60 credits – Counselling Psychology – thesis; 78 credits – Educational Psychology); M.A. Teaching and Learning – Non-Thesis; M.Sc.A. in Communication Sciences and Disorders; S.T.M., Religious Studies.
- The residence requirement for the master's program in Education (M.Ed.); Library and Information Studies (M.L.I.S.); Management (M.B.A.); Religious Studies (S.T.M.); M.A. Counselling Psychology – Non-Thesis; M.A. Teaching and Learning – Non-Thesis; M.Sc. in Public Health – Non-Thesis; M.Sc.A. Nursing; M.Sc.A. Occupational Therapy; M.Sc.A. Physical Therapy; and students in part-time programs is determined on a per course basis. Residence requirements are fulfilled when students complete all course requirements in their respective programs.
- For master's programs structured as Course, Project or Non-Thesis options where the program is pursued on a part-time basis, residence requirements are normally fulfilled when students complete all course requirements in their respective programs (minimum 45 credits or a minimum of three full-time terms) and pay the fees accordingly.

These designated periods of residence represent minimum time requirements. There is no guarantee that the work for the degree can be completed in this time. Students must register for such additional terms as are needed to complete the program.

Coursework – Master's Degrees

Program requirements are outlined in the relevant departmental sections of the Graduate and Postdoctoral Studies Calendar available at www.mcgill.ca/study.

The department concerned will examine the student's previous training and then decide which of the available courses in the area of specialization or related fields are required to bring the candidate to the proper level for the master's degree. Due account will be taken of relevant courses passed at any recognized university.

As a rule, no more than one-third of the McGill program formal coursework (not thesis, project, stage, or internship) can be credited with courses from another university.

Non-thesis degrees normally specify the course program which the candidate must follow.

The candidate is required to pass, with a mark of B- or better, all those courses which have been designated by the department as forming a part of the program, including additional requirements.

Students taking courses at another university must obtain a minimum grade of B- (65%) if the course is to be credited toward their McGill degree. In the cases where only a letter grade is used, a B- is the minimum passing grade and no equivalent percentage will be considered. In the cases where only a percentage grade is used, 65% is the minimum passing grade.

If courses were not used for a degree, they could be **credited** toward a McGill degree keeping in mind that a maximum of one-third of the course work (not thesis, project, stage, internship, and practicum) can be credited. If an **exemption** is granted, it must be replaced by another graduate course at McGill toward the degree. No double counting is ever allowed. This regulation also applies to doctoral programs.

Research and Thesis – Master's Degrees

All candidates for a research degree must present a thesis based on their own research. The total number of credits allotted to the thesis in any master's program must not be less than 24. The title of the thesis and names of examiners must be forwarded on a *Nomination of Examiners* form, in accordance with the dates on www.mcgill.ca/importantdates, through the Chair of the department concerned at the same time as the thesis is submitted to Graduate and Postdoctoral Studies. A thesis for the master's degree, while not necessarily requiring an exhaustive review of work in the particular field of study, or a great deal of original scholarship, must show familiarity with previous work in the field and must demonstrate the ability to carry out research and to organize results, all of which must be presented in good literate style. The thesis will not normally exceed 100 pages; in some disciplines, shorter texts are preferred. Guidelines and deadlines are available at www.mcgill.ca/gps/students/thesis/guidelines.

Language Requirements – Master's Degrees

Most master's degree programs do not include language requirements, but candidates who intend to proceed to a doctoral degree should take note of any language requirements and are strongly advised to take the examinations in at least one language while working for the master's degree.

5.2 Doctoral Degrees**Residence Requirements – Doctoral**

Refers to the numbers of terms (or years) students must be registered on a full-time basis to complete their program. Students are not permitted to graduate until they have fulfilled the residence requirement (or paid the corresponding fees) in their program.

Candidates entering Ph.D. 1 must follow a program of at least three years residency at the University; this is a minimum requirement, and there is no guarantee that the work of the degree can be completed in this time, but students are expected to complete within the maximum specified period. Only exceptional candidates holding a bachelor's degree will be considered for direct admission to Ph.D. 1 level.

It is required that candidates spend the greater part of each summer working on their theses, and those who do not do so are unlikely to complete a satisfactory thesis in the prescribed minimum time (see "Vacation Policy for Graduate Students and Postdocs").

A student who has obtained a master's degree at McGill University or at an approved institution, in a relevant subject and is proceeding to a Ph.D. degree will, on the recommendation of the department, be admitted to Ph.D. 2; in this case, the residency requirement for the program is two years.

In the doctoral program, students must be registered on a full-time basis for one more year after completion of the residency (i.e., Ph.D. 4 year) before continuing as additional session students until completion of the program.

Note: The master's degree must have been awarded before initial registration in the doctoral program; otherwise, the admission level will be at Ph.D. 1 and residency will be extended to three years. Once the level of admission is approved by Graduate and Postdoctoral Studies, it will not be changed after obtaining the master's degree if the date falls after registration in the program. If a previous awarded degree is a condition of admission, it must be fulfilled before registration in another program.

As a rule, no more than one-third of the McGill program formal coursework can be credited with courses from another university.

Comprehensive Examinations – Doctoral

A comprehensive examination or its equivalent is usually held near the end of Ph.D. 2. The results of this examination determine whether or not students will be permitted to continue in their programs. The methods adopted for examination and evaluation and the areas to be examined are specified by departmental regulations approved by the Dean of Graduate and Postdoctoral Studies. It is the responsibility of students to inform themselves of these details at the commencement of their programs. For more information, see "Ph.D. Comprehensives Policy".

Language Requirements – Doctoral

Most graduate departments in the Faculties of Agricultural and Environmental Sciences, Education, Engineering, Management, Medicine, and Science do not require a language examination. Students should inquire in their departments if there are any such requirements or whether any other requirements have been substituted for those relating to languages.

Graduate departments in the Faculties of Arts, Music and Religious Studies usually require proficiency in one or two languages other than English. In all cases **students should consult departmental regulations concerning language requirements.**

Language requirements for the Ph.D. degree are met through demonstrated reading knowledge. The usual languages are French, German, or Russian, but in particular instances another language may be necessary.

All language requirements must be fulfilled and the marks reported to Graduate and Postdoctoral Studies **before** submission of the thesis to GPS (Thesis Section).

Students must contact their departments to make arrangements to take the Language Reading Proficiency Examinations. Students may, however, demonstrate competence by a pass standing in two undergraduate language courses taken at McGill (see departmental regulations).

Candidates are advised to discharge their language requirements as early in their program as possible.

Students expecting to enrol in Professional Corporations in the province of Quebec are advised to become fluent in both spoken and written French.

Courses in French language are available at the English and French Language Centre. The teaching is intensive and class sizes are kept small. While undergraduate students are given preference, graduate students who are certain they can devote sufficient time to the work may enrol.

Thesis – Doctoral

The thesis for the Ph.D. degree must display original scholarship expressed in good literate style and must be a distinct contribution to knowledge. **Formal notice of a thesis title and names of examiners must be submitted to the Thesis Section of GPS on the *Nomination of Examiners* form in accordance with the dates on www.mcgill.ca/importantdates, at the same time as the thesis is submitted.** The list of examiners must be approved by the Department Chair, the supervisor and the student. The Thesis Section of GPS should be notified of any subsequent change of title as early as possible. Guidelines and deadlines are available at www.mcgill.ca/gps/students/thesis/guidelines.

Seven copies of the thesis must be provided by the candidate. Of these, two copies will be retained by the University and five copies returned to the candidate. Some departments may require one or more additional copies. The final corrected copy is submitted electronically.

Special regulations for the Ph.D. degree in particular departments are stated in the entries of those departments.

Thesis Oral Examination – Doctoral

After the thesis has been received and approved, a final oral examination is held on the subject of the thesis and subjects intimately related to it. This is conducted in the presence of a Committee of at least five members presided over by a Pro-Dean nominated by Graduate and Postdoctoral Studies. The Chair of the candidate's department and the Thesis Supervisor are regularly invited to be members of the Committee; at least one member of the Committee is appointed from outside the candidate's department. Guidelines are available at www.mcgill.ca/gps/students/thesis/guidelines.

5.3 Ad Hoc Programs

In exceptional cases, an applicant who wishes to pursue a master's (Thesis option only) or Ph.D. program in an academic department which is not currently authorized by the *Ministère de l'Éducation, du Loisir et du Sport* (MELS) to offer graduate programs, may be admitted to an *Ad Hoc* program. The application, including a research proposal, is examined by an Admissions Committee in the department which has familiarity with the proposed research area and experience in directing graduate studies.

Once the Admissions Committee makes a favourable recommendation, Graduate and Postdoctoral Studies confirms an Advisory Committee (recommended by the academic unit) to be responsible for program planning and monitoring of research progress. The regulations are fully described in the document "Procedures for Admission in *Ad Hoc* Master's and Doctoral Programs", available from GPS.

5.4 Ad Personam Programs (Thesis Option only)

In very rare circumstances, an applicant who wishes to engage in master's (Thesis option only) or Ph.D. studies of an interdisciplinary nature involving joint supervision by two departments, each of which is authorized by the *Ministère de l'Éducation, du Loisir et du Sport* (MELS) to offer its own graduate programs, may be admitted to an *Ad Personam* program. The regulations are fully described in a document available from GPS.

5.5 Coursework for Graduate Programs, Diplomas, and Certificates

Upper-level undergraduate courses (excluding 500-level) may not be considered for degrees, diplomas, and certificates unless they are already listed as required courses in the approved program description. If an upper-level undergraduate course (excluding 500-level) is taken by a graduate student, it must come as a recommendation from the Graduate Program Director in the department. The recommendation must state if the undergraduate course is an additional requirement for the program (must obtain B- or better) or if the course is extra to the program (will be flagged as such on the record and fees will be charged). See document at www.mcgill.ca/gps/staff/registration.

English and French language courses offered by the French Language Centre (Faculty of Arts) or the School of Continuing Studies may not be taken for coursework credits toward a graduate program.

All substitutions for coursework in graduate programs, diplomas, and certificates must be approved by GPS.

Courses taken at other institutions to be part of the requirements of a program of studies must be approved by GPS before registration. Double counting is not permitted.

6 General Admission for Graduate Studies



Note: The following admission requirements and application procedures are the minimum standard for applicants to McGill's Graduate and Postdoctoral Studies programs. Some graduate units may require additional qualifications or a higher minimum CGPA; prospective students are strongly urged to consult the unit concerned regarding specific requirements set for their program of interest.

Website: www.mcgill.ca/gradapplicants

Email: servicepoint@mcgill.ca

Deadline: Admission to graduate studies operates on a rolling basis; complete applications and their supporting documentation must reach departmental offices on or before the date for guaranteed consideration specified by the department. To be considered for entrance fellowships, where available, applicants must verify the deadlines with individual departments. Meeting minimum admission standards does not guarantee admission.

6.1 Application for Admission

Application information and the online application form are available at www.mcgill.ca/gradapplicants/apply. Applicants (with some exceptions) are required to ask two instructors familiar with their work to send letters of recommendation. All applicants must themselves send, or ask the appropriate university authorities to send, two official or certified copies of their complete academic record from each university-level institution attended to date. McGill graduates do not need to submit McGill transcripts. Letters of recommendation and official transcripts must be sent **directly** to the department concerned. Please note

that all documents submitted to McGill University in support of an application to be admitted, including, but not limited to transcripts, diplomas, letters of reference and test scores, become the property of McGill University and will not be returned to the applicant or issuing institution under any circumstance.

A **non-refundable** fee of \$100 in Canadian funds **must** accompany each application, otherwise **it cannot be submitted**. This sum must be paid by credit card and is non-refundable when submitting the online application form. Candidates for Special, Visiting Student, and Qualifying status must apply and pay the application fee every year (i.e., every Fall term).

It is recommended that applicants submit a list of the titles of courses taken in the major subject, since transcripts often give code numbers only. **Transcripts written in a language other than English or French must be accompanied by a translation prepared by a licensed translator.** An explanation of the grading system used by the applicant's university is essential. The applicant should also indicate the major subject area in which further study is desired.

Completed applications, with supporting documents, must reach departmental offices according to individual department dates for guaranteed consideration. Applicants should contact the department concerned, or see: www.mcgill.ca/gradapplicants/programs. International students are advised to apply well in advance of the date for guaranteed consideration as immigration procedures may be lengthy. Applications received after the prescribed dates for guaranteed consideration may or may not be considered, at the discretion of the department. Candidates will be notified of acceptance or refusal by Graduate and Postdoctoral Studies as quickly as possible.

Admission to graduate programs at McGill is highly competitive and the final decision rests with Graduate and Postdoctoral Studies. Admission decisions are not subject to appeal or reconsideration.

6.2 Admission Requirements (minimum requirements to be considered for admission)

Applicants should be graduates of a university of recognized reputation and hold a bachelor's degree equivalent to a McGill degree in a subject closely related to the one selected for graduate work. This implies that about one-third of all undergraduate courses should have been devoted to the subject itself and another third to cognate subjects.

The applicant must present evidence of academic achievement: a minimum standing equivalent to a cumulative grade point average (CGPA) of 3.0 out of a possible 4.0 or a CGPA of 3.2/4.0 for the last two full-time academic years. High grades are expected in courses considered by the department to be preparatory to the graduate program. Some departments impose additional or higher requirements.

See www.mcgill.ca/gradapplicants/apply/prepare/requirements/international-degree-equivalency for information on mark/grade equivalencies and degree requirements from countries in Europe and around the world.

Admission to graduate programs at McGill is highly competitive and the final decision rests with Graduate and Postdoctoral Studies. Admission decisions are not subject to appeal or reconsideration.

6.3 Admission Tests

Graduate Record Examination (GRE)

The Graduate Record Examination (GRE) (Educational Testing Service, Princeton, NJ 08540) consists of a relatively advanced test in the candidates' specialty, and a general test of their attainments in several basic fields of knowledge for which no special preparation is required or recommended. It is offered at many centres, including Montreal, several times a year; the entire examination takes about eight hours, and there is a registration fee. Refer to www.ets.org/gre for further information. Only some departments require applicants to write the GRE examination, but all applicants who have written either the general aptitude or the advanced test are advised to submit the scores along with their other admission material.

This credential is of special importance in the case of applicants whose education has been interrupted, or has not led directly toward graduate study in the subject selected. In such cases the department has the right to insist on a report from the Graduate Record Examination or some similar test. High standing in this examination will not by itself guarantee admission. The Miller Analogies Test may be used similarly. Some departments of the Faculty of Education also require the taking of various tests.

Graduate Management Admissions Test (GMAT)

Applicants to graduate programs in Management must submit scores from the Graduate Management Admissions Test (GMAT). The test is a standardized assessment offered by the Graduate Management Admission Council to help business schools assess candidates for admission. For further information see www.mba.com/mba/thegmat.

6.4 Competency in English

Applicants to graduate studies must demonstrate an adequate level of proficiency in English **prior to admission**, regardless of citizenship status or country of origin.

Normally, applicants meeting any one of the following conditions are NOT required to submit proof of proficiency in English:

1. Mother tongue (language first learned and still used on a daily basis) is English.
2. Has obtained (or is about to obtain) an undergraduate or graduate degree from a recognized foreign institution where English is the language of instruction.
3. Has obtained (or is about to obtain) an undergraduate or graduate degree from a recognized institution in Canada or the United States of America (anglophone or francophone).

4. Has lived and attended university, or been employed, for at least four consecutive years, in a country where English is the acknowledged primary language.

Applicants who do not meet any of the above-listed conditions must demonstrate proficiency in English using *one* of the following options:

1. TOEFL (Test of English as a Foreign Language): minimum acceptable scores are

Competency in English		
iBT (Internet-based test)	PBT (paper-based test)	CBT (computer-based test)*
86 overall, (no less than 20 in each of the four component scores)	550	* The CBT is no longer being offered and CBT results are no longer considered valid, or being reported by ETS.
N.B. an institutional version of the TOEFL is not acceptable.		

2. IELTS (International English Language Testing System): a band score of 6.5 or greater.
3. MELAB (Michigan English Language Assessment Battery): a mark of 85% or higher.
4. University of Cambridge ESOL Certificate in Advanced English (CAE): a grade of "B" (Good) or higher.
5. University of Cambridge ESOL Certificate of Proficiency in English (CPE): a grade of "C" (Pass) or higher.
6. Edexcel London Test of English - Level 5 - with an overall grade of at least "Pass".
7. McGill Certificate of Proficiency in English or McGill Certificate of Proficiency - English for Professional Communication: Certificate of Proficiency awarded. McGill Certificate of Proficiency in English or McGill Certificate of Proficiency - English for Professional Communication: Certificate of Proficiency awarded.

In each case, applicants must ensure that official test results are sent to McGill directly by the testing service. Applications cannot be considered if test results are not available. These scores are general minima; some departments may set higher requirements.

Revised – July 2008

6.5 Admission to a Qualifying Program

Some applicants whose academic degrees and standing entitle them to serious consideration for admission to graduate studies, but who are considered inadequately prepared in the subject selected may be admitted to a Qualifying Program for a Master's. The undergraduate-level courses to be taken in a Qualifying Program will be prescribed by the department concerned.

Qualifying students are registered in graduate studies, **but not as candidates for a degree**. Only one qualifying year (i.e., two full-time terms) is permitted.

In all cases, after the completion of a qualifying year or term, an applicant interested in commencing a degree program must apply for admission by the dates for guaranteed consideration. Successful completion of the work in the Qualifying Program (B- in all courses) does not automatically entitle the student to proceed toward a degree. Qualifying year students must apply for admission to the program for which they seek qualification.

In cases where a department recommends a change of registration from Qualifying Program (Fall) to Master's Degree First Year (Winter), **students must apply to the degree program by the Winter departmental dates for guaranteed consideration**. A Qualifying-Year applicant admitted to a Winter term as a first term of studies must apply for admission for a Fall term as his/her second term of studies.

Students who are ineligible for a Qualifying Program may apply to the appropriate undergraduate faculty for admission as regular or special students, and seek admission to graduate studies at a later date. The normal admission requirements must be met and the usual procedures followed.

6.6 Admission to a Second Degree Program

A candidate with a given higher degree may apply for admission to a second degree program at the same level but **in a different subject**. The normal admission requirements must be met and all the usual procedures followed.

6.7 Admission to Two Degree Programs

Students may, with special permission granted by Graduate and Postdoctoral Studies, be admitted to two degree programs or to two departments or faculties. Students are **never** permitted to pursue two **full-time** degree programs concurrently.

6.8 Admission to an Ad Personam Joint Program

Ad Personam joint graduate programs are restricted to master's Thesis option and Ph.D. programs. Students shall be admitted and registered by one department, to be known as the "first department". Approval for the joint program must be obtained from Graduate and Postdoctoral Studies. The request shall be signed by the Chairs of both departments involved and shall explicitly list the conditions imposed by the second department. The student shall undertake research under the joint supervision of both departments.

Students shall fulfil the degree requirements of the first department and shall complete all the requirements specified by the second department in the request for admission. This program is described in more detail in a document available from GPS.

6.9 Admission to an Ad Hoc Program (Thesis)

In exceptional cases, admission to an *Ad Hoc* program (Thesis) may be considered. Before Graduate and Postdoctoral Studies will authorize the admission of a student into an *Ad Hoc* program, it must receive a favourable report from a departmental committee constituted to examine the program in question.

Candidates, through the supervisor designated by the academic department most closely related to their research field, must submit a research proposal, an outline of the coursework needed including a comprehensive examination (for doctoral programs) in the relevant field, and the list of four supervisory committee members.

Once the request has been approved, the candidate may register following all the regular procedures. A fuller description of the admission procedure is available from GPS.

6.10 Reinstatement and Admission of Former Students

Students who have not been registered for a period of less than two years and who have not officially withdrawn from the University by submitting a signed Withdrawal Form to Graduate and Postdoctoral Studies are eligible to be considered for reinstatement into their program. The student's department must recommend, in writing, that the student be reinstated, stipulating any conditions for reinstatement that it deems appropriate. The final decision rests with GPS. Normally, GPS will approve the departmental recommendation. If the student's department chooses not to recommend reinstatement, the student may appeal to the Associate Dean (Graduate and Postdoctoral Studies). The decision of the Associate Dean (Graduate and Postdoctoral Studies) shall be final and not subject to further appeal.

Reinstatement fees will be charged in addition to the fees due for the academic session into which the student has been reinstated. The amount of the reinstatement fees is the tuition portion of fees owed for all unregistered terms, up to a maximum of two years just prior to the term of reinstatement.

If an individual has not registered for a period of more than two years, their student file will be closed. These individuals and those who have formally withdrawn may be considered for admission. Applicants' admission applications will be considered as part of the current admission cycle, in competition with other people applying during that cycle and in accordance with current graduate admission procedures and policies.

Procedure: Requirements for completion of the program will be evaluated. Some of these requirements may need to be redone or new ones may be added. Applicants must inquire about the fees that will be charged.

Revised – Council of February 9, 2004.

6.11 Deferral of Admission

Under exceptional circumstances, an admission for a particular semester can be considered for a deferral. This can be considered only if the student has not registered. If the student has already registered, no deferral can be granted. The student must withdraw from the University and apply for admission to a later term.

7 Fellowships, Awards, and Assistantships

Graduate and Postdoctoral Studies
(Fellowships and Awards Section)
James Administration Building, Room 400
845 Sherbrooke Street West
Montreal, QC H3A 2T5
Telephone: 514-398-3990
Fax: 514-398-2626

Email: graduate.fellowships@mcgill.ca

Website: www.mcgill.ca/gps/students (under Fellowships and Awards)

Graduate Fellowships and Awards Calendar: <http://coursecalendar.mcgill.ca/fellowships201112/wwhelp/wwhimpl/js/html/wwhelp.htm>

The Fellowships and Awards Section of Graduate and Postdoctoral Studies provides processing services for many sources of support for Canadian and non-Canadian students, both new to McGill and continuing. Further information on these and other sources of funding can be found in various publications on the Fellowships and Awards web pages. The *Graduate Fellowships and Awards Calendar* lists all internal awards as well as numerous external awards.

Entrance Fellowships are awarded on the basis of the application for admission, upon nomination by academic departments. Most internal fellowships are awarded in this manner – please contact the proposed academic department directly for further information.

Research Assistantships, Teaching Assistantships, and stipends from professors' research grants are handled by individual academic departments at McGill. Fellowships, assistantships, and stipends are used to make funding packages for graduate students. All assistantship and stipend inquiries should be directed to departments.

A small number of citizens from countries whose governments have entered into agreements on tuition fees with Quebec may be exempted from the supplemental tuition fees normally required of international students. All French citizens and a limited number of citizens of a country in the list, which can be found at www.mels.gouv.qc.ca/ens-sup/ens-univ/droits_scolaire-A_pays-organisations.pdf, are eligible for such exemptions. For more information and the necessary application materials, see this MELS website: www.mels.gouv.qc.ca/international/index_en.asp?page=progExemp. The list of organizations where students should apply can be accessed from this website.

Differential Fee Waivers (DFW's) for international students provide eligible non-Canadian graduate students with waivers of the international tuition fee supplement. There are no application forms for differential fee waivers, since these are awarded on the basis of departmental nominations made to the Fellowships and Awards Section. Eligible students should contact their McGill department.

8 Postdoctoral Research

Students must inform themselves of University rules and regulations and keep abreast of any changes that may occur. The *Postdoctoral Research* section of this publication contains important details required by students during their studies at McGill and should be periodically consulted, along with other sections and related publications.

8.1 Postdocs

Postdocs are recent graduates with a Ph.D. or equivalent (i.e., Medical Specialist Diploma) engaged by a member of the University's academic staff, including Adjunct Professors, to assist him/her in research.

Postdocs must be appointed by their department and registered with Graduate and Postdoctoral Studies in order to have access to University facilities (library, computer, etc.).

8.2 Guidelines and Policy for Academic Units on Postdoctoral Education

The general guidelines listed below are meant to encourage units to examine their policies and procedures to support postdoctoral education. Every unit hosting Postdocs should have explicitly stated policies and procedures for the provision of postdoctoral education as well as established means for informing Postdocs of policies, procedures, and privileges (e.g., orientation sessions, handbooks, etc.), as well as mechanisms for addressing complaints. Academic units should ensure that their policies, procedures and privileges are consistent with these guidelines and the Charter of Students' Rights. For their part, Postdocs are responsible for informing themselves of policies, procedures and privileges.

1. Definition and Status

i. Postdoctoral status will be recognized by the University in accordance with Quebec provincial regulations. Persons may only be registered with postdoctoral status for a period of up to five years from the date they were awarded a Ph.D. or equivalent degree. Time allocated to parental or health leave is added to this period of time. Leaves for other reasons, including vacation leave, do not extend the term. Postdocs must do research under the supervision of a McGill professor, including Adjunct Professors, who are a member of McGill's academic staff qualified in the discipline in which training is being provided and with the abilities to fulfil responsibilities as a supervisor of the research and as a mentor for career development. They are expected to be engaged primarily in research with minimal teaching or other responsibilities.

2. Registration

i. Postdocs must be registered annually with the University through Graduate and Postdoctoral Studies. Initial registration will require an original or notarized copy of the Ph.D. diploma. Registration will be limited to persons who fulfil the definition above and for whom there is an assurance of appropriate funding and where the unit can provide assurance of the necessary resources to permit postdoctoral education.

ii. Upon registration, the Postdoc will be eligible for a University identity card issued by Enrolment Services.

3. Appointment, Pay, Agreement of Conditions

- i. Appointments may not exceed your registration eligibility status.
- ii. In order to be registered as a Postdoc, you must be assured of financial support other than from personal means during your stay at McGill University, equivalent to the minimal stipend requirement set by the University in accordance with guidelines issued by federal and provincial research granting agencies. There are no provisions for paid parental leave unless this is stipulated in the regulations of a funding agency outside the University.
- iii. At the outset of a postdoctoral appointment, a written Letter of Agreement for Postdoctoral Education should be drawn up and signed by the Postdoc, the supervisor, and the department head or delegate (see template Letter of Agreement on the web at www.mcgill.ca/gps/postdocs and supporting document – commitments for Postdoctoral Scholars and Supervisors at www.mcgill.ca/files/gps/Commitments_of_Postdoctoral_Scholars_and_Supervisors_July_09.pdf). This should stipulate, for example, the purpose of the postdoctoral appointment (research training and the advancement of knowledge), the duration of the fellowship/financial support, the modality of pay, the work space, travel funds, and expectations and compensation for teaching and student research supervision. Leaves from postdoctoral education must comply with the Graduate and Postdoctoral Studies Policies for Vacation, Parental/Familial, and Health Leave (see Graduate and Postdoctoral Studies General Information [section 8.3: Vacation Policy for Graduate Students and Postdocs](#) and [section 9.6: Health and Parental/Familial Leave of Absence Policy](#)). Any breach of these conditions may result in grievance procedures or the termination of the postdoctoral appointment.
- iv. Postdocs with full responsibility for teaching a course should be compensated over and above their fellowship at the standard rate paid to lecturers by their department.
- v. The amount of research, teaching, or other tasks that Postdocs engage in over and above postdoctoral activities should conform to the regulations for Postdocs specified by the Canadian research council of their discipline. This applies to all Postdocs, including those whose funding does not come from the Canadian research councils.

4. Privileges

- i. Postdocs have the same pertinent rights as the ones granted to McGill students in the *Handbook on Student Rights and Responsibilities* (“Green Book”), available at www.mcgill.ca/secretariat/policies/students.
- ii. Postdocs have full graduate student borrowing privileges in McGill libraries through their identity card.
- iii. As a rule, Postdocs who are Canadian citizens or who have Permanent Resident status may take courses for credit. Admission to such courses should be sought by submitting application documents directly to the appropriate program by the Postdoc. They must be admitted by the department offering the courses as Special Students. These Postdocs may only be enrolled as part-time students in non-degree granting programs. They will be charged fees for these courses.
- iv. Postdocs may be listed in the McGill directory. The Computing Centre will grant Postdocs email privileges on the same basis as graduate students upon presentation of a valid identity card.
- v. The Department of Athletics will grant Postdocs access to sports facilities upon presentation of their identity card. A fee will be charged on an annual or term basis.
- vi. Postdocs are mandatory members of the Post-Graduate Students’ Society (PGSS) and an annual association fee is automatically charged. PGSS fees are mandatory. Postdocs are permitted membership in the Faculty Club; an annual fee will be charged for this membership.
- vii. Postdocs are encouraged to participate in Professional Development Workshops provided by Graduate and Postdoctoral Studies and Teaching and Learning services. These sessions are usually free of charge.
- viii. Postdocs have access to the services provided by the Ombudsperson.
- ix. Postdocs may enrol as part-time students in the second language written and spoken English/French courses offered by the School of Continuing Studies/French Language Centre. Postdocs will be charged tuition for these courses. International Postdocs may be required to obtain a CAQ and a Study Permit.
- x. Access to student services and athletic services are available to the Postdoc on an opt-in basis. Fees are applicable.

5. Responsibilities

- i. Postdocs are subject to the responsibilities outlined in the *Handbook on Student Rights and Responsibilities* (“Green Book”), available at www.mcgill.ca/secretariat/policies/students.
- ii. Each academic unit hosting Postdocs should clearly identify Postdocs’ needs and the means by which they will be met by the unit.
- iii. Each academic unit should assess the availability of research supervision facilities, office space, and research funding before recruiting Postdocs.
- iv. Some examples of responsibilities of the department are:
 - to verify the Postdoc’s eligibility period for registration;
 - to provide Postdocs with departmental policy and procedures that pertain to them;
 - to oversee the registration and appointment of Postdocs;
 - to assign departmental personnel (e.g., Postdoc coordinator and graduate program director) the responsibility for Postdocs;
 - to oversee and sign off on the Letter of Agreement for Postdoctoral Education;
 - to ensure that each Postdoc has a supervisor, lab and/or office space, access to research operating costs and necessary equipment;
 - to include Postdocs in departmental career and placement opportunities;
 - to refer Postdocs to the appropriate University policies and personnel for the resolution of conflict that may arise between a Postdoc and a supervisor.
- v. Some examples of responsibilities of the supervisor are:

- to uphold and transmit to their Postdocs the highest professional standards of research and/or scholarship;
- to provide research guidance;
- to meet regularly with their Postdocs;
- to provide feedback on research submitted by the Postdocs;
- to clarify expectations regarding intellectual property rights in accordance with the University’s policy;
- to provide mentorship for career development;
- to prepare, sign, and adhere to a Letter of Agreement for Postdoctoral Education.

vi. Some examples of responsibilities of Postdocs are:

- to inform themselves of and adhere to the University’s policies and/or regulations for Postdocs for leaves, for research, and for student conduct as outlined in the *Handbook on Student Rights and Responsibilities* and the *General Information, Regulations and Research Guidelines* Calendar of Graduate and Postdoctoral Studies;
- to submit a complete file for registration to Graduate and Postdoctoral Studies;
- to sign and adhere to their Letter of Agreement for Postdoctoral Education;
- to communicate regularly with their supervisor;
- to inform their supervisor of their absences.

vii. Some examples of the responsibilities of the University are:

- to register Postdocs;
- to provide an appeal mechanism in cases of conflict;
- to provide documented policies and procedures to Postdocs;
- to provide Postdocs with the necessary information on McGill University student services.

Approved by Senate, April 2000

8.3 Vacation Policy for Graduate Students and Postdocs

Graduate students and Postdocs should normally be entitled to vacation leave equivalent to university holidays and an additional total of fifteen (15) working days in the year. Funded students and Postdocs with fellowships and research grant stipends taking additional vacation leave may have their funding reduced accordingly.

Council of FGSR April 23, 1999

8.4 Leave of Absence for Health and Parental/Familial Reasons

A leave of absence may be granted by Graduate and Postdoctoral Studies for maternity or parental reasons or for health reasons (see [section 9.6: Health and Parental/Familial Leave of Absence Policy](#)).

Such a leave must be requested on a term by term basis and may be granted for a period of up to 52 weeks. Students and Postdocs must make a request for such a leave in writing to their department and submit a medical certificate. The department shall forward the request to GPS. See procedure under [section 9.6: Health and Parental/Familial Leave of Absence Policy](#). Students who have been granted such a leave will have to register for the term(s) in question and their registration will show as “leave of absence” on their record. No tuition fees will be charged for the duration of the authorized leave. Research supervisors are not obligated to remunerate students and Postdocs on leave. GPS has prepared a summary table of various leave policies (paid or unpaid) for students and Postdocs paid from the Federal and Quebec Councils through fellowships or research grants. The document is available at www.mcgill.ca/gps/postdocs/becoming/leave under “Information on the Funding Council Leave Policies for Graduate Students and Postdoctoral Fellows”.

8.5 Postdoctoral Research Trainees

Eligibility

If your situation does not conform to the *Quebec Ministère de l’Éducation, du Loisir et du Sport* (MELS) definition of Postdoctoral Fellow, you may be eligible to attend McGill as a Postdoctoral Research Trainee. While at McGill, you can perform research only (you may not register for courses or engage in clinical practice). Medical specialists who will have clinical exposure and require a training card must register through Postgraduate Medical Education of the Faculty of Medicine – not Graduate and Postdoctoral Studies.

The category of Postdoctoral Research Trainee is for:

Category 1: An individual who has completed requirements for the Doctoral degree or medical specialty, but the degree/certification has not yet been awarded. The individual will subsequently be eligible for registration as a Postdoctoral Fellow.

Category 2: An individual who is not eligible for Postdoctoral Registration according to the MELS definition, but is a recipient of an external postdoctoral award from a recognized Canadian funding agency.

Category 3: An individual who holds a professional degree (or equivalent) in a regulated health profession (as defined under CIHR-eligible health profession) and is enrolled in a program of postgraduate medical education at another institution. The individual wishes to conduct the research stage or elective component of his/her program of study at McGill University under the supervision of a McGill professor. The individual will be engaged in full-time research with well-defined objectives, responsibilities, and methods of reporting. The application must be accompanied by a letter of permission from the home institution (signed by the Department Chair, Dean or equivalent) confirming registration in their program and stating the expected duration of the research stage. Individuals who are expecting to spend more than one year are encouraged to obtain formal training (Master's or Ph.D.) through application to a relevant graduate program.

Category 4: An individual with a regulated health professional degree (as defined under CIHR-eligible health profession), but not a Ph.D. or equivalent or medical specialty training, but who fulfils criteria for funding on a tri-council operating grant or by a CIHR fellowship (up to maximum of five years post-degree).



Note: individuals who are not Canadian citizens or permanent residents must inquire about eligibility for a work permit.

General Conditions

- the maximum duration is three years;
- must be engaged in full-time research;
- must provide copies of official transcripts/diploma;
- must have the approval of a McGill professor to supervise the research and of the Unit;
- must have adequate proficiency in English, but is not required to provide official proof of English competency to Graduate and Postdoctoral Studies;
- must comply with regulations and procedures governing research ethics and safety and obtain the necessary training;
- will be provided access to McGill libraries, email, and required training in research ethics and safety. Any other University services must be purchased (e.g., access to athletic facilities);
- must arrange for basic health insurance coverage prior to arrival at McGill and may be required to provide proof of coverage.

9 Graduate Studies Guidelines and Policies

Students must inform themselves of University rules and regulations and keep abreast of any changes that may occur. The *General Studies Guidelines and Policies* section of this publication contains important details required by students during their studies at McGill and should be periodically consulted, along with other sections and related publications.



Note: The University Exam Regulations governed by the : *University Student Assessment Policy* (adopted by Senate in February 2011) are being updated for Fall 2011 and will be available at www.mcgill.ca/students/exams/regulations. The revised Regulations will be published in the *University Regulations and Resources* section of the 2012-2013 *Programs, Courses and University Regulations* publication. This “Note” applies to all subsections under this topic Graduate Studies Guidelines and Policies.

9.1 Guidelines and Regulations for Academic Units on Graduate Student Advising and Supervision

The general guidelines suggested below are meant to encourage units to examine their graduate programs and to specify their own policies and procedures. These guidelines are directed primarily toward thesis programs but will, in part, be appropriate for non-thesis programs as well.

Each academic unit should have explicitly stated policies and procedures regarding the advising and supervising of graduate students, as well as established means for informing students of procedures and deadlines (e.g., orientation sessions, handbooks) and mechanisms for addressing complaints. Academic units should ensure that their policies and procedures are consistent with the Charter of Students' Rights. For their part, graduate students are responsible for informing themselves of these policies and procedures.

1. Assignment of Advisers, Supervisors, and Committees

- i. Each unit should designate a member (or members) of the academic staff (usually the graduate program director) to monitor the progress of students throughout the graduate program, to ensure that all conditions of admission and requirements are fulfilled, to provide students with information on their program, their progress through it, sources of and policies on financial support, and to advise them how to resolve problems which may arise during their program.
- ii. As soon as possible, students should have a supervisor who has competence in the student's proposed area of research, and a program or thesis committee. Although procedures and timetables for choosing supervisors and committees may vary across programs, they should be consistent within

a particular program and should be made clear to incoming students. Thesis supervisors must be chosen from academic staff in tenure-track positions. Faculty Lecturers and Research Assistants may not act as supervisors but in exceptional cases, may be co-supervisors. Emeritus Professors and Adjunct Professors may co-supervise. Certain non-tenure track professors appointed in the Faculty of Medicine may be eligible to supervise or co-supervise graduate students with the approval of the unit and Graduate and Postdoctoral Studies. In the case of supervision, the academic unit in question must ensure continuity of appropriate supervision of their graduate students.

2. Program

- i. Early in their program, students should be informed of the phases through which they must pass toward the achievement of the graduate degree, the approximate amount of time each phase should take, the criteria for its successful completion, and any deadlines relating to these phases.
- ii. It is important that students are made aware of whatever courses are required to complete their programs, that these courses are available, and that they relate to students' proposed areas of research or to the development of related areas of scholarship.
- iii. Where relevant, students should also be informed early in their program of language requirements or comprehensive examinations. The guidelines, criteria and procedures for comprehensive examinations must be explicit and consistently applied in each program. Academic units should consider the rationale for language and comprehensive examinations and how they relate to the objectives of the graduate program.
- iv. Every effort should be taken to ensure that students choose, as soon as possible, realistic and appropriate areas of research commensurate with degree requirements.
- v. **There must be clear procedures established in every unit by which students receive guidance and constructive criticism on their progress on a regular basis through the program (e.g., regular meetings and/or email communication with supervisors and committees, attendance at research seminars, semester or annual reviews of student progress). In addition to regular meetings between the student and supervisor or advisory/thesis committee, each unit must establish a procedure to provide feedback to thesis students regarding their research progress. At least annually, there must be a meeting between the student, supervisor and advisory/thesis committee or, in the case where there is no such advisory/thesis committee, there must be a meeting between the supervisor and a departmental representative, at which objectives for the upcoming year are established and the prior year's research progress recorded and evaluated. A written record of such meetings must include the signature of the student, supervisor, and the advisory/thesis committee member or a departmental representative, and this record must be retained in the student's departmental file. (The Graduate Student Research Objectives Report Form, the Graduate Student Research Progress Record, and the Graduate Student Research Progress Report Form are to be utilized to keep a record of these meetings.) In the case where the student does not make expected progress, the advisory or thesis committee or, in the case where there is no such advisory or thesis committee, the student, supervisor and a departmental representative must meet at least once per semester for the subsequent twelve months to review progress and if appropriate to set new objectives. On the occasion of a second unsatisfactory progress report, the student may be required to withdraw from the program of study.**
- vi. Students should be made aware of the cost of living in Montreal and of sources of financial support (e.g., teaching or research assistantships, fellowships) and of the facilities available to them (e.g., study space, computers).
- vii. Students should receive guidance and encouragement in areas relating to their growth in scholarship, professional development and career planning. Examples may include, where appropriate, reporting research, writing abstracts, preparing papers for conference presentation or for publication, writing grant and fellowship applications, conducting a job search, and preparing for job interviews.
- viii. Units should be sensitive to special academic needs and concerns that may arise in the case of certain students, such as international students or students who undertake graduate studies after a long absence from university.

3. Responsibilities

Each unit should clearly identify the student's supervisory needs at each phase and the means by which these needs will be met. Some functions will be fulfilled by the Chair, some by the graduate program director, some by the supervisor and some by the committee. Each unit should clearly identify the specific responsibilities of each of these, as well as the responsibilities of students themselves.

- i. Each unit should consider the availability of student support, research facilities, space, and availability of potential supervisors in determining the number of students admitted into the program.
- ii. Some examples of the responsibilities of the graduate program director are to be knowledgeable about program requirements, the composition of committees, the procedures for comprehensive and oral defense examinations, and other policies relating to graduate studies; to maintain a dossier on each student's progress; and to be sensitive to graduation deadlines and students' career plans.
- iii. Some examples of the responsibilities of a supervisor are to uphold and to transmit to students the highest professional standards of research and/or scholarship; to provide guidance in all phases of the student's research; to meet with their students regularly; to provide prompt feedback when work is submitted including drafts of the thesis; and to clarify expectations regarding collaborative work, authorship, publication and conference presentations.
- iv. Some examples of the responsibilities of the students are to inform themselves of program requirements and deadlines; to work within these deadlines; to communicate regularly with the supervisor and committee; and to submit progress reports to the supervisor and committee.
- v. The Chair of the unit should ensure that procedures are in place to address serious disagreements that may arise, for example, between a student and a supervisor or between a supervisor and committee members. Such procedures should involve a neutral mediator who will ensure that all sides of a dispute are heard before any decision is made.

4. Quality of Supervision and Teaching

- i. Academic units and Graduate and Postdoctoral Studies should consider ways to assess and improve the quality of supervision and to help new supervisors, e.g., through workshops or mentoring models. Procedures for monitoring the quality of graduate student supervision and for providing constructive feedback for supervisors should be developed.
- ii. Graduate supervision should be recognized as an integral part of the academic responsibility of an academic unit and should be considered in the allocation of workload, as should the teaching of graduate courses.

- iii. Academic units should establish criteria of excellence in supervision and graduate teaching appropriate to their disciplines and should suitably reward those who meet these criteria, e.g., in decisions concerning tenure and promotion, or merit pay awards.
- iv. The maximum number of students under the direction of a single supervisor should be consistent with the ability of the supervisor to provide quality supervision, taking into account the workload of the supervisor and norms of the discipline.
- v. Procedures should be established for ensuring continuity in supervision when a student is separated from a supervisor – for example, when the supervisor takes a sabbatical leave, retires from McGill or changes universities or when the student leaves to complete field work or takes a job before submitting a thesis.

Revised by Council of FGSR, April 23, 1999 and October 6, 2003

9.2 Policy on Graduate Student Research Progress Tracking

This is a new mandatory policy and procedure to track the research progress of graduate students. The policy is referred to in the amended [section 9.1: Guidelines and Regulations for Academic Units on Graduate Student Advising and Supervision](#) in bold print. Documents to record progress can be found on the GPS website: www.mcgill.ca/gps/staff/forms.

The following is a summary of the main elements of the new **mandatory** policy. The following steps must be followed for each graduate student in a thesis program:

1. Annually, the student must meet with, at minimum, their supervisor(s) and a departmental representative. This meeting can occur in the context of an annual thesis or advisory committee in those departments that have thesis committees
2. At the first such meeting (to be held shortly after thesis students begin their programs), written objectives/expectations for the year must be recorded on the first of the three forms, Form #1 (Graduate Student Research Objectives Report Form). All three people at the meeting must sign this form. A student who does not agree to sign the form must write a statement detailing his/her objections to the expectations recorded on the form.
3. Approximately one year later, and every year thereafter, the student, supervisor(s) and the departmental representative should meet again to review the progress that has been achieved toward the recorded objectives. Prior to the meeting, the student should record his/her accomplishments and progress for the year by completing Form #2 (Graduate Student Research Progress Record). This completed form is then evaluated by the supervisor and the departmental representative on Form #3 (Graduate Student Research Progress Report Form). All parties sign Form #3. A student who does not agree to sign the form must write a statement detailing his/her objections. At this same meeting, objectives for the following year should be recorded on Form #1, as per the procedure described in point 2, above.
4. In the event that recorded research progress is unsatisfactory, a new set of objectives should be developed for the student at the meeting, and recorded on Form #1. These new, or interim, objectives apply only to the next semester. Evaluation of progress should take place after that semester has concluded, following the steps described in point 3, above.
5. In the event that a student has any two unsatisfactory evaluations they may be required to withdraw from their program of study. These two unsatisfactory evaluations need not be successive.
6. All forms are to be kept in departmental files.
7. Departments that already have progress tracking forms may continue to utilize them, but these must conform to the fundamental principles underlying this new policy. Specifically, any departmental procedure or forms to record graduate research progress must:
 - be used **annually**;
 - be used in a meeting with the supervisor and one other departmental representative, and signed by all parties;
 - include a written statement of expectations approximately one year before any evaluation. (Note: This can be one semester in the case of expectations following an unsatisfactory evaluation.);
 - permit the student to submit a minority report and not sign;
 - state clearly that any two unsatisfactory evaluations may be grounds for requiring a student to withdraw.

Please note this new University policy is **MANDATORY**. Students may grieve against a department that fails to adhere to the policy and procedures outlined above.

Senate, September 2003

9.3 Vacation Policy for Graduate Students and Postdocs

Graduate students and Postdocs should normally be entitled to vacation leave equivalent to university holidays and an additional total of fifteen (15) working days in the year. Funded students and Postdocs with fellowships and research grant stipends taking additional vacation leave may have their funding reduced accordingly.

Council of FGSR April 23, 1999

9.4 Ph.D. Comprehensives Policy

Preamble

The majority of doctoral programs at McGill require candidates to pass a comprehensive examination or set of examinations or equivalent, such as qualifying examinations, preliminary examinations, candidacy paper, comprehensive evaluation, thesis proposal, etc. The Calendar of Graduate and Postdoctoral Studies (GPS) includes the following statement:

A comprehensive examination or its equivalent is usually held near the end of Ph.D. 2. The results of this examination determine whether or not students will be permitted to continue in their programs. The methods adopted for examination and evaluation and the areas to be examined are specified by departmental regulations and approved by Graduate and Postdoctoral Studies. It is the responsibility of students to inform themselves of these details at the commencement of their programs.

It is recognized that expectations for the Ph.D. comprehensive will vary according to the needs of the discipline. It is important to make it clear to doctoral candidates what the expectations and procedures are for their Ph.D. comprehensive, and to maintain consistency within a given program.

1. General Policy

At the beginning of the relevant academic year, units must provide doctoral students with a written description of the Ph.D. comprehensive, covering the following issues: objectives and content, format, timing, assessment, grading and reporting, failures. (See below for details.)

2. All units that have a Ph.D. comprehensive must adopt an administrative course number for it, usually XXXX 701. One of the following forms of grading must be adopted and used consistently within the program: Pass/Fail or letter grades. ("Mixed" modes of grading are not permitted, i.e., some students within a program reported on a Pass/Fail basis and others by means of letter grades.)

Specific Issues

Objectives and Content

Units must specify the objectives of the Ph.D. comprehensive. Objectives may include assessing any of the following (or a combination), with a view to determining whether the student demonstrates the necessary research skills and academic achievements to be permitted to continue in the Ph.D. program. (This list is not intended to be exhaustive.)

- knowledge of the discipline (from the point of view of breadth)
- understanding of the proposed field of research
- ability to conduct independent and original research
- a thesis proposal
- professional skills
- ability to present and defend material orally

The content of the comprehensive must be consistent with the objectives and should be appropriately circumscribed. Students must be given an indication of the range of material that may be covered in the examination and suggestions as to how to cover this material (e.g., via reading lists, courses, etc.).

Format

The format of the comprehensive must be clearly stated and must be consistent across students within a particular program. The following list gives some of the more common formats, which are often combined. (This list is not intended to be exhaustive.)

- written examination of a specific duration
- take-home examination
- extended research paper(s)
- written research proposal
- oral exam (which may include or consist of a defense of a research paper or research proposal)

If the comprehensive consists of several parts, the relationship (if any) between them must be made clear.

Timing

Timing of the comprehensive must be specified, including the earliest and latest dates by which the comprehensive is to be completed. Students must be informed of the specific dates of the exam in sufficient time for them to prepare for it.

Given the importance of the Ph.D. comprehensive and the consequences of failure, the exam should be held reasonably early in the program, so that students do not spend several years preparing for it.

Prerequisites must be specified. For example, clarify whether all course work must have been completed prior to the comprehensive and whether the comprehensive is the final step before thesis research and writing.

Assessment, Grading and Reporting

Evaluation parameters must be made clear, including information about who sets the exam questions and who evaluates the student. If performance is assessed by a committee, clarify how the committee is appointed and who sits on it. In the case of written examinations, clarify whether the grading is done by one or more people.

Where there is more than one component to the examination (e.g., an oral exam plus a written exam), it must be made clear how these components are factored into the final grade. For example, make it clear whether each component counts equally, whether the assessment is global, and whether failure on one part of the comprehensive examination (or on one question) results in an overall failure.

Feedback

The assessment and reasons for the decision must be documented and provided to the student in sufficient detail to allow the student to understand the decision, including identifying strengths and weaknesses. (A number of units have developed short forms specifically for this purpose.) In the case of oral examinations, the student should also be given feedback on presentation, logical exposition, ability to answer questions, etc.

In the case of oral exams, units may wish to consider the following: ensure that there is a reasonably detailed written assessment of the student's performance; tape the oral examination; allow the student to select a faculty member to act as a neutral observer; have one faculty member serve as a neutral chair (equivalent to a Pro-Dean); have an "outside" committee member; have the oral examination open to other students and faculty members.

Plagiarism

McGill University values academic integrity, which is fundamental to achieving our mission of the advancement of learning. Therefore, all students must understand the issues associated with **academic integrity** (see www.mcgill.ca/students/srr/honest for more information).

Plagiarism in a Ph.D. comprehensive examination contravenes McGill University's academic goals and standards. Consequently, any student found guilty of plagiarism under the Code of Student conduct and Disciplinary Procedures (see the *Handbook on Students Rights and Responsibilities* available at www.mcgill.ca/secretariat/policies/students) in a Ph.D. comprehensive examination may face very serious penalties, even expulsion from the University without the degree.

Failures

i. Repeats

In the event of a failure, units must allow, without prejudice, one repeat of the comprehensive (in whole or in part). The first time a student fails, the student must be informed in writing by the department that he/she has failed the comprehensive and must be informed of conditions relating to a repeat of the examination. In such circumstances, the grade of HH (continuing) will be used. In the event of a second failure, a grade of F will be reported to Graduate and Postdoctoral Studies and the student will be asked to withdraw from the Ph.D. program.

Conditions for retaking the examination must be clearly stated, including the time frame, potential dates, nature of the re-examination, committee membership, etc.

Units have the right to specify further requirements in the event of failure (e.g., requiring students to take an additional course or courses in areas where they have shown weakness on the comprehensive).

ii. Plagiarism

If plagiarism is suspected, the case will be referred directly to the committee on Student Discipline in accordance with the code of Student Conduct, Part III (article 15) and Part V (A). If plagiarism is established by due University process, the student is considered to have failed the examination, with no possibility of repeat.

iii. Review and Reassessment

Rereads. In the case of written comprehensives, the Graduate Studies Reread Policy applies.

A student who fails an oral examination may request a review. In such cases, Graduate and Postdoctoral Studies will conduct a review of the examination process and procedures.

Other Relevant Policies/Offices

- Charter of Student Rights
- Graduate Studies Reread Policy
- Office for Students with Disabilities

Approved by Executive of Faculty of Graduate Studies and Research (FGSR) February 17, 1997 and Council of FGSR March 7, 1997

9.5 Graduate Studies Reread Policy

This policy applies only in the case of marks given for written work in 600- and 700-level courses. For 500-level courses and below, the reread policy of the appropriate undergraduate faculty applies.

Consultation

In accordance with the Charter of Student Rights, and subject to the conditions stated therein, graduate students have the right, subject to reasonable administrative arrangements, "to consult any written submission for which they have received a mark and to discuss this submission with the examiner". Upon request by the student, the instructor of the course is obliged to conduct this consultation with the student.

(Note: Where materials have been graded by a TA and the student wants a reconsideration of the grade, the faculty member responsible for the course is expected to review the materials and the appropriateness of the grade. This is so even if the materials in question have already been discussed by the TA with the student.)

Verification

In a case where a student feels that totalling errors have been made in arriving at the final grade, the student can request the instructor to carry out a detailed check that all questions have been marked and that the final grade has correctly been computed on the basis of the term work, final examination, etc.

Rereads

According to the Charter, students have the right, subject to reasonable administrative arrangements, "to an impartial and competent review of any mark" (hereafter "reread").

At the time the request for a reread is made, the student should have already met with the faculty member responsible for the course to review the mark, or made a reasonable attempt to do so. Rereads can only be requested if a change upwards in the letter grade for the course is possible as a result of the reread. Assignments can only be reread if, together, they account for more than 20% of the course grade.

The reread by a second reader is a review of the mark, not the work assigned. It is the second reader's task to determine whether the original mark is fair and reasonable, not to give the work a totally new assessment.

1. The time limit for requesting a reread is within 30 days after posting of the final marks for the course. However, in the case of work which has been graded during the course and returned to the student, students must indicate in writing to Graduate and Postdoctoral Studies within 5 working days of receiving the graded work their intention to request a reread. This intention must be confirmed within 30 days of the posting of the final marks for the course.

(Note: Material that is returned to a student **cannot be reread** unless arrangements have been made to ensure that the material has not been changed subsequent to the original grading; for example, the student can make a copy for the professor to retain either before handing the material in or immediately upon receiving it back from the instructor or at the point where the professor and student review the work together.)

Instructors are strongly advised to write their corrections in red pen and to write comments which help the student to understand the mark assigned.)

2. The request for a formal reread must be made by the student in writing to Graduate and Postdoctoral Studies and should specify the reasons for the request. It should include a statement indicating that the student has already met with the faculty member responsible for the course to review the mark or indicating why this has not been possible. The reread fee (\$35 for an exam, \$35 for a paper, \$35 for one or more assignments, to a maximum of \$105 per course) will be charged directly to the student's fee account after the result of the reread is received. No fee will be charged if there is a change upwards in the letter grade for the course.
3. Administration of the reread is handled by Graduate and Postdoctoral Studies, not by the department. GPS will contact the department to obtain the work to be reread, a list of potential readers, and details of the marking. The list of potential readers must be approved by the Department Chair or Graduate Program Director. The Chair or Director must, as well, vouch for the impartiality of these readers. All communication with the second reader is conducted by GPS.

The second reader is given the original assignment, with marginalia, corrections, summary comments and mark intact, as well as any notes from the instructor pertinent to the general nature of the course or the assignment and grading schemes, etc.

4. The student's and the instructor's names are blanked out to reduce the possibility of prejudice and to help meet the requirement of the Charter of Students' Rights that the review be impartial. The rereader's name will not be made known to the student or instructor at any time; the student's name will not be made known to the rereader at any time.
5. The second reader should support his or her assessment with a brief memorandum to Graduate and Postdoctoral Studies. As a result of the reread process, the grade may become **higher or lower or remain unchanged**. The grade submitted by the second reader shall replace the original grade. The reread grade cannot be challenged.

In the case of requests for rereads of group work, all members of the group must sign the request, indicating that they agree to the reread. In the event that members of the group are not in agreement, the written request should indicate which students are requesting the reread and which students do not wish for a reread. In such cases, the outcome of the reread (whether positive or negative) will affect only the students in favour of the reread. Neither the reread grade nor the decision to opt in or out of the reread can be challenged.

6. The new grade resulting from the review will be communicated to the student in a letter from Graduate and Postdoctoral Studies, with a copy to the academic unit.

Prepared by the Committee on Graduate Programs, Supervision and Teaching

Approved by Council of the Faculty of Graduate Studies and Research, May 12th 1995

9.6 Health and Parental/Familial Leave of Absence Policy

A leave of absence may be granted by Graduate and Postdoctoral Studies for maternity or parenting (interpreted according to McGill's "Parental Leave Policy" for non-academic staff) reasons or for health reasons.

Such a leave must be requested on a term by term basis and may be granted for a period of up to 52 weeks. Students must make a request for such a leave in writing to their department and submit a medical certificate. The department shall forward the request to GPS.

During a **leave of absence for parental or familial reasons**, a student will not be eligible to take courses but he/she may request and expect guidance on thesis and research work and will have free access to the University's academic facilities. Library services will continue to be available by registering at the Circulation Desk of the Humanities and Social Sciences Library (McLennan-Redpath). In special circumstances, familial leave may be considered by GPS for a student when a close family member is ill.

During a **leave of absence for health reasons**, a student will not be eligible to request guidance on thesis and research work or to take courses. He/she will not have access to the University's academic facilities but Library services will normally continue to be available by registering at the Circulation Desk of the Humanities and Social Sciences Library (McLennan-Redpath).

A medical certificate must accompany such leave requests.

Council of FGSR, March 1999

Please refer to *University Regulations and Resources > Graduate > Regulations > : Leave of Absence Status* for information regarding registration of graduate students and Postdocs on such leaves.

Procedure:

All requests for a leave of absence for health reasons should be accompanied by the following:

- a duly completed *Leave of Absence/Non-Resident Request Form* available from www.mcgill.ca/gps/staff/registration;
- a written request from the student;
- a Minerva form to drop all courses for all relevant terms;
- a medical certificate.

To be acceptable, the medical certificate must contain at least the following items:

- the student's name, as well as complete contact information for the physician;
- a clear statement by the physician justifying the student's inability to perform his/her academic duties, with start and end dates;
- if the request is submitted during a term for which the leave is requested, a clear explanation as to why the health conditions in question did not prevent the normal performance of academic duties at the beginning of the semester.

No retroactive requests for leave of absence will be considered.

It remains the student's responsibility to verify their administrative situation, in particular, as it pertains to term and course registration.

9.7 Failure Policy

Please refer to *University Regulations and Resources > Graduate > Regulations > : Failure Policy* for information regarding the policy and procedures to follow in cases of failure.

9.8 Guideline on Hours of Work

In order to maintain full-time status, a graduate student should not work more than 180 hours per term over 15 weeks with 12 hours per week.

10 Research Policy and Guidelines, Patents, Postdocs, Associates, Trainees

Students must inform themselves of University rules and regulations and keep abreast of any changes that may occur. The *Research Policy and Guidelines, Patents, Postdocs, Associates, Trainees* section of this publication contains important details required by students during their studies at McGill and should be periodically consulted, along with other sections and related publications.

10.1 Policy on Research Ethics

Please refer to the Policy on Research Ethics available at www.mcgill.ca/secretariat/policies/research.

10.2 Regulations on Research Policy

Please refer to the Regulations on Research Policy available at www.mcgill.ca/secretariat/policies/research.

10.3 Policy on Research Integrity

Please refer to the Policy on Research Integrity available at: www.mcgill.ca/research/about/integrity.

10.4 Guidelines for Research Involving Human Subjects

Please refer to the guidelines for research involving human subjects available at: www.mcgill.ca/research/researchers/compliance/human.

10.5 Guidelines for Research with Animal Subjects

Please refer to the guidelines for research involving animal subjects available at: www.mcgill.ca/research/researchers/compliance/animal.

10.6 Policy on Intellectual Property

Please refer to the Policy on Intellectual Property available at: www.mcgill.ca/research/researchers/ip.

10.7 Regulations Governing Conflicts of Interest

Please refer to the regulations governing conflicts of interest available at www.mcgill.ca/secretariat/policies/conflictinterest.

10.8 Safety in Field Work

Please refer to the policies on safety in field work available at www.mcgill.ca/ehs/fieldworksafety.

10.9 Office of Sponsored Research

Please refer to the Office of Sponsored Research, available at: www.mcgill.ca/research/researchers.

10.10 Postdocs

Please see www.mcgill.ca/gps/postdocs.

10.11 Research Associates

A Research Associate is a senior career researcher who usually works independently, in most cases has a Ph.D. or equivalent, and is often supported directly by outside granting agencies. (www.mcgill.ca/apo/classifications/other/research-associate)

11 Academic Programs

The programs and courses in the following sections have been approved for the 2011-2012 session as listed, but the Faculty reserves the right to introduce changes as may be deemed necessary or desirable.

11.1 Atmospheric and Oceanic Sciences**11.1.1 Location**

Department of Atmospheric and Oceanic Sciences
Burnside Hall
805 Sherbrooke Street West, Room 945
Montreal, QC H3A 2K6
Canada

Telephone: 514-398-3764

Fax: 514-398-6115
 Email: gradinfo@meteo.mcgill.ca
 Website: www.mcgill.ca/meteo

11.1.2 About Atmospheric and Oceanic Sciences

The Department of Atmospheric and Oceanic Sciences offers courses and research opportunities in atmospheric sciences and physical oceanography leading to the M.Sc. and Ph.D. degrees. Research programs borrow from fundamental fields such as mathematics, statistics, physics, chemistry, and computing to address a broad range of topics relating to weather and climate. Examples include atmospheric chemistry, climate dynamics, cloud and precipitation physics, dynamical oceanography and meteorology, geophysical turbulence, numerical modelling, numerical weather prediction, ocean carbon budgets, and sea ice dynamics, as well as synoptic, mesoscale, and radar and satellite meteorology.

Some faculty members have close ties with other departments, schools, and centres, including the Chemistry and Mathematics and Statistics departments, the McGill School of the Environment, the Global Environmental and Climate Change Centre (GEC3), ArcticNet, and Quebec Ocean. Facilities include the J. Stewart Marshall Radar Observatory, as well as state-of-the-art field and laboratory equipment for atmospheric chemistry. Graduate students have access to computers, ranging from desktop PCs to the massive parallel machines available to us through CLUMEQ and Compute Canada, and the IBM supercomputer at Environment Canada. In some cases, M.Sc. and Ph.D. research may include a field component. Most students also participate in national and international conferences.

Financial assistance in the form of research stipends and teaching assistantships is available for all qualified graduate students.

section 11.1.5: Master of Science (M.Sc.); Atmospheric and Oceanic Sciences (Thesis) (45 credits)

Our program applies mathematics, physics, computing, and sometimes chemistry to study the atmosphere and/or oceans. The ideal student would therefore have a strong quantitative background in one or more of these fields. Although some of our students have undergraduate knowledge of meteorology or physical oceanography, such background is not necessary to succeed in the program. McGill offers the only program in Canada which includes both atmospheric and oceanic sciences. Students benefit from a large professor to student ratio, access to state-of-the-art computing, remote sensing, and atmospheric chemistry laboratory equipment. The Department also has close ties with Environment Canada's numerical weather prediction centre in Dorval, Quebec. Most of our incoming M.Sc. student choose this (default) option. It allows considerable flexibility as to the choice of research topics, and gives students both a strong classroom knowledge of the subject as well as the opportunity to choose from a variety of thesis research projects. Students who do not choose to continue in academia find employment in a variety of areas and places, for example, working with Environment Canada as research associates or weather forecasters.

section 11.1.6: Master of Science (M.Sc.); Atmospheric and Oceanic Sciences (Thesis) — Environment (45 credits)

The graduate option in Environment provides students with an appreciation of the role of science in informing decision-making in the environment sector, and the influence that political, socio-economic and ethical judgments have. The option also provides a forum whereby graduate students bring their disciplinary perspectives together and enrich each other's learning through structured courses, formal seminars, and informal discussions and networking. Students following the Environment option must first be accepted by the Department of Atmospheric and Oceanic Sciences, and then by the McGill School of Environment (MSE) before an offer of admission will be made by the University. Environment option students require either a single supervisor with a joint appointment in Atmospheric and Oceanic Sciences and the MSE, or co-supervisors, one each in Atmospheric and Oceanic and the MSE.

section 11.1.7: Doctor of Philosophy (Ph.D.); Atmospheric and Oceanic Sciences

Our program applies mathematics, physics, computing, and sometimes chemistry to study the atmosphere and or oceans. The ideal student would therefore have a strong quantitative background in one or more of these fields. Although some of our students have undergraduate knowledge of meteorology of physical oceanography, such background is not necessary to succeed in the program. McGill offers the only program in Canada which includes both atmospheric and oceanic sciences. Students benefit from a large professor to student ratio, access to state-of-the-art computing, remote sensing, and atmospheric chemistry laboratory equipment. The Department also has close ties with Environment Canada's numerical weather prediction centre in Dorval, Quebec. Students who do not choose to continue in academia find employment in a variety of areas and places, for example, working with Environment Canada as research associates or weather forecasters.

11.1.3 Atmospheric and Oceanic Sciences Admission Requirements and Application Procedures

11.1.3.1 Admission Requirements

Applicants for the M.Sc. program must meet the general requirements of Graduate and Postdoctoral Studies and hold a bachelor's degree with high standing in atmospheric science, physics, mathematics, engineering, or equivalent.

The normal requirement for admission to the Ph.D. program is an M.Sc. degree in atmospheric science, physical oceanography, or related discipline with acceptably high standing. Students without a master's degree in Atmospheric Science (Meteorology) or Physical Oceanography but with a strong background in related disciplines (physics, mathematics, engineering) may be admitted to the Ph.D. program. They enter at the Ph.D. 1 rather than the Ph.D. 2 level, and devote the first year of the program mainly to coursework.

Inquiries should be addressed directly to the Chair of Admissions, Department of Atmospheric and Oceanic Sciences.

11.1.3.2 Application Procedures

McGill's online application form for graduate program candidates is available at www.mcgill.ca/gradapplicants/apply.

Dates for Guaranteed Consideration

For dates for guaranteed consideration, please consult the following website: www.mcgill.ca/gradapplicants/programs. Then select the appropriate program.



Note: We are not willing to consider any applications to be admitted for the Summer term.

11.1.4 Atmospheric and Oceanic Sciences Faculty**Chair**

J.R. Gyakum

Emeritus Professors

J.F. Derome; B.Sc., M.Sc.(McG.), Ph.D.(Mich.), F.R.S.C.

H.G. Leighton; B.Sc., M.Sc.(McG.), Ph.D.(Alta.)

L.A. Mysak; C.M., B.Sc.(Alta.), M.Sc.(Adel.), A.M., Ph.D.(Harv.), F.R.S.C. (*Canada Steamship Lines Professor of Meteorology*)

R.R. Rogers; B.S.(Texas), S.M.(MIT), Ph.D.(NYU)

I. Zawadzki; B.Sc.(Buenos Aires), M.Sc., Ph.D.(McG.), F.R.S.C.

Professors

J.R. Gyakum; B.Sc.(Penn. St.), M.Sc., Ph.D.(MIT)

M.K. Yau; S.B., S.M., Sc.D.(MIT) (*NSERC/Hydro-Québec Industrial Research Chair in Short-term Forecasting of Precipitation*)

I. Zawadzki; B.Sc.(Buenos Aires), M.Sc., Ph.D.(McG.), F.R.S.C.

Associate Professors

P. Ariya; B.Sc., Ph.D.(York) (*William Dawson Scholar*) (*joint appt. with Chemistry*)

P. Bartello; B.Sc., M.Sc., Ph.D.(McG.) (*joint appt. with Mathematics*)

F. Fabry; B.Sc., M.Sc., Ph.D.(McG.) (*joint appt. with McGill School of Environment*)

D. Straub; B.S., M.S.(SW Louisiana), Ph.D.(Wash.)

B. Tremblay; B.Sc., M.Sc.(Car.), Ph.D.(McG.)

Assistant Professors

M. Bourqui; B.Sc., M.Sc.(EPFL, Switzerland), Ph.D.(ETHZ, Switzerland) (*joint appt. with Chemistry*)

P. Kollias; B.Sc., M.S.(Athens), Ph.D.(Miami) (*Canada Research Chair*)

J. Palter; B.Sc., Ph.D.(Duke)

S.-W. Son; B.Sc., M.Sc.(Seoul National, Korea), Ph.D.(Penn. St.) (*Canada Research Chair*)

Adjunct Professors

P. Gauthier, C.A. Lin, H. Lin, D. Matthews, S. Melo, R.E. Stewart

11.1.5 Master of Science (M.Sc.); Atmospheric and Oceanic Sciences (Thesis) (45 credits)

The M.Sc. degree requires a minimum of 45 credits, up to a maximum of 51 credits. The program includes from 9 to 27 credits of coursework (depending on the student's background).

Thesis Courses (24 credits)

ATOC 691	(3)	Master's Thesis Literature Review
ATOC 692	(6)	Master's Thesis Research 1
ATOC 694	(3)	Master's Thesis Progress Report and Seminar
ATOC 699	(12)	Master's Thesis

Students registered in M.Sc. programs are expected to regularly attend both the student seminar series (ATOC 751D1/D2 or ATOC 752D1/D2) and the Department seminar series during the entire period of their enrolment in the program.

Complementary Courses (21 credits)

Must complete or have completed the following courses or equivalent:

ATOC 512	(3)	Atmospheric and Oceanic Dynamics
ATOC 513	(3)	Waves and Stability
ATOC 515	(3)	Turbulence in Atmosphere and Oceans
ATOC 521	(3)	Cloud Physics
ATOC 525	(3)	Atmospheric Radiation
ATOC 530	(3)	Paleoclimate Dynamics
ATOC 531	(3)	Dynamics of Current Climates
ATOC 540	(3)	Synoptic Meteorology 1
ATOC 541	(3)	Synoptic Meteorology 2
ATOC 568	(3)	Ocean Physics
ATOC 619*	(3)	Advanced Atmospheric Chemistry
ATOC 626	(3)	Atmospheric/Oceanic Remote Sensing
ATOC 646	(3)	Mesoscale Meteorology
ATOC 666	(3)	Topics In Ocean Circulation
CHEM 619*	(3)	Advanced Atmospheric Chemistry

* Students may select either ATOC 619 or CHEM 619.

Or other courses at the 500 level or higher recommended by the department's Graduate Program Director.

Students with a strong background in atmospheric or oceanic science, or a Diploma in Meteorology, will take at least the 7 credit minimum. Students with no previous background in atmospheric or oceanic science must take the 20 credit maximum.

11.1.6 Master of Science (M.Sc.); Atmospheric and Oceanic Sciences (Thesis) — Environment (45 credits)

Thesis Courses (24 credits)

ATOC 691	(3)	Master's Thesis Literature Review
ATOC 692	(6)	Master's Thesis Research 1
ATOC 694	(3)	Master's Thesis Progress Report and Seminar
ATOC 699	(12)	Master's Thesis

Students registered in M.Sc. programs are expected to regularly attend both the student seminar series (ATOC 751D1/D2 or ATOC 752D1/D2) and the Department seminar series during the entire period of their enrolment in the program.

Required Courses (6 credits)

ENVR 610	(3)	Foundations of Environmental Policy
ENVR 650	(1)	Environmental Seminar 1

ENVR 651	(1)	Environmental Seminar 2
ENVR 652	(1)	Environmental Seminar 3

Complementary Courses (15 credits)

12 credits of Departmental courses chosen from the following:

ATOC 512	(3)	Atmospheric and Oceanic Dynamics
ATOC 513	(3)	Waves and Stability
ATOC 515	(3)	Turbulence in Atmosphere and Oceans
ATOC 521	(3)	Cloud Physics
ATOC 525	(3)	Atmospheric Radiation
ATOC 530	(3)	Paleoclimate Dynamics
ATOC 531	(3)	Dynamics of Current Climates
ATOC 540	(3)	Synoptic Meteorology 1
ATOC 541	(3)	Synoptic Meteorology 2
ATOC 568	(3)	Ocean Physics
ATOC 619*	(3)	Advanced Atmospheric Chemistry
ATOC 626	(3)	Atmospheric/Oceanic Remote Sensing
ATOC 646	(3)	Mesoscale Meteorology
ATOC 666	(3)	Topics In Ocean Circulation
CHEM 619*	(3)	Advanced Atmospheric Chemistry

or another course at the 500 level or higher recommended by the Department's Graduate Program Director.

* Students may select either ATOC 619 or CHEM 619.

3 credits of MSE courses chosen from the following:

ENVR 519	(3)	Global Environmental Politics
ENVR 544	(3)	Environmental Measurement and Modelling
ENVR 580	(3)	Topics in Environment 3
ENVR 611	(3)	The Economy of Nature
ENVR 620	(3)	Environment and Health of Species
ENVR 622	(3)	Sustainable Landscapes
ENVR 630	(3)	Civilization and Environment
ENVR 680	(3)	Topics in Environment 4

or another course at the 500 level or higher recommended by the advisory committee and approved by the Environment Option Committee.

11.1.7 Doctor of Philosophy (Ph.D.); Atmospheric and Oceanic Sciences**Thesis****Required Courses**

(1 credit)

ATOC 700	(1)	Ph.D. Proposal Seminar
ATOC 701	(0)	Ph.D. Comprehensive (General)

Complementary Courses (7 credits)

Students are required to take ATOC 751D1 and ATOC 751D2 OR ATOC 752D1 and ATOC 752D2.

1 credit from:

ATOC 751D1	(.5)	Seminar: Physical Meteorology
ATOC 751D2	(.5)	Seminar: Physical Meteorology
ATOC 752D1	(.5)	Atmospheric, Oceanic and Climate Dynamics
ATOC 752D2	(.5)	Atmospheric, Oceanic and Climate Dynamics

And 6 credits from the Department of Atmospheric and Oceanic Sciences, at the 500 or 600 level, as approved by the Graduate Program Director.

11.2 Biology**11.2.1 Location**

Department of Biology
Stewart Biological Sciences Building, Room W4/8
1205 Dr. Penfield Avenue
Montreal, QC H3A 1B1
Canada

Telephone: 514-398-6400

Fax: 514-398-5069

Email: gradinfo.biology@mcgill.ca

Website: <http://biology.mcgill.ca>

11.2.2 About Biology

The Department offers graduate training in many areas of biology with particular strengths in the following areas: Molecular Biology and Genetics; Cell and Developmental Biology; Ecology, Biodiversity, and Conservation; Evolution; Neurobiology; Bioinformatics; and Plant Biology. In addition to the regular M.Sc. and Ph.D. programs, the Biology Department offers specialized programs, known as “options”, in certain specific areas: Neotropical Environments (NEO), Bioinformatics, Environment, and Developmental Biology.

Graduate programs leading to the M.Sc. and Ph.D. degrees are offered. Both are research-intensive degrees, and the emphasis in both programs is on development of the intellectual and technical skills necessary for independent research. The main component of both degrees is a thesis presenting results of this work and the student’s original contribution to scientific knowledge. Formal coursework, usually in the form of literature-based seminar courses, is minimal and typically completed within the first year. Students present their own work annually in a formal seminar, and regularly attend other seminar series and journal clubs, in order to round out their scientific training.

In addition to working with world-class researchers, graduate students in Biology have access to top-notch research infrastructure. The recently renovated Stewart Biology Building and the newly constructed Bellini Life Sciences Complex are equipped with state of the art equipment and facilities for sophisticated imaging, robotic, and genetic techniques, to name a few. These in-house capabilities are complemented by a wide range of field research facilities, which include the Gault Nature Reserve at Mont St. Hilaire (Québec), the Morgan Arboretum (Québec), the Huntsman Marine Science Centre (New Brunswick), the Subarctic Research Laboratory (Québec), the Bellairs Research Institute (Barbados), the Smithsonian Tropical Research Institute (Panama), and the limnology research station at the Wilder and Helen Penfield Nature Reserve on Lake Memphremagog (Québec). These resources are also extended by affiliation with other organizations such as the Redpath Museum, the Biotechnology Research Institute of the National Research Council of Canada, the *Groupe Interuniversitaire de Recherches Océanographiques du Québec* (GIROQ), the McGill Macdonald campus, the Montreal Neurological Institute, the Jewish General Hospital, the Montreal General Hospital, Montreal Children's, and Royal Victoria Hospitals.

The Department specifies a minimum level of support for all graduate students. This amount is \$15,500 per annum plus tuition fees. The required minimum duration of support is two years for the M.Sc. program, five years for a Ph.D. student entering as Ph.D. 1 (from a bachelor's) and four years for a Ph.D. student entering as Ph.D. 2.

The graduate program of each student is established and regularly evaluated by a three-member supervisory committee appointed by the Graduate Training Committee and chaired by the student’s thesis supervisor.

section 11.2.5: Master of Science (M.Sc.); Biology (Thesis) (45 credits)

The typical graduate student in this program has a strong background knowledge in cell and molecular biology, biochemistry, organismal biology, ecology, developmental biology, and statistics, often with special strengths in the area of proposed study. Given the continuing trend toward interdisciplinary work,

section 11.2.5: Master of Science (M.Sc.); Biology (Thesis) (45 credits)

the program also accepts some students with a high scholastic standing who have completed a program in fields other than biology (medicine, engineering, chemistry, physics, etc.). Admission is based on an evaluation by the applicant's potential supervisor, who is the faculty member who will provide supervision and financial support for the student's research, and by the Biology Graduate Training Committee. Prospective graduate students are encouraged to contact faculty members with whom they wish to study before applying for admission.

Alumni have gone on to pursue a wide range of careers. Many go on to pursue postdoctoral research and later assume faculty positions, while others work as researchers in industry, wildlife biologists, forensic technologists, or science policy advisers, to name a few.

section 11.2.6: Master of Science (M.Sc.); Biology (Thesis) — Environment (48 credits)

The Environment graduate option offers students the opportunity to pursue environment-focused graduate research in the context of a range of different fields, including Anthropology, Atmospheric and Oceanic Sciences, Biology, Bioresource Engineering, Earth and Planetary Sciences, Entomology, Epidemiology, Experimental Medicine, Geography, Law, Microbiology, Plant Science, Parasitology, Philosophy, Renewable Resources, and Sociology. Through a program consisting of research, seminars and two courses, this option adds a layer of interdisciplinarity that challenges students to develop and defend their research and think in a broader context. Students graduating from the M.Sc. or Ph.D. program under the Environment option will therefore be able to understand and critically analyze an environmental problem from several perspectives (e.g., social, cultural, scientific, technological, ethical, economic, political, legislative) and at a local, national, regional, and/or international scale. In addition, they will be able to explore and critically assess analytic and institutional approaches for alleviating the selected environmental problem, and to effectively communicate research findings to both specialist and lay audiences. Coordinated and administered through the McGill School of Environment (MSE), the Environment option is aimed at students who wish to use interdisciplinary approaches in their graduate research on environmental issues and who wish to benefit from interactions that will occur as they interact with students from a wide range of different disciplines.

section 11.2.7: Master of Science (M.Sc.); Biology (Thesis) — Neotropical Environment (48 credits)

The McGill-Smithsonian Tropical Research Institute (STRI) Neotropical Environment Option (NEO) is a research-based option for M.Sc. or Ph.D. students in the departments of Anthropology, Biology, Bioresource Engineering, Geography, Natural Resource Sciences, Plant Science, and Political Science at McGill University. The NEO is aimed at students who wish to focus their graduate research on environmental issues relevant to the Neotropics and Latin American countries. The typical NEO student has a very strong interest in conservation because NEO courses focus on conservation issues. Students in the program have diverse backgrounds, including both Latin American and Canadian students, and must either speak Spanish or enrol in a Spanish course when they enter the program. NEO favours interdisciplinary approaches to research and learning through the participation of researchers from McGill and from STRI. Accordingly, each student will have two co-supervisors, one from McGill and one from STRI. Students will complete their research in Latin America and the NEO's core and complementary courses will be taught in Panama. Participation in the MSE-Panama Symposium presentation in Montreal is also required. Through this educational approach, NEO seeks to facilitate a broader understanding of tropical environmental issues and the development of skills relevant to working in the tropics.

section 11.2.8: Master of Science (M.Sc.); Biology (Thesis) — Bioinformatics (48 credits)

The goal of the Bioinformatics option is to train students to become researchers in the interdisciplinary field of Bioinformatics, which lies at the intersection of biological/medical sciences and mathematics/computer science/engineering. This work includes the development of strategies for experimental design, the construction of tools to analyze datasets, the application of modelling techniques, the creation of tools for manipulating Bioinformatics data, the integration of biological databases, and the use of algorithms and statistics. The Bioinformatics graduate option consists of a number of interdisciplinary courses, as well as a seminar designed to bring students from many backgrounds together and to provide a thorough overview of research in this field. The typical entering student will be affiliated with one of about fourteen different "home" departments in three different faculties, chosen based on his/her specific field of expertise, and will therefore meet the specific requirements for that department. The student will additionally be evaluated according to requirements specific to the Bioinformatics option. Students in this option will have access to five specialized courses that are open only to students within the Bioinformatics option. At the M.Sc. level, students successfully completing the Bioinformatics option will be fluent in the concepts, language, approaches, and limitations of the field.

section 11.2.9: Doctor of Philosophy (Ph.D.); Biology

The typical graduate student in this program has a strong background knowledge in cell and molecular biology, biochemistry, organismal biology, ecology, developmental biology, and statistics, often with special strengths in the area of proposed study. Given the continuing trend toward interdisciplinary work, the program also accepts some students with a high scholastic standing who have completed a program in fields other than biology (medicine, engineering, chemistry, physics, etc.). Admission is based on an evaluation by the applicant's potential supervisor, who is the faculty member who will provide supervision and financial support for the student's research, and by the Biology Graduate Training Committee. Prospective graduate students are encouraged to contact faculty members with whom they wish to study before applying for admission.

Alumni have gone on to pursue a wide range of careers. Many go on to pursue postdoctoral research and later assume faculty positions, while others work as researchers in industry, wildlife biologists, forensic technologists, or science policy advisers, to name a few.

section 11.2.10: Doctor of Philosophy (Ph.D.); Biology — Developmental Biology

The option in Developmental Biology brings together the strong concentration of outstanding developmental biology researchers at McGill and across Montreal to offer students the opportunity to pursue cutting edge research in developmental biology in a rich and collaborative environment. This option is intended to provide broad training in developmental biology and offers research opportunities with a variety of vertebrate, invertebrate and plant model systems, including *Drosophila*, *C. elegans*, *Arabidopsis*, and mice. Participating faculty are drawn from research institutions across Montreal in addition

section 11.2.10: Doctor of Philosophy (Ph.D.); Biology — Developmental Biology

to the Department of Biology, including the Montreal Neurological Institute, the Institut de Recherches Cliniques de Montréal (IRCM), and the Rosalind and Morris Goodman Cancer Centre. The synergies arising from this network enhance a unique training environment that provides students with outstanding theoretical and practical preparation for a future career in science. This Ph.D. program is distinguished from the graduate program in Biology because entering students will carry out three research “rotations” during their first semester, allowing them to experience a variety of research areas before choosing a supervisor for the remainder of their graduate work. Students enter directly from their undergraduate studies, and the primary criterion for admission to the program is a strong background in research at the undergraduate level. It is also expected that candidates will have a CGPA of 3.5 or better, although exceptions may be made for applicants with outstanding research experience. Students will also participate in courses, retreats, and symposia specific to the program.

section 11.2.11: Doctor of Philosophy (Ph.D.); Biology — Environment

The Environment graduate option offers students the opportunity to pursue environment-focused graduate research in the context of a range of different fields, including Anthropology, Atmospheric and Oceanic Sciences, Biology, Bioresource Engineering, Earth and Planetary Sciences, Entomology, Epidemiology, Experimental Medicine, Geography, Law, Microbiology, Plant Science, Parasitology, Philosophy, Renewable Resources, and Sociology. Through a program consisting of research, seminars and two courses, this option adds a layer of interdisciplinarity that challenges students to develop and defend their research and think in a broader context. Students graduating from the M.Sc. or Ph.D. program under the Environment option will therefore be able to understand and critically analyze an environmental problem from several perspectives (e.g., social, cultural, scientific, technological, ethical, economic, political, legislative) and at a local, national, regional, and/or international scale. In addition, they will be able to explore and critically assess analytic and institutional approaches for alleviating the selected environmental problem, and to effectively communicate research findings to both specialist and lay audiences. Coordinated and administered through the McGill School of Environment (MSE), the Environment option is aimed at students who wish to use interdisciplinary approaches in their graduate research on environmental issues and who wish to benefit from interactions that will occur as they interact with students from a wide range of different disciplines. This option is available for Master's and/or Ph.D. students in: Agricultural and Environmental Sciences (Bioresource Engineering, Entomology, Microbiology, Plant Science, Parasitology, Renewable Resources), Arts (Anthropology, Geography, Philosophy, Sociology), Law, Medicine (Epidemiology and Experimental Medicine), and Science (Atmospheric and Oceanic Sciences, Biology, Earth and Planetary Sciences, Geography).

section 11.2.12: Doctor of Philosophy (Ph.D.); Biology — Neotropical Environment

The McGill-Smithsonian Tropical Research Institute (STRI) Neotropical Environment Option (NEO) is a research-based option for M.Sc. or Ph.D. students in the departments of Anthropology, Biology, Bioresource Engineering, Geography, Natural Resource Sciences, Plant Science, and Political Science at McGill University. The NEO is aimed at students who wish to focus their graduate research on environmental issues relevant to the Neotropics and Latin American countries. The typical NEO student has a very strong interest in conservation because NEO courses focus on conservation issues. Students in the program have diverse backgrounds, including both Latin American and Canadian students, and must either speak Spanish or enrol in a Spanish course when they enter the program.

NEO favors interdisciplinary approaches to research and learning through the participation of researchers from McGill and from STRI. Accordingly, each student will have two co-supervisors, one from McGill and one from STRI. Students will complete their research in Latin America and the NEO's core and complementary courses will be taught in Panama. Through this educational approach, NEO seeks to facilitate a broader understanding of tropical environmental issues and the development of skills relevant to working in the tropics.

section 11.2.13: Doctor of Philosophy (Ph.D.); Biology — Bioinformatics

The goal of the Bioinformatics option is to train students to become researchers in the interdisciplinary field of Bioinformatics, which lies at the intersection of biological/medical sciences and mathematics/computer science/engineering. This work includes the development of strategies for experimental design, the construction of tools to analyze datasets, the application of modeling techniques, the creation of tools for manipulating Bioinformatics data, the integration of biological databases and the use of algorithms and statistics.

The Bioinformatics graduate option consists of a number of interdisciplinary courses, as well as a seminar designed to bring students from many backgrounds together and to provide a thorough overview of research in this field. The typical entering student will be affiliated with one of about fourteen different “home” departments in three different faculties, chosen based on his/her specific field of expertise, and will therefore meet the specific requirements for that department. The student will additionally be evaluated according to requirements specific to the Bioinformatics option. Students in this option will have access to five specialized courses that are open only to students within the Bioinformatics option. At the Ph.D. level students will be fluent in the concepts, language, approaches, and limitations of the field and will also have the capability of developing an independent Bioinformatics research program.

11.2.3 Biology Admission Requirements and Application Procedures**11.2.3.1 Admission Requirements**

Applicants must have a B.Sc. in a discipline relevant to the proposed field of study with an overall cumulative grade point average (CGPA) of 3.0/4.0 or a CGPA of 3.2/4.0 for the last two full-time academic years. Graduate Record Examination (GRE) scores are not required, but may be submitted. The Test of English as a Foreign Language (TOEFL) is required of applicants to graduate studies whose mother tongue is not English and who have not completed an undergraduate or graduate degree from a recognized foreign institution where English is the language of instruction or from a recognized Canadian institution (anglophone or francophone). A score of 550 on the paper-based TOEFL or 86 on the Internet-based test with each component score not less than 20 or 6.5 on IELTS is the minimum standard for admission. Specific programs may have additional requirements.

Admission is based on an evaluation by the Graduate Training Committee and on acceptance by a research director who can provide adequate funding for personal and research expenses. Prospective graduate students are encouraged to contact staff members with whom they wish to study before applying for admission.

11.2.3.2 Application Procedures

Application to the graduate program in Biology is made using an online web application form. A direct link to the online form can be found on the Biology Department website.

All applicants should read the academic faculty and admission procedure sections on the Biology Department website before completing the application form. These guidelines contain specific information on the application process, summaries of the research areas of staff, and contact information.

Dates for Guaranteed Consideration

For dates for guaranteed consideration, please select the appropriate program from the following website: www.mcgill.ca/gradapplicants/programs. If application materials are received after the dates for guaranteed consideration, review of the applicant's file may be delayed until the following admittance period. All inquiries pertaining to admission procedures should be directed to the Graduate Admissions Secretary.



Note: Applications for Summer term admission will not be considered.

McGill's online application form for graduate program candidates is available at www.mcgill.ca/gradapplicants/apply.

11.2.4 Biology Faculty

Chair

Paul F. Lasko

Chair of Graduate Program

Laura Nilson

Emeritus Professors

A. Howard Bussey; B.Sc., Ph.D.(Brist.), F.R.S.C.

Robert L. Carroll; B.S.(Mich.), M.A., Ph.D.(Harv.), F.R.S.C.

Ronald Chase; A.B.(Stan.), Ph.D.(MIT)

Jacob Kalf; M.S.A.(Tor.), Ph.D.(Ind.)

Donald L. Kramer; B.Sc.(Boston Coll.), Ph.D.(Br. Col.)

John B. Lewis; B.Sc., M.Sc., Ph.D.(McG.)

Professors

Graham A.C. Bell; B.A., D.Phil.(Oxf.), F.R.S.C. (*James McGill Professor*)

Gregory G. Brown; B.Sc.(Notre Dame), Ph.D.(CUNY) (*on sabbatical*)

Lauren Chapman; B.Sc.(Alta.), Ph.D.(McG.)

Rajinder S. Dhindsa; B.Sc., M.Sc.(Punj.), Ph.D.(Wash.)

Siegfried Hekimi; M.Sc., Ph.D.(Geneva)

Paul F. Lasko; A.B.(Harv.), Ph.D.(MIT) (*Molson Professor of Genetics*) (*Associate Member in Anatomy & Cell Biology*)

Martin J. Lechowicz; B.A.(Mich. St.), M.S., Ph.D.(Wisc.) (*on sabbatical*)

Louis Lefebvre; B.Sc., M.A., Ph.D.(Montr.)

Michel Loreau; M.Sc., Ph.D.(Free Univ., Brussels) (*on sabbatical*)

Gerald S. Pollack; M.A., Ph.D.(Princ.)

Catherine Potvin; B.Sc., M.Sc.(Montr.), Ph.D.(Duke)

Neil M. Price; B.Sc.(New Br.), Ph.D.(Br. Col.)

Rima Rozen; B.Sc., Ph.D.(McG.) (*James McGill Professor*)

Daniel J. Schoen; B.Sc., M.Sc.(Mich.), Ph.D.(Calif.) (*Macdonald Professor of Botany*) (*on sabbatical*)

Associate Professors

Ehab Abouheif; M.Sc.(C'dia), Ph.D.(Duke) (*on sabbatical*)
 Thomas E. Bureau; B.Sc.(Calif.), Ph.D.(Texas) (*William Dawson Scholar*)
 Joseph A. Dent; B.Sc.(Mich.), Ph.D.(Col.)
 François Fagotto; Ph.D.(Neuchâtel)
 Gregor Fussmann; Dipl.(Berlin), Ph.D.(Max Planck Institute)
 Andrew Gonzalez; B.Sc.(Nott.), Ph.D.(Imperial Coll., Lond.)
 Frédéric Guichard; B.Sc.(Montr.), Ph.D.(Laval)
 Paul Harrison; B.Sc.(NUI), Ph.D.(Lond.) (*on sabbatical*)
 Andrew Hendry; B.Sc.(Vic., BC), M.Sc., Ph.D.(Wash.) (*joint appt. with Redpath Museum*)
 Rudiger Krahe; Dipl.(Alexander U.), Ph.D.(Humboldt) (*on sabbatical*)
 Brian Leung; B.Sc.(Br. Col.), Ph.D.(Car.)
 Robert L. Levine; B.Sc.(Brooklyn), M.Sc., Ph.D.(Yale)
 Laura Nilson; B.A.(Colgate), Ph.D.(Yale)
 Richard Roy; B.Sc.(Bishop's), Ph.D.(Laval)
 Frieder Schoeck; Dipl.(Erhagen), Ph.D.(Max Planck Institute)
 Jacalyn Vogel; M.Sc.(E. Ill.), Ph.D.(Kansas) (*Canadian Pacific Chair in Biotechnology*)
 Tamara Western; B.Sc.(Dal.), Ph.D.(Br. Col.)
 Monique Zetka; B.Sc., Ph.D.(Br. Col.)

Assistant Professors

Gary Brouhard; M.S.E., Ph.D.(Mich.)
 David Dankort; B.Sc., Ph.D.(McM.)
 Jonathan Davies; M.Sc.(Cape Town), Ph.D.(Imperial Coll., Lond.)
 Irene Gregory-Eaves; B.Sc.(Vic., BC), M.Sc., Ph.D.(Qu.)
 Nam-Sung Moon; B.Sc., Ph.D.(McG.)
 Simon Reader; B.A.(Camb.), Ph.D.(Camb.)
 Jon Sakata; B.A.(C'Nell), Ph.D.(Texas-Austin)
 Alanna J. Watt; B.Sc.(C'dia), Ph.D.(Brandeis)
 Sarah Woolley; B.Sc.(Duke), Ph.D.(Texas-Austin)
 Hugo Zheng; M.Sc.(Helsinki), Ph.D.(Oxf. Brookes)

Associate Members

Anatomy and Cell Biology: Nathalie Lamarche, Craig Mandato
 Anthropology: Colin Chapman
 Biochemistry: Maxime Bouchard
 Centre for Research in Neuroscience: Sal Carbonetto, Robert Dunn, Yong Rao, Donald Van Meyel
 Dept. of Human Genetics, Chair: David Rosenblatt
 MCH: Feige Kaplan
 MNI: Kenneth Hastings, Stefano Stifani
 RVH: Hugh J. Clarke, Daniel Dufort, Teruko Taketo
 Redpath Museum: Claire de Mazancourt, David Green, Hans Larsson, Virginie Millien, Anthony Ricciardi
 University of the West Indies: Judith Mendes

Adjunct Professors

IRCM: Michel Cayouette, Frédéric Charron, Artur Kania, Marie Kmita

NRC Lab: Malcolm S. Whiteway

STRI: Eldredge Bermingham, Rachel Collin, Hector Guzman, Edward Allen Herre, Haris Lessios, Mark Torchin

U. de Montréal: Pierre Drapeau, Louis St-Amant

11.2.5 Master of Science (M.Sc.); Biology (Thesis) (45 credits)**Thesis Courses (39 credits)**

BIOL 697	(13)	Master's Thesis Research 1
BIOL 698	(13)	Master's Thesis Research 2
BIOL 699	(13)	Master's Thesis Research 3

Complementary Courses (6 credits)

Two 3-credit courses, or equivalent, at the 500, 600, or 700 level in Biology or other departments, and approved by the Supervisory Committee.

11.2.6 Master of Science (M.Sc.); Biology (Thesis) — Environment (48 credits)**Thesis Courses (39 credits)**

BIOL 697	(13)	Master's Thesis Research 1
BIOL 698	(13)	Master's Thesis Research 2
BIOL 699	(13)	Master's Thesis Research 3

Required Courses (6 credits)

ENVR 610	(3)	Foundations of Environmental Policy
ENVR 650	(1)	Environmental Seminar 1
ENVR 651	(1)	Environmental Seminar 2
ENVR 652	(1)	Environmental Seminar 3

Complementary Courses (3 credits)

3 credits, one of the following courses:

ENVR 519	(3)	Global Environmental Politics
ENVR 544	(3)	Environmental Measurement and Modelling
ENVR 580	(3)	Topics in Environment 3
ENVR 611	(3)	The Economy of Nature
ENVR 620	(3)	Environment and Health of Species
ENVR 622	(3)	Sustainable Landscapes
ENVR 630	(3)	Civilization and Environment
ENVR 680	(3)	Topics in Environment 4

or another graduate course at the 500 level or higher recommended by the advisory committee and approved by the Environment Option Committee.

11.2.7 Master of Science (M.Sc.); Biology (Thesis) — Neotropical Environment (48 credits)

Participation in the MSE-Panama Symposium presentation in Montreal is also required.

Thesis Courses (39 credits)

BIOL 697	(13)	Master's Thesis Research 1
BIOL 698	(13)	Master's Thesis Research 2
BIOL 699	(13)	Master's Thesis Research 3

Required Courses (6 credits)

BIOL 640	(3)	Tropical Biology and Conservation
ENVR 610	(3)	Foundations of Environmental Policy

Elective Courses (3 credits)

3 credits, at the 500 level or higher, on environmental issues to be chosen in consultation with and approved by the student's supervisor AND the Neotropical Environment Options Director.

11.2.8 Master of Science (M.Sc.); Biology (Thesis) — Bioinformatics (48 credits)**Thesis Courses (39 credits)**

BIOL 697	(13)	Master's Thesis Research 1
BIOL 698	(13)	Master's Thesis Research 2
BIOL 699	(13)	Master's Thesis Research 3

Required Courses (3 credits)

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar

Complementary Courses (6 credits)

6 credits from the following courses:

BINF 621	(3)	Bioinformatics: Molecular Biology
BMDE 652	(3)	Bioinformatics: Proteomics
BTEC 555	(3)	Structural Bioinformatics
COMP 618	(3)	Bioinformatics: Functional Genomics
PHGY 603	(3)	Systems Biology and Biophysics

11.2.9 Doctor of Philosophy (Ph.D.); Biology**Thesis****Required Courses (6 credits)**

BIOL 700	(0)	Doctoral Qualifying Examination
BIOL 702	(6)	Ph.D. Seminar

Complementary Courses (6 credits)

Two 3-credit courses, or equivalent, at the 500, 600, or 700 level in Biology or other departments, and approved by the Supervisory Committee.

11.2.10 Doctor of Philosophy (Ph.D.); Biology — Developmental Biology**Thesis****Required Courses (12 credits)**

BIOL 520	(3)	Gene Activity in Development
BIOL 532	(3)	Developmental Neurobiology Seminar
BIOL 700	(0)	Doctoral Qualifying Examination
BIOL 702	(6)	Ph.D. Seminar

Complementary Course (3 credits)

One course chosen from the following:

BIOL 544	(3)	Genetic Basis of Life Span
BIOL 569	(3)	Developmental Evolution
BIOL 592	(3)	Integrated Bioinformatics
EXMD 607	(3)	Molecular Control of Cell Growth
EXMD 608	(3)	Molecular Embryology
HGEN 692	(3)	Human Genetics
NEUR 605	(3)	Neuroscience Seminar 4

or another graduate course at the 500, 600, or 700 level chosen in consultation with the student's supervisor.

Additional courses may be required if the student's background is deemed insufficient.

11.2.11 Doctor of Philosophy (Ph.D.); Biology — Environment**Thesis****Required Courses (12 credits)**

BIOL 700	(0)	Doctoral Qualifying Examination
BIOL 702	(6)	Ph.D. Seminar
ENVR 610	(3)	Foundations of Environmental Policy
ENVR 650	(1)	Environmental Seminar 1
ENVR 651	(1)	Environmental Seminar 2
ENVR 652	(1)	Environmental Seminar 3

Complementary Course (3 credits)

One course chosen from the following:

ENVR 519	(3)	Global Environmental Politics
ENVR 544	(3)	Environmental Measurement and Modelling
ENVR 580	(3)	Topics in Environment 3
ENVR 611	(3)	The Economy of Nature
ENVR 620	(3)	Environment and Health of Species
ENVR 622	(3)	Sustainable Landscapes
ENVR 630	(3)	Civilization and Environment
ENVR 680	(3)	Topics in Environment 4

or another graduate course at the 500, 600, or 700 level recommended by the advisory committee and approved by the Environment Option Committee.

11.2.12 Doctor of Philosophy (Ph.D.); Biology — Neotropical Environment

Participation in the MSE-Panama Symposium presentation in Montreal is also required.

Thesis

Required Courses (12 credits)

BIOL 640	(3)	Tropical Biology and Conservation
BIOL 700	(0)	Doctoral Qualifying Examination
BIOL 702	(6)	Ph.D. Seminar
ENVR 610	(3)	Foundations of Environmental Policy

Elective Courses (3 credits)

3 credits, at the 500 level or higher, on environmental issues to be chosen in consultation with and approved by the student's supervisor AND the Neotropical Environment Options Director.

11.2.13 Doctor of Philosophy (Ph.D.); Biology — Bioinformatics

Thesis

Required Courses (9 credits)

BIOL 700	(0)	Doctoral Qualifying Examination
BIOL 702	(6)	Ph.D. Seminar
COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar

Complementary Courses (6 credits)

Two courses chosen from the following:

BINF 621	(3)	Bioinformatics: Molecular Biology
BMDE 652	(3)	Bioinformatics: Proteomics
BTEC 555	(3)	Structural Bioinformatics
COMP 618	(3)	Bioinformatics: Functional Genomics
PHGY 603	(3)	Systems Biology and Biophysics

11.3 Chemistry

11.3.1 Location

Department of Chemistry
Otto Maass Chemistry Building
801 Sherbrooke Street West
Montreal, QC H3A 2K6
Canada

Telephone: 514-398-6999

Fax: 514-398-3797

Email: graduate.chemistry@mcgill.ca

Website: www.chemistry.mcgill.ca

11.3.2 About Chemistry

Research in Chemistry

Members of the Department are organized into various research themes. Some of the current research interests are listed below, and are presented in much more detail on the Departmental website at www.chemistry.mcgill.ca.

Analytical - Environmental

Analytical-Environmental research at McGill entails a wide range of exciting fundamental and applied research with focus on state-of-the-art instrumental development in spectroscopy, imaging, chemometric and analytical bio-spectroscopy, artificial intelligence, ultra trace sampling, state-of-the-art atmospheric kinetics and photochemistry, thermochemical, box and cloud modelling, as well as the development and application of state-of-the-art numerical models of the chemistry of the regional and global atmosphere. Our collective research has direct implications in fields such as materials, environmental, and biomedical chemistry.

Chemical Biology

The Chemical Biology Thematic Group is engaged in a diverse range of research topics which span structural biology, enzymology, nucleic acid research, signalling pathways, single molecule biophysics, and biophysical chemistry of living tissues. Among the themes which unite the research being performed in this group is trying to learn new chemistry and physics from biological systems.

We have projects relating to pharmaceutically relevant enzymes such as those involved in drug metabolism and antibiotic resistance; development of therapeutic agents in the control of inflammation, cancer and viral infections; the chemical biology of NO; quantification of bioenergetic markers of metabolism; self-assembly mechanisms of the HIV-1 virion capsid; liposome microarray systems to address membrane protein dynamics and recognition; studies on reactive oxygen species translocation across the aqueous/lipid membrane interface; RNAi/antisense technologies; dynamic combinatorial chemistry; protein dynamics and function; mechanistic aspects involved in cellular adhesion and transport in membrane and zeolite channels; and cutting-edge microscopes used to examine transport, motility, and reactivity in cells.

Chemical Physics

The research interests of the members of the Chemical Physics Thematic group are diverse, with groups focusing on high-end laser and NMR spectroscopies, kinetics and modelling of atmospheric chemical reactions, experimental, and theoretical biophysical chemistry, polymers at interfaces, and statistical and quantum mechanics. In the field of biophysical chemistry, single molecule spectroscopy is being used to probe enzyme function as well as DNA recombination and repair. Our recent advances in image correlation spectroscopic techniques now allow researchers to precisely follow the macromolecular dynamics in living cells. In a similar vein, breakthrough ultra-fast electron diffraction experiments have opened the window to real time observation of the making and breaking of chemical bonds. State-of-the-art multi-pulse femtosecond spectroscopy experiments are being applied to interesting and technologically important new materials such as photonic crystals and quantum dot superlattices. A molecular-level picture of polymer dynamics and structure at surfaces and interfaces is being developed through theoretical modelling, high field solids NMR spectroscopy, electron microscopy, and other surface characterization methods. In the area of atmospheric chemistry, the chemical transformation of the atmosphere is being modelled both experimentally and theoretically to understand how these processes are currently affecting and driving climate change. Finally, we have basic theory projects relating to the experimental work just described, as well as in transport and structure in complex colloidal or zeolite systems, protein dynamics, and fundamental issues in quantum and statistical mechanics.

Materials Chemistry

The Chemistry of Materials is a rapidly evolving domain of research. Materials Chemistry seeks to understand how composition, reactivity, and structure are related to function from a molecular perspective. The functionality of materials is expressed in a variety of areas including photonics, micro- and nano-electronics, biosystems, nanotechnology, drug delivery, catalysis, polymer science, molecular biology, and chemical and biological sensing. Activities of the Materials Chemistry Group are often broadly interdisciplinary. University-wide synergies among members of this group have led to the creation of the McGill Institute for Advanced Materials (MIAM) and the McGill Nanotools Facility. The latter comprises state-of-the-art **micro/nanofabrication**, atomic manipulation and high performance computing facilities. MIAM and members of the Chemistry Department have established research that links the **Centre for Self Assembled Chemical Structures**, the **Centre for Biosensors and Biorecognition**, the **Centre for the Physics of Materials**, and the **Centre for Bone and Periodontal Research**. Synthetic approaches to new materials include research in dendrimers, polynucleic acid architectures, polymers that conduct electrons or light and biopolymers. Polymer and colloid science figure prominently as does research and applications of the chemistry and physical properties of nanostructures. There is significant activity in understanding directed molecular assembly at interfaces and in the application of sophisticated spectroscopic tools to explore them.

Synthesis - Catalysis

The Synthesis/Catalysis Research Activity Group is a collective to develop the state-of-art catalysts, synthetic methodologies, reaction mechanisms, and synthetic routes for organic chemicals, natural products, and materials. The following are the major research activities at McGill: (1) Development of novel catalysts and catalytic reactions for highly efficient organic synthesis; Green Chemistry. This includes the study and discovery of novel transition-metal catalysts, biological catalysts, nano- and dendrimer-based catalysts for synthetic purposes; new chemical reactivity such as C-H activation, asymmetric catalysis and theory, multi-component reactions and combinatorial chemistry; innovative chemistry in alternative solvents such as water, sub-critical water, ionic liquids, and liquid CO₂; photocatalytic reactions, reaction mechanisms, and physical organic chemistry; and computational chemistry. (2) Synthesis of biological compounds, organic materials, and natural products. Focus areas are total synthesis of natural products, synthesis of DNA and RNA analogues; synthesis of antiviral and anticancer nucleoside analogues, synthesis of amino acid and peptides; synthesis and study of carbohydrate derivatives; design, synthesis, and study of speciality organic chemical and materials.

section 11.3.5: Master of Science, Applied (M.Sc.A.); Chemistry (Non-Thesis) (45 credits)

(Not offered in 2011-2012)

section 11.3.6: Master of Science (M.Sc.); Chemistry (Thesis) (45 credits)

Please consult the Department for more information about this program.

section 11.3.7: Master of Science (M.Sc.); Chemistry (Thesis) — Chemical Biology (45 credits)

(Not offered in 2011-2012)

section 11.3.8: Doctor of Philosophy (Ph.D.); Chemistry

Please consult the Department for more information about this program.

section 11.3.9: Doctor of Philosophy (Ph.D.); Chemistry — Chemical Biology

(Not offered in 2011-2012)

11.3.3 Chemistry Admission Requirements and Application Procedures**11.3.3.1 Admission Requirements**

The minimum academic standard for admission to research thesis degree programs is a minimum standing equivalent to a cumulative grade point average (CGPA) of 3.0 out of a possible 4.0 or a CGPA of 3.2/4.0 for the last two full-time academic years. Applicants from other institutions should have an academic background equivalent to that of a McGill graduate in the Chemistry Honours/Major programs. If possible, candidates should specify the field of research in which they are interested.

11.3.3.2 Application Procedures**Dates for Guaranteed Consideration**

For dates for guaranteed consideration, please consult the following website: www.mcgill.ca/gradapplicants/programs. Then select the appropriate program.



Note: We are not willing to consider any applications to be admitted for the Summer term.

All inquiries concerning graduate work in the Department should be addressed to the Director of Graduate Studies, Department of Chemistry.

FINANCIAL ASSISTANCE**M.Sc. and Ph.D. Degrees**

Graduate students devote 12 hours per week (contact hours, plus grading of reports, etc.) during the academic session to their teaching duties. Financial assistance during the remainder of the year is provided from research funds. Scholarship holders, such as NSERC or awards of similar value, receive a tuition fee waiver.

11.3.4 Chemistry Faculty**Chair**

R.B. Lennox

Director of Graduate Studies

N. Moitessier

Emeritus Professors

T.H. Chan; B.Sc.(Tor.), M.A., Ph.D.(Princ.), F.C.I.C., F.R.S.C.

A. Eisenberg; B.S.(Wor. Poly.), M.A., Ph.D.(Princ.), F.C.I.C.

B.C. Eu; B.Sc.(Seoul), Ph.D.(Brown)

D.F.R. Gilson; B.Sc.(Univ. Coll., Lond.), M.Sc., Ph.D.(Br. Col.)

J.F. Harrod; B.Sc., Ph.D.(Birm.), F.R.S.C.

A.S. Hay; B.Sc.(Alta.), Ph.D.(Ill.), F.R.S.

R.H. Marchessault; B.Sc.(Montr.), Ph.D.(McG.), F.C.I.C., F.R.S.C.

M.A. Whitehead; B.Sc., Ph.D., D.Sc.(Lond.), F.C.I.C.

Professors

B.A. Arndtsen; B.A.(Car.), Ph.D.(Stan.)
 D.S. Bohle; B.A.(Reed), M.Phil., Ph.D.(Auck.)
 D.H. Burns; B.Sc.(Puget Sound), Ph.D.(Wash.)
 I.S. Butler; B.Sc., Ph.D.(Brist.), F.C.I.C.
 M.J. Damha; B.Sc., Ph.D.(McG.), F.C.I.C.
 D.G. Gray; B.Sc.(Belf.), M.Sc., Ph.D.(Manit.), F.C.I.C.
 D.N. Harpp; A.B.(Middlebury), M.A.(Wesl.), Ph.D.(N. Carolina), F.C.I.C.
 R.B. Lennox; B.Sc., M.Sc., Ph.D.(Tor.), F.C.I.C.
 C.J. Li; B.Sc.(Zhengzhou), M.S.(Chin. Acad. Sci.), Ph.D.(McG.)
 D.M. Ronis; B.Sc.(McG.), Ph.D.(MIT)
 E.D. Salin; B.Sc.(Calif.), Ph.D.(Ore.), F.C.I.C.
 B.C. Sanctuary; B.Sc., Ph.D.(Br. Col.)
 H. Sleiman; B.Sc.(A.U.B.), Ph.D.(Stan.)
 T.G.M. van de Ven; Kand. Doc.(Utrecht), Ph.D.(McG.)

Associate Professors

M.P. Andrews; B.Sc., M.Sc., Ph.D.(Tor.)
 P. Ariya; B.Sc., Ph.D.(York)
 K. Auclair; B.Sc.(UQAC), Ph.D.(Alta.)
 C.J. Barrett; B.Sc., M.Sc., Ph.D.(Qu.)
 W.C. Galley; B.Sc.(McG.), Ph.D.(Calif.)
 J.L. Gleason; B.Sc.(McG.), Ph.D.(Virg.)
 A. Kakkar; B.Sc., M.Sc.(Chan. U., India), Ph.D.(Wat.)
 P. Kambhampati; B.A.(Car. Coll.), Ph.D.(Texas)
 D. Perepichka; B.Sc.(Donetsk St. U, Ukraine), Ph.D.(Nat. Aca. Sci., Ukraine)
 J.F. Power; B.Sc., Ph.D.(C'dia)
 L. Reven; B.A.(Car.), Ph.D.(Ill.)
 Y.S. Tsantrizos; B.Sc., M.Sc., Ph.D.(McG.)
 P. Wiseman; B.Sc.(St. FX), Ph.D.(W. Ont.)

Assistant Professors

A.S. Blum; B.A.(Princ.), Ph.D.(Wash.)
 M. Bourqui; B.Sc.(EPF Lausanne), Ph.D.(ETH Zürich)
 G. Cosa; B.Sc.(Argentina), Ph.D.(Ott.)
 A. Mittermaier; B.Sc.(Guelph), Ph.D.(Tor.)
 A. Moores; B.Sc., Ph.D.(École Polytechnique, Paris)
 B. Siwick; B.A.Sc. Eng. Sci., M.Sc., Ph.D.(Tor.)

Associate Members

J.A. Finch (*Mining, Metals and Materials Engineering*), P. Grütter (*Physics*), O.A. Mamer (*University Clinic, RVH*), R. Schirmacher (*MNI*)

Adjunct Professors

Y. Guindon, C. Reber, I. Wharf, C.T. Yim, R. Zamboni

11.3.5 Master of Science, Applied (M.Sc.A.); Chemistry (Non-Thesis) (45 credits)

(Not offered in 2011-2012)

Research Project (15 credits)

CHEM 699 (15) Project

Complementary Courses (30 credits)

15 credits, five 3-credit CHEM courses at the 500, 600, or 700 level.

15 credits, five 3-credit courses at the 500, 600, or 700 level selected in consultation with the Adviser.

11.3.6 Master of Science (M.Sc.); Chemistry (Thesis) (45 credits)**Thesis Courses**

(24-31 credits)

At least 24 credits chosen from the following:

CHEM 691	(3)	M.Sc. Thesis Research 1
CHEM 692	(6)	M.Sc. Thesis Research 2
CHEM 693	(9)	M.Sc. Thesis Research 3
CHEM 694	(12)	M.Sc. Thesis Research 4
CHEM 695	(15)	M.Sc. Thesis Research 5
CHEM 696	(6)	M.Sc. Thesis Research 6
CHEM 697	(9)	M.Sc. Thesis Research 7
CHEM 698	(12)	M.Sc. Thesis Research 8

Required Courses

(5 credits)

CHEM 650	(1)	Seminars in Chemistry 1
CHEM 651	(1)	Seminars in Chemistry 2
CHEM 688	(3)	Assessment

Complementary Courses

(9-16 credits)

Students will normally take 9-16 credits of CHEM (or approved) courses at the 500 or 600 level.

11.3.7 Master of Science (M.Sc.); Chemistry (Thesis) — Chemical Biology (45 credits)

(Not offered in 2011-2012)

Thesis Courses (24 credits)

(minimum 24 credits)

At least 24 credits chosen from the following:

CHEM 691	(3)	M.Sc. Thesis Research 1
CHEM 692	(6)	M.Sc. Thesis Research 2
CHEM 693	(9)	M.Sc. Thesis Research 3
CHEM 694	(12)	M.Sc. Thesis Research 4

CHEM 695	(15)	M.Sc. Thesis Research 5
CHEM 696	(6)	M.Sc. Thesis Research 6
CHEM 697	(9)	M.Sc. Thesis Research 7
CHEM 698	(12)	M.Sc. Thesis Research 8

Required Courses (5 credits)

CHEM 650	(1)	Seminars in Chemistry 1
CHEM 651	(1)	Seminars in Chemistry 2
CHEM 688	(3)	Assessment

Complementary Courses (11 credits)

(minimum 11 credits)

2 credits, two of the following courses:

BIOC 610	(1)	Seminars in Chemical Biology 1
BIOC 611	(1)	Seminars in Chemical Biology 3
BIOC 689	(1)	Seminars in Chemical Biology 2
BIOC 690	(1)	Seminars in Chemical Biology 4

Students will take at least three courses from the following list, including at least 3 credits from the first two courses listed below:

Note: Students can take either CHEM 503 or PHAR 503, CHEM 504 or PHAR 504.

BIOC 603	(3)	Genomics and Gene Expression
BIOC 604	(3)	Macromolecular Structure
CHEM 502	(3)	Advanced Bio-Organic Chemistry
CHEM 503	(3)	Drug Design and Development 1
CHEM 504	(3)	Drug Design and Development 2
CHEM 514	(3)	Biophysical Chemistry
CHEM 522	(3)	Stereochemistry
CHEM 591	(3)	Bioinorganic Chemistry
CHEM 621	(5)	Reaction Mechanisms in Organic Chemistry
CHEM 629	(5)	Organic Synthesis
CHEM 655	(4)	Advanced NMR Spectroscopy
PHAR 503	(3)	Drug Design and Development 1
PHAR 504	(3)	Drug Design and Development 2
PHAR 562	(3)	General Pharmacology 1
PHAR 563	(3)	General Pharmacology 2
PHAR 707	(3)	Topics in Pharmacology 6

The remaining credits may be graduate-level courses approved by the Department.

11.3.8 Doctor of Philosophy (Ph.D.); Chemistry**Thesis**

Required Courses

CHEM 650	(1)	Seminars in Chemistry 1
CHEM 651	(1)	Seminars in Chemistry 2
CHEM 688	(3)	Assessment
CHEM 701	(0)	Comprehensive Examination 1
CHEM 702	(0)	Comprehensive Examination 2

Complementary Courses

Students entering the program with an M.Sc. degree will normally take three (3) graduate-level courses. Students entering without an M.Sc. degree will normally take five (5) graduate-level courses.

Students may be required to take advanced undergraduate courses if background deficient.

11.3.9 Doctor of Philosophy (Ph.D.); Chemistry — Chemical Biology

(Not offered in 2011-2012)

Thesis**Required Courses**

BIOC 610	(1)	Seminars in Chemical Biology 1
BIOC 611	(1)	Seminars in Chemical Biology 3
BIOC 689	(1)	Seminars in Chemical Biology 2
BIOC 690	(1)	Seminars in Chemical Biology 4
CHEM 650	(1)	Seminars in Chemistry 1
CHEM 651	(1)	Seminars in Chemistry 2
CHEM 688	(3)	Assessment
CHEM 701	(0)	Comprehensive Examination 1
CHEM 702	(0)	Comprehensive Examination 2

Complementary Courses

Students entering the program with an M.Sc. degree will normally take three (3) graduate-level courses. Students entering without an M.Sc. degree will normally take five (5) graduate-level courses. At least three courses must be from the following list, including at least 3 credits from the first two courses listed below.

Note: Students can take either CHEM 503 or PHAR 503, CHEM 504 or PHAR 504.

BIOC 603	(3)	Genomics and Gene Expression
BIOC 604	(3)	Macromolecular Structure
CHEM 502	(3)	Advanced Bio-Organic Chemistry
CHEM 503	(3)	Drug Design and Development 1
CHEM 504	(3)	Drug Design and Development 2
CHEM 514	(3)	Biophysical Chemistry
CHEM 522	(3)	Stereochemistry
CHEM 591	(3)	Bioinorganic Chemistry
CHEM 621	(5)	Reaction Mechanisms in Organic Chemistry
CHEM 629	(5)	Organic Synthesis
CHEM 655	(4)	Advanced NMR Spectroscopy
PHAR 503	(3)	Drug Design and Development 1

PHAR 504	(3)	Drug Design and Development 2
PHAR 562	(3)	General Pharmacology 1
PHAR 563	(3)	General Pharmacology 2
PHAR 707	(3)	Topics in Pharmacology 6

The remaining credits may be 500-, 600-, or 700-level courses approved by the Department.

11.4 Computer Science

11.4.1 Location

School of Computer Science
 McConnell Engineering, Room 318
 3480 University Street
 Montreal, QC H3A 2A7
 Canada

Telephone: 514-398-7071 ext. 00074

Fax: 514-398-3883

Email: grad.cs@mcgill.ca

Website: www.cs.mcgill.ca

11.4.2 About Computer Science

The School of Computer Science is one of the leading teaching and research centres for computer science in Canada. We offer a Ph.D. program and several M.Sc. programs. All include coursework and research. In the basic M.Sc. programs students must choose between the thesis option and the non-thesis option, which requires a project. The Ph.D. program includes an option in bioinformatics and the thesis M.Sc. program includes options in bioinformatics and in Computational Science and Engineering. Students are normally funded by their adviser's research grants; in the case of scholarship students, this typically takes the form of a 'top-up' to the scholarship. Research in the School covers a broad range of areas, including: **Theory:** algorithms, combinatorial optimization, computational geometry, cryptography, graph theory, logic and computation, programming languages, quantum computing, theory of computation, and scientific computing; **Systems:** compilers, computer games, distributed systems, embedded and real-time systems, modelling and simulations, networks, software engineering; **Applications:** bioinformatics, machine learning, robotics, computer animation, graphics, and vision.

All students must consult the graduate program website www.cs.mcgill.ca, where up-to-date information about the graduate program is posted. Any questions concerning the program should be addressed to the Graduate Coordinator.

section 11.4.5: Master of Science (M.Sc.); Computer Science (Thesis) (45 credits)

This program is designed for students with a strong interest in research in computer science who hold at least the equivalent of an undergraduate minor in CS. This program combines a strong course component with a research thesis. It is the usual (but not mandatory) entry point for students who wish to do a Ph.D., but is also the program of choice for students who want to find challenging and exciting jobs after their Master's.

section 11.4.6: Master of Science (M.Sc.); Computer Science (Thesis) — Computational Science and Engineering (45 credits)

This program option is to train graduates in state-of-the-art applications of numerical and modelling methods and computer technology to scientific and engineering problems. CSE is a rapidly growing multidisciplinary area with connections to the sciences, engineering, mathematics, and computer science.

section 11.4.7: Master of Science (M.Sc.); Computer Science (Thesis) — Bioinformatics (45 credits)

Bioinformatics research lies at the intersection of biological/medical sciences and mathematics/computer science/engineering. The intention of the Bioinformatics option is to train students to become researchers in this interdisciplinary field. This includes the development of strategies for experimental design, the construction of tools to analyze datasets, the application of modeling techniques, the creation of tools for manipulating Bioinformatics data, the integration of biological databases and the use of algorithms and statistics.

section 11.4.8: Master of Science (M.Sc.); Computer Science (Non-Thesis) (45 credits)

This program is designed for students who want to obtain broad knowledge of advanced topics in computer science but without the requirement of a thesis. It offers an excellent preparation for the job market, but is not recommended for students interested in eventually pursuing a Ph.D.

section 11.4.9: Doctor of Philosophy (Ph.D.); Computer Science

The Ph.D. program trains students to become strong, independent researchers in the field of their choice. Our graduates take challenging positions in industry or take academic positions at universities and research labs. In order to apply to the Ph.D. program, normally applicants should hold a Master's degree in Computer Science or a closely related area, from a well-recognized university, but exceptional students can be admitted to the Ph.D. program directly without a master's degree.

section 11.4.10: Doctor of Philosophy (Ph.D.); Computer Science — Bioinformatics

Bioinformatics research lies at the intersection of biological/medical sciences and mathematics/computer science/engineering. The intention of the Bioinformatics option is to train students to become researchers in this interdisciplinary field. This includes the development of strategies for experimental design, the construction of tools to analyze datasets, the application of modeling techniques, the creation of tools for manipulating Bioinformatics data, the integration of biological databases and the use of algorithms and statistics.

11.4.3 Computer Science Admission Requirements and Application Procedures**11.4.3.1 Admission Requirements****Master's (M.Sc.)**

The minimum requirement for admission is a bachelor's degree (CGPA 3.2 or better, or equivalent) with the coursework in Computer Science indicated in the brochure "Information for Applicants to Graduate Programs".

The brochure supplements information in this publication and should be consulted by all graduate students.

Ph.D.

In order to apply to the Ph.D. program, normally applicants should hold an M.Sc. degree in Computer Science or a closely related area, from a well-recognized university. Students who hold a B.Sc. degree in Computer Science but have an exceptionally strong academic record may be admitted directly to the Ph.D. program, but they must initially apply to the M.Sc. program. Students who are in the M.Sc. program have the option to be fast-tracked into the Ph.D. program at the end of their first academic year contingent on excellent performance as judged by the Ph.D. committee.

11.4.3.2 Application Procedures

Applications will be considered upon receipt of:

1. application form;
2. original or certified copies of transcripts;
3. two letters of reference;
4. \$100 application fee;
5. test results (GRE, TOEFL).

All information is to be submitted directly to the Graduate Coordinator.

Dates for Guaranteed Consideration

For dates for guaranteed consideration, please consult the following website: www.mcgill.ca/gradapplicants/programs. Then select the appropriate program.

Application documents are also available on our website, www.cs.mcgill.ca/academic/prospectivestudents/applying/applying.

McGill's online application form for graduate program candidates is available at www.mcgill.ca/gradapplicants/apply.

Deadline: January 1st if applicant wishes to be considered for scholarship awards or otherwise March 1st for admission to the Fall term.

11.4.4 Computer Science Faculty**Director**

Gregory Dudek

Emeritus Professors

R. De Mori; Ph.D.(Politecnico di Torino)

T.H. Merrett; B.Sc.(Qu.), D.Phil.(Oxf.)

M.M. Newborn; B.E.E.(Rensselaer Poly.), Ph.D.(Ohio St.), F.A.C.M.

C. Paige; B.Sc., B.Eng.(Syd.), Ph.D.(Lond.)

G.F.G. Ratzler; B.Sc.(Glas.), M.Sc.(McG.)

Emeritus Professors

G.T. Toussaint; B.Sc.(Tulsa), Ph.D.(Br. Col.)

Professors

D. Avis; B.Sc.(Wat.), Ph.D.(Stan.)

L. Devroye; M.S.(Louvain), Ph.D.(Texas) (*James McGill Professor*)

G. Dudek; B.Sc.(Qu.), M.Sc., Ph.D.(Tor.) (*James McGill Professor*)

L. Hendren; B.Sc., M.Sc.(Qu.), Ph.D.(C'nell)

P. Panangaden; M.Sc.(IIT, Kanpur), M.S.(Chic.), Ph.D.(Wisc.)

B. Reed; B.Sc., Ph.D.(McG.) (*Canada Research Chair*)

K. Siddiqi; B.Sc.(Lafayette), M.Sc., Ph.D.(Brown) (*William Dawson Chair*)

D. Thérien; B.Sc.(Montr.), M.Sc., Ph.D.(Wat.) (*James McGill Professor*)

Associate Professors

M. Blanchette; B.Sc., M.Sc.(Montr.), Ph.D.(Wash.)

X.W. Chang; B.Sc., M.Sc.(Nanjing), Ph.D.(McG.)

C. Crépeau; B.Sc., M.Sc.(Montr.), Ph.D.(MIT)

N. Friedman; B.A.(W. Ont.), Ph.D.(Tor.)

M.T. Hallett; B.Sc.(Qu.), Ph.D.(Vic., BC)

P. Hayden; B.Sc.(McG.), Ph.D.(Oxf.)

B. Kemme; B.Sc., M.Sc.(U. of Erlangen-Nuremberg, Germany), Ph.D.(ETH, Zurich)

J. Kienzle; Eng.Dip., Ph.D.(Swiss Fed. IT)

M. Langer; B.Sc.(McG.), M.Sc.(Tor.), Ph.D.(McG.)

X. Liu; B.Sc., M.Sc.(Tsinghua), Ph.D.(Ill.)

M. Maheswaran; B.Sc.(U. Peradeniya), M.Sc., Ph.D.(Purdue)

B. Pientka; B.Sc., M.Sc.(Tech. U. of Darmstadt, Germany), Ph.D.(Carn. Mell)

J. Pineau; B.Sc.(Wat.), M.Sc., Ph.D.(Carn. Mell)

D. Precup; B.Sc.(Tech. U. of Cluj-Napoca), M.Sc., Ph.D.(Mass.)

M. Robillard; B.Eng.(École Poly., Montr.), M.Sc., Ph.D.(Br. Col.)

C. Tropper; B.Sc.(McG.), Ph.D.(Brooklyn Poly.)

H. Vangheluwe; B.Sc., M.Sc., D.Sc.(Ghent, Belgium)

C. Verbrugge; B.A.(Qu.), Ph.D.(McG.)

A. Vetta; B.Sc., M.Sc.(LSE), Ph.D.(MIT)

Assistant Professors

H. Hatami; B.Sc.(Sharif), M.Sc., Ph.D.(Tor.)

P. Kry; B.Sc.(Wat.), M.Sc., Ph.D.(Br. Col.)

D. Ruths; B.Sc., M.Sc., Ph.D.(Rice)

M. Singh; B.Sc., M.Sc.(IIT), Ph.D., ACO(Carn. Mell)

J. Waldispuhl; B.Sc.(Nice & Sophia-Antipolis), M.Sc.(Paris VII), Ph.D.(École Poly., France)

Faculty Lecturer

J. Vybihal; B.Sc., M.Sc.(McG.)

Associate MembersD.J. Levitin (*Psychology*)D. Schlimm (*Philosophy*)R. Sengupta (*Geography*)B.F. Shepherd (*Mathematics & Statistics*)T.R. Shultz (*Psychology*)R. Sieber (*Geography*)**Adjunct Professors**

P.J. Mosterman, T. Perkins, I. Rekleitis, G.O. Sabidussi, M. Tabach Izadi, P. Tesson

11.4.5 Master of Science (M.Sc.); Computer Science (Thesis) (45 credits)**Thesis Courses (24 credits)**

24 credits selected from:

COMP 691	(2)	Thesis Research 1
COMP 696	(3)	Thesis Research 2
COMP 697	(4)	Thesis Research 3
COMP 698	(9)	Thesis Research 4
COMP 699	(15)	Thesis Research 5

Complementary Courses (21 credits)

At least 21 credits of 500-, 600-, or 700-level COMP courses, including at least 12 credits of 4-credit courses.

Note: Students with an appropriate background can substitute 3 credits by COMP 696 and 4 credits by COMP 697.

11.4.6 Master of Science (M.Sc.); Computer Science (Thesis) — Computational Science and Engineering (45 credits)**Thesis Courses (24 credits)**

24 credits selected from:

COMP 691	(2)	Thesis Research 1
COMP 696	(3)	Thesis Research 2
COMP 697	(4)	Thesis Research 3
COMP 698	(9)	Thesis Research 4
COMP 699	(15)	Thesis Research 5

Required Courses

One credit selected as follow:

COMP 669D1	(.5)	Computational Science Engineering Seminar
COMP 669D2	(.5)	Computational Science Engineering Seminar

Complementary Courses

(minimum 21 credits)

Two courses from List A, two courses from List B, and the remaining credits to be chosen from graduate (500-, 600-, or 700-level) courses in the School of Computer Science. Two complementary courses must be taken outside the School of Computer Science.

Note: Students with an appropriate background can substitute 3 credits by COMP 696 and 4 credits by COMP 697, but still need to take 6-8 credits from List A and 6-8 credits from List B.

List A: Scientific Computing Courses:

CIVE 602	(4)	Finite Element Analysis
COMP 522	(4)	Modelling and Simulation
COMP 540	(3)	Matrix Computations
COMP 566	(3)	Discrete Optimization 1
MATH 578	(4)	Numerical Analysis 1
MATH 579	(4)	Numerical Differential Equations

List B: Application and Specialized Methods Courses:

ATOC 512	(3)	Atmospheric and Oceanic Dynamics
ATOC 513	(3)	Waves and Stability
ATOC 515	(3)	Turbulence in Atmosphere and Oceans
CIVE 572	(3)	Computational Hydraulics
CIVE 603	(4)	Structural Dynamics
CIVE 613	(4)	Numerical Methods: Structural Engineering
COMP 505	(3)	Advanced Computer Architecture
COMP 557	(3)	Fundamentals of Computer Graphics
COMP 558	(3)	Fundamentals of Computer Vision
COMP 567	(3)	Discrete Optimization 2
COMP 621	(4)	Program Analysis and Transformations
COMP 642	(4)	Numerical Estimation Methods
COMP 767	(4)	Advanced Topics: Applications 2
ECSE 507	(3)	Optimization and Optimal Control
ECSE 532	(3)	Computer Graphics
ECSE 547	(3)	Finite Elements in Electrical Engineering
ECSE 549	(3)	Expert Systems in Electrical Design
MATH 555	(4)	Fluid Dynamics
MATH 560	(4)	Optimization
MATH 651	(4)	Asymptotic Expansion and Perturbation Methods
MATH 761	(4)	Topics in Applied Mathematics 1
MECH 533	(3)	Subsonic Aerodynamics
MECH 537	(3)	High-Speed Aerodynamics
MECH 538	(3)	Unsteady Aerodynamics
MECH 539	(3)	Computational Aerodynamics
MECH 541	(3)	Kinematic Synthesis
MECH 545	(3)	Advanced Stress Analysis
MECH 572	(3)	Introduction to Robotics
MECH 573	(3)	Mechanics of Robotic Systems
MECH 576	(3)	Geometry in Mechanics
MECH 577	(3)	Optimum Design

MECH 610	(4)	Fundamentals of Fluid Dynamics
MECH 620	(4)	Advanced Computational Aerodynamics
MECH 632	(4)	Theory of Elasticity
MECH 642	(4)	Advanced Dynamics
MECH 650	(4)	Fundamentals of Heat Transfer
MECH 654	(4)	Compt. Fluid Flow and Heat Transfer

11.4.7 Master of Science (M.Sc.); Computer Science (Thesis) — Bioinformatics (45 credits)

Thesis Courses (24 credits)

24 credits selected from:

COMP 691	(2)	Thesis Research 1
COMP 696	(3)	Thesis Research 2
COMP 697	(4)	Thesis Research 3
COMP 698	(9)	Thesis Research 4
COMP 699	(15)	Thesis Research 5

Required Courses (3 credits)

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar

Complementary Courses (18 credits)

6 credits chosen from the following courses:

BINF 621	(3)	Bioinformatics: Molecular Biology
BMDE 652	(3)	Bioinformatics: Proteomics
BTEC 555	(3)	Structural Bioinformatics
COMP 618	(3)	Bioinformatics: Functional Genomics
PHGY 603	(3)	Systems Biology and Biophysics

12 credits of 4-credit courses chosen from 500-, 600-, or 700-level Computer Science courses in consultation with the candidate's supervisor.

Note: Students with an appropriate background can substitute 4 credits by COMP 697.

11.4.8 Master of Science (M.Sc.); Computer Science (Non-Thesis) (45 credits)

Research Project (15 credits)

15 credits selected as follows:

COMP 693	(3)	Research Project 1
COMP 694	(6)	Research Project 2
COMP 695	(6)	Research Project 3

Complementary Courses (30 credits)

30 credits of 500-, 600-, or 700-level COMP courses.

11.4.9 Doctor of Philosophy (Ph.D.); Computer Science

Required coursework: Students must take eight graduate courses, of which at least five are computer science courses. These courses should be chosen by the student in consultation with the supervisor (or co-supervisor) and the Progress Committee.

Thesis**Required Courses**

COMP 700	(0)	Ph.D. Comprehensive Examination
COMP 701	(3)	Thesis Proposal and Area Examination

Complementary Courses

18-24 credits selected from:

Category A: Theory and Applications

COMP 506	(3)	Advanced Analysis of Algorithms
COMP 507	(3)	Computational Geometry
COMP 523	(3)	Language-based Security
COMP 524	(3)	Theoretical Foundations of Programming Languages
COMP 525	(3)	Formal Verification
COMP 531	(3)	Theory of Computation
COMP 540	(3)	Matrix Computations
COMP 547	(4)	Cryptography and Data Security
COMP 552	(4)	Combinatorial Optimization
COMP 554	(4)	Approximation Algorithms
COMP 560	(3)	Graph Algorithms and Applications
COMP 561	(4)	Computational Biology Methods and Research
COMP 563	(3)	Molecular Evolution Theory
COMP 564	(3)	Computational Gene Regulation
COMP 566	(3)	Discrete Optimization 1
COMP 567	(3)	Discrete Optimization 2
COMP 598	(3)	Topics in Computer Science 1
COMP 599	(3)	Topics in Computer Science 2
COMP 610	(4)	Information Structures 1
COMP 618	(3)	Bioinformatics: Functional Genomics
COMP 623	(4)	Concurrent Programming Languages
COMP 627	(4)	Theoretical Programming Languages
COMP 642	(4)	Numerical Estimation Methods
COMP 647	(4)	Advanced Cryptography
COMP 648	(4)	Motion Planning and Robotics
COMP 649	(4)	Quantum Cryptography
COMP 680	(4)	Mining Biological Sequences
COMP 690	(4)	Probabilistic Analysis of Algorithms
COMP 760	(4)	Advanced Topics Theory 1
COMP 761	(4)	Advanced Topics Theory 2

Category B: Systems and Applications

COMP 512	(4)	Distributed Systems
COMP 520	(4)	Compiler Design
COMP 521	(4)	Modern Computer Games
COMP 522	(4)	Modelling and Simulation
COMP 526	(3)	Probabilistic Reasoning and AI
COMP 529	(4)	Software Architecture
COMP 533	(3)	Object-Oriented Software Development
COMP 535	(3)	Computer Networks 1
COMP 557	(3)	Fundamentals of Computer Graphics
COMP 558	(3)	Fundamentals of Computer Vision
COMP 575	(3)	Fundamentals of Distributed Algorithms
COMP 577	(3)	Distributed Database Systems
COMP 598	(3)	Topics in Computer Science 1
COMP 599	(3)	Topics in Computer Science 2
COMP 612	(4)	Database Programming Principles
COMP 614	(4)	Distributed Data Management
COMP 617	(4)	Information Systems
COMP 621	(4)	Program Analysis and Transformations
COMP 644	(4)	Pattern Recognition
COMP 646	(4)	Computational Perception
COMP 652	(4)	Machine Learning
COMP 655	(4)	Distributed Simulation
COMP 656	(4)	Run-Time Language Support
COMP 667	(4)	Software Fault Tolerance
COMP 762	(4)	Advanced Topics Programming 1
COMP 763	(4)	Advanced Topics Programming 2
COMP 764	(4)	Advanced Topics Systems 1
COMP 765	(4)	Advanced Topics Systems 2
COMP 766	(4)	Advanced Topics Applications 1
COMP 767	(4)	Advanced Topics: Applications 2

Note: Each year the Ph.D. Committee will determine which category COMP 598 and COMP 599 belong to according to the subjects taught in those courses.

11.4.10 Doctor of Philosophy (Ph.D.); Computer Science — Bioinformatics**Thesis****Required Courses**

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
COMP 700	(0)	Ph.D. Comprehensive Examination
COMP 701	(3)	Thesis Proposal and Area Examination

Complementary Courses

Two courses chosen from the following:

BINF 621	(3)	Bioinformatics: Molecular Biology
BMDE 652	(3)	Bioinformatics: Proteomics
BTEC 555	(3)	Structural Bioinformatics
COMP 618	(3)	Bioinformatics: Functional Genomics
PHGY 603	(3)	Systems Biology and Biophysics

Additional courses at the 500, 600, or 700 level may be required at the discretion of the candidate's supervisory committee. Students who have completed the M.Sc.-level option in Bioinformatics must complete 6 credits of complementary courses not taken in the master's program.

11.5 Earth and Planetary Sciences**11.5.1 Location**

Department of Earth and Planetary Sciences
 Frank Dawson Adams Building
 3450 University Street
 Montreal, QC H3A 2A7
 Canada

Telephone: 514-398-6767

Fax: 514-398-4680

Email: gradinquiry@eps.mcgill.ca

Website: www.eps.mcgill.ca

11.5.2 About Earth and Planetary Sciences

The Department of Earth and Planetary Sciences offers both M.Sc. and Ph.D. degree programs. Graduate programs are based on research, although some courses are required to build the backgrounds of students. Research in the Department is wide-ranging. It includes studies of the geochemistry of the mantle, the nature of processes concentrating metals in hydrothermal mineral deposits, experimental studies of the controls of viscosity in magmas and the mechanisms of volcanic eruption, the fixation of mercury in marine sediments, the nature of changes in atmospheric chemistry in the early and late Precambrian, mechanisms of faulting, the evolution of topography during orogenesis, wetland hydrogeology, and planetary-scale ocean biogeochemistry and its relationship to global warming. There is a very substantial interdisciplinary basis to much of the research.

Facilities in the Department include low-temperature and pressure to high-temperature and pressure experimental laboratories, a stable-isotope mass spectrometer, XRF, laser-ablation ICP-MS, and electron microprobe, as well as atomic absorption spectrometers. Our students also make substantial use of other facilities at McGill and at nearby Université du Québec à Montréal.

Financial assistance is available in the form of teaching assistantships, research assistantships, and scholarships.

Areas of Research**Aquatic Geochemistry**

Application of chemical thermodynamics, kinetics, and surface chemistry to the characterization of mineral-solution interactions in aquatic environments, carbonate geochemistry, early diagenesis of marine and coastal sediments, trace metal and environmental geochemistry in freshwater and marine systems.

Biom mineralization

Investigation of process occurring at the interface between inorganic and organic phases leading to the nucleation and growth of crystals in both natural and synthetic systems. Pathogenic mineralization and calcification in mammalian cells and tissues. Investigating biomarkers as signatures of ancient biological activity in terrestrial and extraterrestrial materials.

Economic Geology

Studies of the genesis of hydrothermal mineral deposits through a combination of field-based, experimental, and theoretical methods. Research focuses on the understanding of physico-chemical controls of mineralization, through geological mapping of deposits, experimental studies of metal solubility and speciation in hydrothermal systems, simulations of hydrothermal alteration, and theoretical studies designed to estimate conditions of alteration and ore formation. Trace-element chemistry of minerals as quantitative probes of the compositions of ore-forming fluids.

Hydrogeology

Studies of pore-water flow in northern peatlands, heat transport, heat as a tracer of natural systems, groundwater modeling, coupled numerical models of pore water flow and heat transport with freeze/thaw processes, and the impact of melting tropical glaciers on water resources.

Igneous Petrology

Experimental studies of the structure, thermodynamics, and transport properties (diffusion and viscosity) of silicate melts and applications to igneous petrogenesis. The nature of the Earth's upper mantle and the processes within it which give rise to basaltic volcanism on both the Earth and the other terrestrial planets. Applications of laser ablation ICPMS; Petrology, geochemistry, and tectonics of the Appalachian lithosphere.

Mineralogy

Chemistry and crystallography of carbonate minerals. Experimental investigations of the effect of environmental factors (e.g., solution composition and temperature) on the morphology and composition of calcite.

Oceanic Biogeochemistry

Links between the marine ecosystem and climate through observations of the modern ocean, simulations of ocean biogeochemistry with computer models, and sedimentary records of past climate change.

Seismology

Subduction earthquake nucleation and rupture propagation processes. Physical mechanism of aseismic deformation transients, deep non-volcanic tremors, dynamic and static stress triggering of low-frequency earthquakes and transients. Pore-fluid pressure coupling with frictional strength and slip.

Tectonics

The interactions of climate and tectonics, especially in regard to the formation and degradation of orogens. Understanding the paleoclimatic and neotectonic history of Plio-Pleistocene landscape development using cosmogenic-dating techniques. Archean orogenic processes. Fluid flow in faults, granular flow in faults, and catastrophic structural/geochemical events in faults.

Isotopic Geochemistry and Sedimentary Geology

Sedimentology, stratigraphy, and isotope geochemistry as guides to reconstructing ancient environments. Reconstruction of paleoenvironmental change during the Neoproterozoic to early Phanerozoic. Relationships between tectonics (i.e. supercontinental break-up and assembly), seawater chemistry and ocean redox, severe climatic fluctuations (including snowball Earth), and the origin and diversification of animals. Recovery of the geochemical memory of large-scale Earth system processes (e.g., microbial control of the global S cycle; anthropogenic manipulation of atmospheric OH abundances). Investigations of microbial biogeochemistry under an anoxic Archean atmosphere, to constrain mass fluxes in the Phanerozoic geologic sulfur cycle, and to track processes that control the pollution-cleansing oxidants (OH, O₃) in the modern atmosphere.

Volcanology

Petrology and geochemistry of intermediate and felsic magmas. Understanding physical processes and forecasting eruptions at active subduction-zone volcanoes. Geochemistry of volcanic gases, their use for eruption prediction, and their impact on the atmosphere.

section 11.5.5: Master of Science (M.Sc.); Earth and Planetary Sciences (Thesis) (45 credits)

The nature of graduate research in the Department of Earth and Planetary Sciences is highly variable. As a result, students may enter the graduate program with backgrounds in Earth sciences, chemistry, or physics, depending on their research interests and the supervisor with whom they wish to work. Students pursuing an M.Sc. are required to take four courses, but their major project is an M.Sc. thesis that typically results in a journal publication. Research for the thesis is typically begun in the first year of residence and completed, together with the written results, in the second year of residence. Students graduating from the program typically proceed to a Ph.D. or work in the mineral-exploration or petroleum industries. It is possible to 'fast-track' to a Ph.D. program at the end of the first year if suitable progress has been demonstrated.

section 11.5.6: Master of Science (M.Sc.); Earth and Planetary Sciences (Thesis) — Environment (48 credits)

The graduate option in Environment provides students with an appreciation of the role of science in informing decision-making in the environment sector, and the influence that political, socio-economic, and ethical judgments have. The option also provides a forum whereby graduate students bring their disciplinary perspectives together and enrich each other's learning through structured courses, formal seminars, and informal discussions and networking. Students that have been admitted through their home department or Faculty may apply for admission to the option. Option requirements are consistent across academic units. The option is coordinated by the MSE, in partnership with participating academic units.

section 11.5.7: Doctor of Philosophy (Ph.D.); Earth and Planetary Sciences

The nature of graduate research in the Department of Earth and Planetary Sciences is highly variable. As a result, students may enter the graduate program with backgrounds in Earth sciences, chemistry, or physics, depending on their research interests and the supervisor with whom they wish to work. Ph.D. students typically enter with an M.Sc., in which case they are required by our regulations to take only two courses, although a supervisor may require more, depending on the suitability of the student's background. Aside from courses, the first year is occupied by early work on the thesis project that constitutes the bulk of the Ph.D., with preparation for an oral examination on their research proposal at the end of the first year. Conduct of the research, and preparation of the results, for thesis and publication, typically takes three additional years. Students entering the Ph.D. program without an M.Sc. are required to take a full year of courses before embarking on the processes described above. Students graduating from our Ph.D. program pursue careers in universities and government-funded research institutes, and in the mineral-exploration and petroleum industries.

section 11.5.8: Doctor of Philosophy (Ph.D.); Earth and Planetary Sciences — Environment

The graduate option in Environment provides students with an appreciation of the role of science in informing decision-making in the environment sector, and the influence that political, socio-economic and ethical judgments have. The option also provides a forum whereby graduate students bring their

section 11.5.8: Doctor of Philosophy (Ph.D.); Earth and Planetary Sciences — Environment

disciplinary perspectives together and enrich each other's learning through structured courses, formal seminars, and informal discussions and networking. Students that have been admitted through their home department or Faculty may apply for admission to the option. Option requirements are consistent across academic units. The option is coordinated by the MSE, in partnership with participating academic units.

11.5.3 Earth and Planetary Sciences Admission Requirements and Application Procedures**11.5.3.1 Admission Requirements**

Applicants should have an academic background equivalent to that of a McGill graduate in the Honours or Majors program in geology, geophysics, chemistry, or physics (3.0 out of 4.0). The admissions committee may modify the requirements in keeping with the field of graduate study proposed. In some cases, a qualifying year may be required.

11.5.3.2 Application Procedures**Dates for Guaranteed Consideration**

For dates for guaranteed consideration, please consult the following website: www.mcgill.ca/gradapplicants/programs. Then select the appropriate program.

Applicants who want to be considered for entrance awards, or requiring financial assistance, should apply before the dates for guaranteed consideration. There are no special forms required to apply for financial aid from the Department, as all applicants will be considered for the awards for which they are eligible.

Students should first contact potential supervisors within the Department of Earth and Planetary Sciences (www.eps.mcgill.ca/Faculty/faculty.php) and assess their interest in accepting new students before starting the formal application procedure. General inquiries concerning the Department should be addressed to Graduate Admissions, Department of Earth and Planetary Sciences. Candidates should indicate their field(s) of interest when making formal application for admission.

McGill's online application form for graduate program candidates is available at www.mcgill.ca/gradapplicants/apply.

11.5.4 Earth and Planetary Sciences Faculty**Chair**

A. Hynes

Emeritus Professors

Jafar Arkani-Hamed; B.Eng.(Tehran), Ph.D.(MIT)

Wallace H. MacLean; B.Geol.Eng.(Colo. Sch. of Mines), M.Sc.(A.), Ph.D.(McG.)

Robert F. Martin; B.Sc.(Ott.), M.S.(Penn. St.), Ph.D.(Stan.)

Colin W. Stearn; B.Sc.(McM.), M.S., Ph.D.(Yale), F.R.S.C.

Professors

Don Baker; B.A.(Chic.), Ph.D.(Penn. St.)

Donald Francis; B.Sc.(McG.), M.Sc.(Br. Col.), Ph.D.(MIT) (*Dawson Professor of Geology*)

Andrew J. Hynes; B.Sc.(Tor.), Ph.D.(Cant.) (*William E. Logan Professor of Geology*)

Olivia G. Jensen; B.Sc., M.Sc., Ph.D.(Br. Col.)

Alfonso Mucci; B.Sc., M.Sc.(Montr.), Ph.D.(Miami)

John Stix; A.B.(Dart.), M.Sc., Ph.D.(Tor.)

A.E. (Willy) Williams-Jones; B.Sc., M.Sc.(Natal), Ph.D.(Qu.)

Associate Professors

Galen Halverson; B.A.(Mont.), M.A., Ph.D.(Harv.) (*T.H. Clark Chair in Sedimentary and Petroleum Geology*)

Jeanne Paquette; B.Sc., M.Sc.(McG.), Ph.D.(Stonybrook)

Hojatollah Vali; B.Sc., M.Sc., Ph.D.(Munich) (*Director, Electron Microscopy Centre*)

Assistant Professors

Eric Galbraith; B.Sc.(McG.), Ph.D.(Br. Col.)

Sarah Hall; B.A.(Hamilton), Ph.D.(Calif.-Santa Cruz)

Yajing Liu; B.Sc.(Peking), Ph.D.(Harv.)

Jeffrey McKenzie; B.Sc.(McG.), M.Sc., Ph.D.(Syrac.)

Christie Rowe; A.B.(Smith), Ph.D.(Calif.-Santa Cruz)

Vincent van Hinsberg; Propadouse(Utrecht), Doctorandus(Utrecht), Ph.D.(Brist.)

Boswell Wing; A.B.(Harv.), M.A., Ph.D.(Johns Hop.) (*Canada Research Chair in Earth Systems Science (Geochemistry)*)**Faculty Lecturer**

W. Minarik; B.A.(St. Olaf), M.Sc.(Wash.), Ph.D.(Rensselaer Poly.)

Adjunct Professors

M. Duchesne, M. Riedel, H. Short, B. Sundby

Retired Professor

R. Hesse

11.5.5 Master of Science (M.Sc.); Earth and Planetary Sciences (Thesis) (45 credits)**Thesis Courses (33 credits)**

EPSC 697	(9)	Thesis Preparation 1
EPSC 698	(12)	Thesis Preparation 2
EPSC 699	(12)	Thesis Preparation 3

Required Course (3 credits)

EPSC 666	(3)	Current Issues in Geosciences
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Complementary Courses (9 credits)

Three 3-credit 500, 600, or 700 level EPSC courses chosen with the approval of the supervisor or the research director and GPS.

11.5.6 Master of Science (M.Sc.); Earth and Planetary Sciences (Thesis) — Environment (48 credits)**Thesis Courses (33 credits)**

EPSC 697	(9)	Thesis Preparation 1
EPSC 698	(12)	Thesis Preparation 2
EPSC 699	(12)	Thesis Preparation 3

Required Courses (9 credits)

ENVR 610	(3)	Foundations of Environmental Policy
ENVR 650	(1)	Environmental Seminar 1
ENVR 651	(1)	Environmental Seminar 2
ENVR 652	(1)	Environmental Seminar 3
EPSC 666	(3)	Current Issues in Geosciences

Complementary Courses (6 credits)

One 3-credit course at the 500, 600, or 700 level chosen with the approval of the supervisor or research director and GPS.

3 credits chosen from the following courses:

ENVR 519	(3)	Global Environmental Politics
ENVR 544	(3)	Environmental Measurement and Modelling
ENVR 580	(3)	Topics in Environment 3
ENVR 611	(3)	The Economy of Nature
ENVR 620	(3)	Environment and Health of Species
ENVR 622	(3)	Sustainable Landscapes
ENVR 630	(3)	Civilization and Environment
ENVR 680	(3)	Topics in Environment 4

or another course at the 500, 600, or 700 level recommended by the advisory committee and approved by the Environment Option Committee.

11.5.7 Doctor of Philosophy (Ph.D.); Earth and Planetary Sciences

Highly qualified B.Sc. graduates may be admitted directly to the Ph.D. 1 year. Students with the M.Sc. degree are normally admitted to the Ph.D. 2 year. Students are required to take six graduate-level courses in the Ph.D. 1 year, and two courses plus a comprehensive oral examination in the Ph.D. 2 year.

Thesis**Required Courses**

EPSC 666	(3)	Current Issues in Geosciences
EPSC 700	(0)	Preliminary Doctoral Examination

Complementary Courses

One to seven courses approved at the 500, 600, or 700 level selected in consultation with the student's supervisor and approved by the Academic Standing Committee.

11.5.8 Doctor of Philosophy (Ph.D.); Earth and Planetary Sciences — Environment**Thesis****Required Courses**

ENVR 610	(3)	Foundations of Environmental Policy
ENVR 650	(1)	Environmental Seminar 1
ENVR 651	(1)	Environmental Seminar 2
ENVR 652	(1)	Environmental Seminar 3
EPSC 666	(3)	Current Issues in Geosciences
EPSC 700	(0)	Preliminary Doctoral Examination

Complementary Courses

One to five courses

One course chosen from the following courses:

ENVR 519	(3)	Global Environmental Politics
ENVR 544	(3)	Environmental Measurement and Modelling

ENVR 580	(3)	Topics in Environment 3
ENVR 611	(3)	The Economy of Nature
ENVR 620	(3)	Environment and Health of Species
ENVR 622	(3)	Sustainable Landscapes
ENVR 630	(3)	Civilization and Environment
ENVR 680	(3)	Topics in Environment 4

or another course at the 500, 600, or 700 level recommended by the advisory committee with the student's supervisor and approved by the Academic Standing Committee.

Zero to four courses at the 500, 600, or 700 level selected in consultation with the student's supervisor and approved by the Academic Standing Committee.

11.6 Geography

11.6.1 Location

Department of Geography
Burnside Hall
805 Sherbrooke Street West, Room 705
Montreal, QC H3A 2K6
Canada

Telephone: 514-398-4111
Fax: 514-398-7437
Email: grad.geog@mcgill.ca
Website: www.geog.mcgill.ca

11.6.2 About Geography

The Department of Geography offers a research and thesis-based graduate program leading to a Master of Arts (M.A.), Master of Science (M.Sc.), and a doctorate (Ph.D.). In its scope, our program includes the opportunity to conduct field-based studies in both the natural (i.e., biophysical) and the social sciences. Thematic areas of study include Political, Urban, Economic and Health Geography, Environment and Human Development, Geographic Information Systems and Remote Sensing, Land Surface Processes, Earth Systems Science, and Environmental Management. Geography houses the Hitschfield Geographic Information Centre, maintains the McGill High Arctic Research Station (Axel Heiburg Island, Nunavut Territory) and the McGill Sub-Arctic Research Station (Schefferville, Québec), and has strong ties with McGill's School of the Environment and the Centre for Climate and Global Change Research. Faculty and students conduct research in fields as diverse as climate change impacts, periglacial geomorphology, and forest resource history in regions ranging from the Arctic to Southeast Asia and Latin America.

McGill Northern Research Stations

The McGill Sub-Arctic Research Station is located at Schefferville, in the centre of Quebec-Labrador. Facilities exist for research in most areas of physical and some areas of human geography in the subarctic.

McGill University also operates a field station at Expedition Fiord on Axel Heiberg in the High Arctic. Facilities are limited to a small lab and dorm building and cookhouse. Research activities focus on the glacial and geological. For additional information on these stations, contact the Scientific Director, Wayne Pollard, Department of Geography.

Centre for Climate and Global Change Research

The Department of Geography, with the McGill Departments of Atmospheric and Oceanic Sciences, Economics, Natural Resource Sciences, and several departments from the Université du Québec à Montréal and Université de Montréal developed a collaborative research centre that examines climate and global change. Through this centre there are graduate opportunities.

For more information contact Professor Nigel Roulet, Director, Centre for Climate and Global Change, McGill University.

Being both a natural and a social science, geography provides a unique opportunity to obtain a broad exposure to modes of analyzing the many environmental and situational problems of contemporary society. Because of this, a geography degree is a fantastic opportunity to get a career in a diverse range of fields. Our students have gone on to become United Nations field researchers in Laos, environmental consultants in Toronto, science teachers in the U.S., geography professors in many parts of the world, UNHCR volunteers in Malaysia, and policy analysts, as well as health and social policy researchers in Montreal...the list goes on! If you're on Facebook, look for *McGill Geography Alumni* or visit our website www.geog.mcgill.ca/other/jobinsgeog.html to learn more about the advantages of having a geography degree from McGill!

Master's degrees in both the physical (M.Sc.) and social (M.A.) sciences are offered by Geography. The core of both programs for all students is field-based research supervised by a faculty member culminating in a thesis. The core program consists of the thesis component (30 credits) and required (3) and complementary (12) graduate (500- or 600-level) courses.

Geography also offers in association with other McGill departments and programs a number of M.A. and M.Sc. options that students may choose to follow. Students must pass the courses specified for their program, attend such additional courses as the Chair and the student's thesis supervisor think fit, and submit a thesis in an appropriate area of geographical inquiry approved by the adviser.

Master of Arts (M.A.) Programs in Geography

Faculty of Arts > Academic Programs > Geography > : [Master of Arts \(M.A.\); Geography \(Thesis\) \(45 credits\)](#)

Master's degrees in both the physical (M.Sc.) and social (M.A.) sciences are offered by Geography. The core of both programs for all students is field-based research supervised by a faculty member culminating in a thesis. The core program consists of the thesis component (30 credits) and required (3) and complementary (12) graduate (500- or 600-level) courses. Geography also offers in association with other McGill departments and programs a number of M.A. and M.Sc. options that students may choose to follow.

Faculty of Arts > Academic Programs > Geography > : [Master of Arts \(M.A.\); Geography \(Thesis\) — Environment \(45 credits\)](#)

The Environment Option is offered in association with the McGill School of Environment and is composed of a thesis component (24 credits), required Geography and Environment courses (9), and complementary Geography and Environment (12) courses. The graduate option in Environment provides students with an appreciation of the role of science in informing decision-making in the environment sector, and the influence that political, socio-economic, and ethical judgments have. Students who have been admitted through their home department or Faculty may apply for admission to the option. Option requirements are consistent across academic units. The option is coordinated by the MSE, in partnership with participating academic units.

Faculty of Arts > Academic Programs > Geography > : [Master of Arts \(M.A.\); Geography \(Thesis\) — Neotropical Environment \(45 credits\)](#)

The McGill-STRI Neotropical Environment Option (NEO) is a research-based option for master's or Ph.D. students offered in association with several University departments, the McGill School of Environment, and the Smithsonian Tropical Research Institute (STRI-Panama). The option includes thesis (30 credits), required courses in Geography, Environment, and Biology (9), and complementary courses (6) chosen from Geography, Agriculture Sciences, Biology, Sociology, Environment, and Political Science. NEO is aimed at students who wish to focus their graduate research on environmental issues relevant to the Neotropics and Latin American countries. NEO favors interdisciplinary approaches to research and learning through the participation of researchers from McGill and from STRI. Students will complete their research in Latin America and NEO's core and complementary courses will be taught in Panama. NEO's educational approach seeks to facilitate a broader understanding of tropical environmental issues and the development of skills relevant to working in the tropics.

Faculty of Arts > Academic Programs > Geography > : [Master of Arts \(M.A.\); Geography \(Thesis\) — Development Studies \(45 credits\)](#)

The Development Studies Option (DSO) is cross-disciplinary in scope within existing Master's programs in Geography, Anthropology, History, Political Science, Economics, and Sociology. Its components include the thesis (30 credits) and required (6) International Development and Geography courses and complementary (9) courses from the participating departments. This thesis option is open to master's students specializing in development studies. Students enter through one of the participating departments and must meet the M.A. requirements of that unit. Students will take an interdisciplinary seminar and a variety of graduate-level courses on international development issues. The M.A. thesis must be on a topic relating to development studies, approved by the DSO coordinating committee.

Faculty of Arts > Academic Programs > Geography > : [Master of Arts \(M.A.\); Geography \(Thesis\) — Gender and Women's Studies \(45 credits\)](#)

This is an interdisciplinary program for Geography students wishing to focus on gender and women's studies and issues in feminist research and methods. Included within it are a thesis (30 credits) typically on gender and women's studies, required (6), and complementary (9) courses from Geography and Women's Studies.

Faculty of Arts > Academic Programs > Geography > : [Master of Arts \(M.A.\); Geography \(Thesis\) — Social Statistics \(45 credits\)](#)

The Social Statistics Option focuses on applications of quantitative methods in social science and is composed of the thesis (30 credits), required Geography (6) courses and complementary Geography, Sociology, Economics, and Political Science (9) courses. The program complements disciplinary training with research experience applying statistical methods to Statistics Canada data (or equivalent). Students will normally complete normal program course requirements, supplemented by further statistical courses, as advised by the option adviser, and subject to approval by the home department. Students will complete a statistics-based M.A. research paper (Economics, Political Science, Sociology) or thesis (Geography) in conjunction with an interdisciplinary capstone seminar. Acceptance into the program is by application to the Social Statistics Option Committee and is contingent on acceptance into the M.A. program in one of the participating departments (Economics, Geography, Political Science, Sociology), which in turn requires meeting Graduate and Postdoctoral Studies admission requirements.

Master of Science (M.Sc.) Programs in Geography

Faculty of Science > Academic Programs > Geography > [section 11.6.5: Master of Science \(M.Sc.\); Geography \(Thesis\) \(45 credits\)](#)

Master's degrees in both the physical (M.Sc.) and social (M.A.) sciences are offered by Geography. The core of both programs for all students is field-based research supervised by a faculty member culminating in a thesis. The core program consists of the thesis component (30 credits) and required (3) and

Faculty of Science > Academic Programs > Geography > [section 11.6.5: Master of Science \(M.Sc.\); Geography \(Thesis\) \(45 credits\)](#)

complementary (12) graduate (500- or 600-level) courses. Geography also offers in association with other McGill departments and programs a number of M.A. and M.Sc. options that students may choose to follow.

Faculty of Science > Academic Programs > Geography > [section 11.6.6: Master of Science \(M.Sc.\); Geography \(Thesis\) — Environment \(45 credits\)](#)

The Environment Option is offered in association with the McGill School of Environment and is composed of a thesis component (24 credits), required Geography and Environment courses (9), and complementary Geography and Environment (12) courses. The graduate option in Environment provides students with an appreciation of the role of science in informing decision-making in the environment sector, and the influence that political, socio-economic and ethical judgments have. Students who have been admitted through their home department or Faculty may apply for admission to the option. Option requirements are consistent across academic units. The option is coordinated by the MSE, in partnership with participating academic units.

Faculty of Science > Academic Programs > Geography > [section 11.6.7: Master of Science \(M.Sc.\); Geography \(Thesis\) — Neotropical Environment \(45 credits\)](#)

The McGill-STRI Neotropical Environment Option (NEO) is a research-based option for master's students is offered in association with several university departments, the McGill School of Environment, and the Smithsonian Tropical Research Institute (STRI-Panama). The option includes thesis (30 credits), required courses in Geography, Environment, and Biology (9) and complementary courses (6) chosen from Geography, Agriculture Sciences, Biology, Sociology, Environment, and Political Science. NEO is aimed at students who wish to focus their graduate research on environmental issues relevant to the Neotropics and Latin American countries. NEO favors interdisciplinary approaches to research and learning through the participation of researchers from McGill and from STRI. Students will complete their research in Latin America and NEO's core and complementary courses will be taught in Panama. NEO's educational approach seeks to facilitate a broader understanding of tropical environmental issues and the development of skills relevant to working in the tropics.

Ph.D. Programs in Geography**[section 11.6.8: Doctor of Philosophy \(Ph.D.\); Geography](#)**

The doctoral degree in Geography includes the successful completion of the comprehensive examination, a thesis based on original research and coursework chosen in collaboration with the student's supervisor and/or research committee. The main elements of the Ph.D. are the thesis and comprehensive examination, a required Methods of Geographical Research course (3), and a minimum of two complementary (6) courses. The Ph.D. in Geography also includes several options.

[section 11.6.9: Doctor of Philosophy \(Ph.D.\); Geography — Environment](#)

The Environment Option consists of the thesis and comprehensive examination, required (9) courses from Geography and Environment, and complementary (9) courses in Environment or other fields recommended by the research committee and approved by the Environment Option Committee. The graduate option in Environment provides students with an appreciation of the role of science in informing decision-making in the environment sector, and the influence that political, socio-economic and ethical judgments have. Students who have been admitted through their home department or Faculty may apply for admission to the option. Option requirements are consistent across academic units. The option is coordinated by the MSE, in partnership with participating academic units.

[section 11.6.10: Doctor of Philosophy \(Ph.D.\); Geography — Gender and Women's Studies](#)

This doctoral option is an interdisciplinary program for students who meet the degree requirements in Geography and who wish to earn 9 credits of approved coursework on gender and women's studies and issues in feminist research and methods. It includes a thesis centrally related to gender and/or women's studies, the comprehensive examination, required (9) courses in Geography and Women's Studies and complementary (6) courses, one of which must pertain to gender and/or women's issues.

[section 11.6.11: Doctor of Philosophy \(Ph.D.\); Geography — Neotropical Environment](#)

The McGill-STRI Neotropical Environment Option (NEO) is a research-based option for Ph.D. students offered in association with several university departments, the McGill School of Environment, and the Smithsonian Tropical Research Institute (STRI-Panama) and includes the thesis, comprehensive examination, required (9) courses in Geography, Environment and Biology, and complementary courses (3) chosen from Geography, Agriculture Sciences, Biology, Sociology, Environment, and Political Science. NEO is aimed at students who wish to focus their graduate research on environmental issues relevant to the Neotropics and Latin American countries. NEO favors interdisciplinary approaches to research and learning through the participation of researchers from McGill and from STRI. Students will complete their research in Latin America and NEO's core and complementary courses will be taught in Panama. NEO's educational approach seeks to facilitate a broader understanding of tropical environmental issues and the development of skills relevant to working in the tropics.

11.6.3 Geography Admission Requirements and Application Procedures**11.6.3.1 Admission Requirements****M.A. and M.Sc. Degrees**

Attention is directed to the Graduate and Postdoctoral Studies admission regulations outlined in the *Admission* section of the *Graduate and Postdoctoral Studies General Information, Regulations and Research Guidelines* available at www.mcgill.ca/study.

Applicants not satisfying these conditions, but with primary undergraduate specialization in a cognate field, may be admitted to the M.A. or M.Sc. degree in Geography in certain circumstances. In general, they, and others who have deficiencies in their preparation but are otherwise judged to be acceptable, will be required to register for a qualifying program or to undertake additional courses.

Ph.D. Degree

Students who have completed a master's degree in Geography (with high standing) may be admitted at the Ph.D. 2 level.

On rare occasions, a student may be admitted to the Ph.D. degree without having first taken the master's degree. They, and others who have deficiencies in their preparation but are otherwise acceptable, will be required to register for a year of coursework and/or be required to take extra courses. The normal duration of a program, including field work where required, is three years.

Normally, the Department will restrict admission to the Ph.D. program to students prepared to work in one of the fields of human or physical geography in which specialized supervision is offered. These, which cover a wide range of systematic areas, are listed in documents available from the Department.

11.6.3.2 Application Procedures

Applicants will be considered upon receipt of:

1. application form;
2. official transcripts;
3. **two** letters of reference for master's; **three** for Ph.D.;
4. \$100 application fee;
5. statement of proposed research;
6. official TOEFL or IELTS score (when necessary).

Dates for Guaranteed Consideration

For dates for guaranteed consideration, please consult the following website: www.mcgill.ca/gradapplicants/programs. Then select the appropriate program. McGill's online application form for graduate program candidates is available at www.mcgill.ca/gradapplicants/apply.

11.6.4 Geography Faculty

Chair

T. R. Moore (*as of September 2011*)

Graduate Program Director

George Wenzel

Post-Retirement

S.H. Olson; M.A., Ph.D.(Johns Hop.)

Professors

P.G. Brown; M.A., Ph.D.(Col.) (*joint appt. with McGill School of Environment*)

T.R. Moore; Ph.D.(Aberd.)

N.T. Roulet; M.Sc.(Trent), Ph.D.(McM.) (*James McGill Professor*)

G. Wenzel; M.A.(Manit.), Ph.D.(McG.)

Associate Professors

G.L. Chmura; M.Sc.(Rhode Is.), Ph.D.(Louis. St.)

O.T. Coomes; M.A.(Tor.), Ph.D.(Wisc. Mad.)

B. Forest; A.B.(Chic.), Ph.D.(Calif.-LA)

M.F. Lapointe; M.Sc.(McG.), Ph.D.(Br. Col.)

T.C. Meredith; M.Sc., Dip.Cons.(Lond.), Ph.D.(Cant.)

W.H. Pollard; M.A.(Guelph), Ph.D.(Ott.)

Associate Professors

N.A. Ross; M.A.(Qu.), Ph.D.(McM.)

R. Sieber; M.P.A.(W. Mich.), Ph.D.(Rutg.) (*joint appt. with McGill School of Environment*)

I.B. Strachan; B.Sc.(Tor.), M.Sc., Ph.D.(Qu.) (*cross appt. with Natural Resource Sciences*)

J. Unruh; M.S.(Wisc.), Ph.D.(Ariz.)

Assistant Professors

L. Barrang-Ford; M.A.(Oxf.), Ph.D.(Guelph)

S. Breau; M.A.(Laval), Ph.D.(Calif.-LA)

B. Lehner; Ph.D.(Frankfurt)

J. Ford; Ph.D.(Guelph)

M. Kalacska; Ph.D.(Alta.)

N. Oswin; M.A.(Dal.), Ph.D.(Br. Col.)

G. Peterson; M.Sc., Ph.D.(Flor.)

N. Ramankutty; M.Sc.(Ill.), Ph.D.(Wisc.)

R. Sengupta; M.Sc., Ph.D.(Ill.)

S. Turner; M.Soc.Sc.(Waikato, N.Z.), Ph.D.(Hull, UK)

Adjunct Professors

R. Cooke, E. Levac

Course Lecturer

G. Akman

11.6.5 Master of Science (M.Sc.); Geography (Thesis) (45 credits)**Thesis Courses (30 credits)**

GEOG 698	(6)	Thesis Proposal
GEOG 699	(24)	Thesis Research

Required Course (3 credits)

GEOG 631	(3)	Methods of Geographical Research
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Complementary Courses (12 credits)

12 credits, four 3-credit courses at the 500 level or above selected according to guidelines of the Department. GEOG 696 can count among these complementary credits for students with an appropriate background.

11.6.6 Master of Science (M.Sc.); Geography (Thesis) — Environment (45 credits)

The Environment Option is offered in association with the McGill School of Environment and is composed of a thesis component (24 credits), required Geography and Environment courses (9 credits) and complementary Geography and Environment (12 credits) courses.

Thesis Courses (24 credits)

GEOG 697	(18)	Thesis Research (Environment Option)
GEOG 698	(6)	Thesis Proposal

Required Courses (9 credits)

ENVR 610	(3)	Foundations of Environmental Policy
ENVR 650	(1)	Environmental Seminar 1
ENVR 651	(1)	Environmental Seminar 2
ENVR 652	(1)	Environmental Seminar 3
GEOG 631	(3)	Methods of Geographical Research

Complementary Courses (12 credits)

9 credits of courses at the 500 level or higher selected according to guidelines of the Department. GEOG 696 can count among these complementary credits for students with an appropriate background.

3 credits, one course chosen from the following:

ENVR 519	(3)	Global Environmental Politics
ENVR 544	(3)	Environmental Measurement and Modelling
ENVR 580	(3)	Topics in Environment 3
ENVR 611	(3)	The Economy of Nature
ENVR 620	(3)	Environment and Health of Species
ENVR 622	(3)	Sustainable Landscapes
ENVR 630	(3)	Civilization and Environment
ENVR 680	(3)	Topics in Environment 4

or another course at the 500 level or higher recommended by the advisory committee and approved by the Environment Option Committee.

11.6.7 Master of Science (M.Sc.); Geography (Thesis) — Neotropical Environment (45 credits)

Participation in the MSE-Panama Symposium presentation in Montreal is also required.

Thesis Courses (30 credits)

GEOG 698	(6)	Thesis Proposal
GEOG 699	(24)	Thesis Research

Required Courses (9 credits)

BIOL 640	(3)	Tropical Biology and Conservation
ENVR 610	(3)	Foundations of Environmental Policy
GEOG 631	(3)	Methods of Geographical Research

Complementary Course (3 credits)

3 credits, one Geography graduate course. GEOG 696 can count among these complementary credits for students with an appropriate background.

Elective Course (3 credits)

3 credits, at the 500 level or higher, on environmental issues to be chosen in consultation with and approval by the student's supervisor AND the Neotropical Environment Options Director.

11.6.8 Doctor of Philosophy (Ph.D.); Geography

The doctoral degree in Geography includes the successful completion of the comprehensive examination, a thesis based on original research and coursework chosen in collaboration with the student's supervisor and/or research committee. The main elements of the Ph.D. are the thesis and comprehensive examination, a required Methods of Geographical Research course (3 credits), and a minimum of two complementary courses (6 credits). The Ph.D. in Geography also includes several options.

Thesis**Required Courses**

GEOG 631	(3)	Methods of Geographical Research
GEOG 700	(0)	Comprehensive Examination 1
GEOG 701	(0)	Comprehensive Examination 2
GEOG 702	(0)	Comprehensive Examination 3

Complementary Courses

Two courses at the 500, 600, or 700 level selected according to guidelines of the Department.

11.6.9 Doctor of Philosophy (Ph.D.); Geography — Environment

The option consists of the thesis and comprehensive examination, required courses (9 credits) from Geography and Environment and complementary courses (9 credits) in Environment or other fields recommended by the research committee and approved by the Environment Option Committee.

Thesis**Required Courses**

ENVR 610	(3)	Foundations of Environmental Policy
ENVR 650	(1)	Environmental Seminar 1
ENVR 651	(1)	Environmental Seminar 2
ENVR 652	(1)	Environmental Seminar 3
GEOG 631	(3)	Methods of Geographical Research

Complementary Courses

Two courses at the 500, 600, or 700 level selected according to guidelines of the Department.

One course chosen from the following:

ENVR 519	(3)	Global Environmental Politics
ENVR 544	(3)	Environmental Measurement and Modelling
ENVR 580	(3)	Topics in Environment 3
ENVR 611	(3)	The Economy of Nature
ENVR 620	(3)	Environment and Health of Species
ENVR 622	(3)	Sustainable Landscapes
ENVR 630	(3)	Civilization and Environment
ENVR 680	(3)	Topics in Environment 4

or another course at the 500 level or higher recommended by the advisory committee and approved by the Environment Option Committee.

Comprehensives

GEOG 700	(0)	Comprehensive Examination 1
GEOG 701	(0)	Comprehensive Examination 2
GEOG 702	(0)	Comprehensive Examination 3

11.6.10 Doctor of Philosophy (Ph.D.); Geography — Gender and Women's Studies

The graduate option in Gender and Women's Studies is an interdisciplinary program for students who meet the degree requirements in Geography who wish to earn 9 credits of approved coursework focusing on gender and women's studies, and issues in feminist research and methods. The student's doctoral thesis must be on a topic centrally relating to issues of gender and/or women's studies.

Thesis

Required Courses

GEOG 631	(3)	Methods of Geographical Research
GEOG 700	(0)	Comprehensive Examination 1
GEOG 701	(0)	Comprehensive Examination 2
GEOG 702	(0)	Comprehensive Examination 3
WMST 601	(3)	Feminist Theories and Methods
WMST 602	(3)	Feminist Research Symposium

Complementary Courses

Two substantive courses.

One of these two courses must be taken within the Department of Geography at the 500 level or above; one of the two courses must be on gender/women's issues at the 500, 600, or 700 level.

11.6.11 Doctor of Philosophy (Ph.D.); Geography — Neotropical Environment

The Neotropical Option is offered in association with several University departments, the McGill School of Environment, and the Smithsonian Tropical Research Institute (STRI-Panama) and includes the thesis, comprehensive examination, required courses (9 credits) in Geography, Environment and Biology, and complementary courses (3 credits) chosen from Geography, Agriculture Sciences, Biology, Sociology, Environment, and Political Science.

Participation in the MSE-Panama Symposium presentation in Montreal is also required.

Thesis

Required Courses

BIOL 640	(3)	Tropical Biology and Conservation
ENVR 610	(3)	Foundations of Environmental Policy
GEOG 631	(3)	Methods of Geographical Research
GEOG 700	(0)	Comprehensive Examination 1
GEOG 701	(0)	Comprehensive Examination 2
GEOG 702	(0)	Comprehensive Examination 3

Elective Courses

3 credits, at the 500 level or higher, on environmental issues to be chosen in consultation with and approved by the student's supervisor AND the Neotropical Environment Options Director.

11.7 Mathematics and Statistics

11.7.1 Location

Department of Mathematics and Statistics
Burnside Hall, Room 1005
805 Sherbrooke Street West
Montreal, QC H3A 2K6
Canada

Telephone: 514-398-3800
Fax: 514-398-3899
Email: grad.mathstat@mcgill.ca
Website: www.math.mcgill.ca

11.7.2 About Mathematics and Statistics

The Department of Mathematics and Statistics offers programs which can be focused on applied mathematics, pure mathematics, and statistics leading to master's degrees (M.A. or M.Sc.), with program options in Bioinformatics and in CSE (Computational Science and Engineering). The research groups are: Algebra Category, Theory and Logic, Geometric Group Theory, Algebraic Geometry, Discrete Mathematics, Mathematical Physics, Analysis and its Applications, Differential Geometry, Number Theory, Applied Mathematics, Differential Equations, and Probability & Statistics. In the basic master's programs students must choose between the Thesis option and the Non-Thesis option, which requires a project. The Bioinformatics and CSE options require a thesis. In addition to the Ph.D. program in Mathematics and Statistics, there is a Ph.D. option in Bioinformatics.

The Department website (www.math.mcgill.ca) provides extensive information on the Department and its facilities, including the research activities and the research interests of individual faculty members. It also provides detailed information, supplementary to the calendar, concerning our programs, admissions, funding of graduate students, thesis requirements, advice concerning the choice of courses, etc.

Students are urged to consult the website (www.math.uqam.ca/ISM) of the *Institut des Sciences Mathématiques* (ISM), which coordinates intermediate and advanced-level graduate courses among Montreal and Quebec universities. A list of courses available under the ISM auspices can be obtained from the ISM website. The ISM also offers fellowships and promotes a variety of joint academic activities greatly enhancing the mathematical environment in Montreal and in the province of Quebec.

Faculty of Arts > Academic Programs > Mathematics and Statistics > : Master of Arts (M.A.); Mathematics and Statistics (Thesis) (45 credits)

The Department of Mathematics and Statistics offers programs with concentrations in applied mathematics, pure mathematics, and statistics leading to the Master's degree (M.A.). The Thesis option requires a thesis (24 credits) and six approved courses of 3 or more credits each for a total of at least 21 credits.

Faculty of Arts > Academic Programs > Mathematics and Statistics > : Master of Arts (M.A.); Mathematics and Statistics (Non-Thesis) (45 credits)

The Department of Mathematics and Statistics offers programs with concentrations in applied mathematics, pure mathematics, and statistics leading to the Master's degree (M.A.). The Non-Thesis option requires a project (16 credits) and eight approved courses of 3 or more credits each for a total of at least 29 credits.

Faculty of Science > Academic Programs > Mathematics and Statistics > section 11.7.5: Master of Science (M.Sc.); Mathematics and Statistics (Thesis) (45 credits)

The Department of Mathematics and Statistics offers programs with concentrations in applied mathematics, pure mathematics, and statistics leading to the Master's degree (M.Sc.). The Thesis option requires a thesis (24 credits) and six approved courses of 3 or more credits each for a total of at least 21 credits.

Faculty of Science > Academic Programs > Mathematics and Statistics > section 11.7.6: Master of Science (M.Sc.); Mathematics and Statistics (Thesis) — Bioinformatics (48 credits)

Bioinformatics research lies at the intersection of biological/medical sciences and mathematics/computer science/engineering. The intention of the Bioinformatics option is to train students to become researchers in this interdisciplinary field. This includes the development of strategies for experimental design, the construction of tools to analyze datasets, the application of modelling techniques, the creation of tools for manipulating Bioinformatics data, the integration of biological databases, and the use of algorithms and statistics. Students successfully completing the Bioinformatics option at the M.Sc. level will be fluent in the concepts, language, approaches, and limitations of the field.

Faculty of Science > Academic Programs > Mathematics and Statistics > [section 11.7.7: Master of Science \(M.Sc.\); Mathematics and Statistics \(Thesis\) — Computational Science and Engineering \(47 credits\)](#)

CSE is a rapidly growing multidisciplinary area with connections to the sciences, engineering, mathematics and computer science. CSE focuses on the development of problem-solving methodologies and robust tools for the solution of scientific and engineering problems. Please visit our website for more information: www.cs.mcgill.ca/prospective-students/graduate/msc_cse_option

Faculty of Science > Academic Programs > Mathematics and Statistics > [section 11.7.8: Master of Science \(M.Sc.\); Mathematics and Statistics \(Non-Thesis\) \(45 credits\)](#)

The Department of Mathematics and Statistics offers programs with concentrations in applied mathematics, pure mathematics, and statistics leading to the Master's degree (M.Sc.). The Non-Thesis option requires a project (16 credits) and eight approved courses of 3 or more credits each for a total of at least 29 credits.

[section 11.7.9: Doctor of Philosophy \(Ph.D.\); Mathematics and Statistics](#)

The Department offers a course of studies leading to the Ph.D. degree. It differs substantially from the master's programs in that the student must write a thesis which makes an original contribution to knowledge. The thesis topic is chosen by the student in consultation with the research supervisor. The thesis must be examined and approved by an internal examiner (normally the research supervisor), an external examiner and the Oral Examination Committee. The student must make an oral defense of the thesis before that Committee. In addition, the student has to pass comprehensive examinations.

[section 11.7.10: Doctor of Philosophy \(Ph.D.\); Mathematics and Statistics — Bioinformatics](#)

Bioinformatics research lies at the intersection of biological/medical sciences and mathematics/computer science/engineering. The intention of the Bioinformatics option is to train students to become researchers in this interdisciplinary field. This includes the development of strategies for experimental design, the construction of tools to analyze datasets, the application of modelling techniques, the creation of tools for manipulating Bioinformatics data, the integration of biological databases, and the use of algorithms and statistics. Students successfully completing the Bioinformatics option at the Ph.D. level will be fluent in the concepts, language, approaches, and limitations of the field and have the capability of developing an independent Bioinformatics research program.

11.7.3 Mathematics and Statistics Admission Requirements and Application Procedures

11.7.3.1 Admission Requirements

In addition to the general Graduate and Postdoctoral Studies requirements, the Department requirements are as follows:

Master's Degree

The normal entrance requirement for the master's programs is a Canadian Honours degree or its equivalent, with high standing, in mathematics, or a closely related discipline in the case of applicants intending to concentrate in statistics or applied mathematics.

Applicants wishing to concentrate in pure mathematics should have a strong background in linear algebra, abstract algebra, and real and complex analysis.

Applicants wishing to concentrate in statistics should have a strong background in linear algebra and basic real analysis. A calculus-based course in probability and one in statistics are required, as well as some knowledge of computer programming. Some knowledge of numerical analysis and optimization is desirable.

Applicants wishing to concentrate in applied mathematics should have a strong background in most of the areas of linear algebra, analysis, differential equations, discrete mathematics, and numerical analysis. Some knowledge of computer programming is also desirable.

Students whose preparation is insufficient for the program they wish to enter may, exceptionally, be admitted to a Qualifying Year.

Ph.D. Degree

A master's degree with high standing is required, in addition to the requirements listed above for the master's program. Students may transfer directly from the master's program to the Ph.D. program under certain conditions. Students without a master's degree, but with exceptionally strong undergraduate training, may be admitted directly to Ph.D. 1.

11.7.3.2 Application Procedures

Online application is preferred and is available at www.mcgill.ca/gradapplicants/apply. Applicants unable to apply online can request a paper or PDF form from the Department.

Applications will be considered upon receipt of:

1. application form;
2. \$100 application fee;
3. two official or certified copies of transcripts;
4. two letters of reference on letterhead with original signatures;
5. one page statement outlining research interests and identifying possible supervisor;

6. TOEFL/IELTS test results (if applicable);
7. applicants in pure and applied mathematics should provide a GRE score report, if available.

For more details, especially concerning items 6 and 7, please consult the website at www.math.mcgill.ca/students/graduate/application.

All information is to be submitted directly to the Graduate Program Coordinator in the Department of Mathematics and Statistics.

Dates for Guaranteed Consideration

For dates for guaranteed consideration, please consult the following website: www.mcgill.ca/gradapplicants/programs. Then select the appropriate program.

McGill's online application form for graduate program candidates is available at www.mcgill.ca/gradapplicants/apply.

11.7.4 Mathematics and Statistics Faculty

Chair

Jacques Hurtubise

Graduate Program Director

Pengfei Guan

Emeritus Professors

Michael Barr; A.B., Ph.D.(Penn.) (*Peter Redpath Emeritus Professor of Pure Mathematics*)

William G. Brown; B.A.(Tor.), M.A.(Col.), Ph.D.(Tor.)

Marta Bunge; M.A., Ph.D.(Penn.)

Jal R. Choksi; B.A.(Cant.), Ph.D.(Manc.)

Kohur N. GowriSankaran; B.A., M.A.(Madr.), Ph.D.(Bom.)

Joachim Lambek; M.Sc., Ph.D.(McG.), F.R.S.C. (*Peter Redpath Emeritus Professor of Pure Mathematics*)

Michael Makkai; M.A., Ph.D.(Bud.) (*Peter Redpath Professor of Pure Mathematics*)

Sherwin Maslowe; B.Sc.(Wayne St.), M.Sc., Ph.D.(Calif.)

Arak M. Mathai; M.Sc.(Kerala), M.A., Ph.D.(Tor.)

William O.J. Moser; B.Sc.(Manit.), M.A.(Minn.), Ph.D.(Tor.)

Karl Peter Russell; Vor.Dip.(Hamburg), Ph.D.(Calif.)

Georg Schmidt; B.Sc.(Natal), M.Sc.(S. Af.), Ph.D.(Stan.)

Vanamamalai Seshadri; B.Sc, M.Sc.(Madr.), Ph.D.(Okl.)

George P.H. Styan; M.A., Ph.D.(Col.)

John C. Taylor; B.Sc.(Acad.), M.A.(Qu.), Ph.D.(McM.)

Professors

William J. Anderson; B.Eng., Ph.D.(McG.)

Henri Darmon; B.Sc.(McG.), Ph.D.(Harv.), F.R.S.C. (*James McGill Professor*)

Stephen W. Drury; M.A., Ph.D.(Cant.)

Christian Genest; BSp.Sc.(UQAC), M.Sc.(Vermont), Ph.D.(Br. Col.)

Eyal Z. Goren; B.A., M.S., Ph.D.(Hebrew)

Pengfei Guan; B.Sc.(Zhejiang), M.Sc., Ph.D.(Princ.) (*Canada Research Chair*)

Jacques C. Hurtubise; B.Sc.(Montr.), D.Phil.(Oxf.) F.R.S.C.

Dmitry Jakobson; B.Sc.(MIT), Ph.D.(Princ.) (*William Dawson Scholar*)

Vojkan Jaksic; B.S.(Belgrade), Ph.D.(Calif. Tech.)

Niky Kamran; B.Sc., M.Sc.(Bruxelles), Ph.D.(Wat.), F.R.S.C. (*James McGill Professor*)

Olga Kharlampovich; M.A.(Ural St.), Ph.D.(Lenin.), Dr. of Sc.(Steklov Inst.)

Professors

Charles Roth; M.Sc.(McG.), Ph.D.(Hebrew)
 F. Bruce Shepherd; B.Sc.(Vic., Tor.), M.Sc., Ph.D.(Wat.) (*James McGill Professor*)
 David A. Stephens; B.Sc., Ph.D.(Nott.)
 John A. Toth; B.Sc., M.Sc.(McM.), Ph.D.(MIT) (*William Dawson Scholar*)
 Daniel T. Wise; B.A.(Yeshiva), Ph.D.(Princ.)
 David Wolfson; B.Sc., M.Sc.(Natal), Ph.D.(Purd.)
 Jian-Ju Xu; B.Sc., M.Sc.(Beijing), M.Sc., Ph.D.(Rensselaer Poly.)

Assistant Professors

Louigi Addario-Berry; B.Sc., M.Sc., Ph.D.(McG.)
 Jayce Getz; A.B.(Harv.), Ph.D.(Wisc.)
 Abbas Khalili; Ph.D.(Wat.)
 Jean-Christophe Nave; B.Sc., Ph.D.(Calif., Santa Barbara)
 Johanna Neslehova; B.Sc., M.Sc.(Hamburg), Ph.D.(Oldenburg)
 Gantumur Tsogtgerel; Ph.D.(Utrecht)
 Johannes Walcher; Dip, Ph.D.(ETH Zurich)

Associate Professors

Masoud Asgharian; B.Sc.(Shahid Beheshti), M.Sc., Ph.D.(McG)
 Peter Bartello; B.Sc.(Tor.), M.Sc., Ph.D.(McG.) (*joint appt. with Atmospheric and Oceanic Sciences*)
 Rustum Choksi; B.Sc.(Tor.) S.M., Ph.D.(Brown)
 Antony R. Humphries; B.A., M.A.(Camb.), Ph.D.(Bath)
 Wilbur Jonsson; M.Sc.(Manit.), Dr.Rer.Nat.(Tübingen)
 Ivo Klemes; B.Sc.(Tor.), Ph.D.(Calif. Tech.)
 James G. Loveys; B.A.(St. Mary's), M.Sc., Ph.D.(S. Fraser)
 Neville G.F. Sancho; B.Sc., Ph.D.(Belf.)
 Robert Seiringer; Dip, Ph.D.(Vienna)
 Russell Steele; B.S., M.S.(Carn. Mell), Ph.D.(Wash.)
 Alain Vandal; B.Sc., M.Sc.(McG.), Ph.D.(Auck.)
 Adrian Vetta; B.Sc., M.Sc.(LSE), Ph.D.(MIT) (*joint appt. with Computer Science*)

Associate Members

Xiao-Wen Chang (*Computer Science*), Luc P. Devroye (*Computer Science*), Pierre R.L. Dutilleul (*Plant Science*), Eliot Fried (*Mechanical Engineering*), Leon Glass (*Physiology*), George Haller (*Engineering*), James A. Hanley (*Epidemiology & Biostatistics*), Lawrence Joseph (*Epidemiology & Biostatistics*), Michael Mackey (*Physiology*), Lawrence A. Mysak (*AOS*), Christopher Paige (*Computer Science*), Prakash Panangaden (*Computer Science*), Robert Platt (*Epidemiology & Biostatistics*), James O. Ramsay (*Psychology*), George Alexander Whitmore (*Management*), Christina Wolfson (*Epidemiology & Biostatistics*)

Adjunct Professors

Vasek Chvatal; Ph.D.(Wat.)
 Donald A. Dawson; B.Sc., M.Sc.(McG.), Ph.D.(MIT)
 Martin Gander; M.S.(ETH Zurich), M.S., Ph.D.(Stan.)
 Andrew Granville; B.A., CASM(Camb.), Ph.D.(Qu.)
 Adrian Iovita; B.S.(Bucharest), Ph.D.(Boston)
 Ming Mei; B.Sc., M.Sc.(Jiangxi Normal Uni.), Ph.D.(Kanazawa)

Adjunct Professors

Alexei Miasnikov; M.Sc.(Novosibirsk), Ph.D., Dr. of Sc.(Lenin.)

M. Ram Murty; B.Sc.(Car.), Ph.D.(MIT), F.R.S.C.

Vladimir Remeslennikov; M.Sc.(Perm, Russia), Ph.D.(Novosibirsk)

Robert A. Seely; B.Sc.(McG.), Ph.D.(Cant.)

Faculty Lecturers

José A. Correa; M.Sc.(Wat.), Ph.D.(Car.)

H. Hahn; Ph.D.(Ill.-Urbana-Champaign)

Axel Hundemer; M.Sc., Ph.D.(Munich)

Armel Djivede Kelome; M.Sc.(Benin), M.Sc.(McG.), Ph.D.(Georgia Tech.)

11.7.5 Master of Science (M.Sc.); Mathematics and Statistics (Thesis) (45 credits)**Thesis Courses (24 credits)**

MATH 600	(6)	Master's Thesis Research 1
MATH 601	(6)	Master's Thesis Research 2
MATH 604	(6)	Master's Thesis Research 3
MATH 605	(6)	Master's Thesis Research 4

Complementary Courses (21 credits)

At least six approved graduate courses, at the 500, 600, or 700 level, of 3 or more credits each.

11.7.6 Master of Science (M.Sc.); Mathematics and Statistics (Thesis) — Bioinformatics (48 credits)**Thesis Courses (24 credits)**

MATH 600	(6)	Master's Thesis Research 1
MATH 601	(6)	Master's Thesis Research 2
MATH 604	(6)	Master's Thesis Research 3
MATH 605	(6)	Master's Thesis Research 4

Required Course (3 credits)

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar

Complementary Courses (21 credits)

6 credits from the following:

BINF 621	(3)	Bioinformatics: Molecular Biology
BMDE 652	(3)	Bioinformatics: Proteomics
BTEC 555	(3)	Structural Bioinformatics
COMP 618	(3)	Bioinformatics: Functional Genomics
PHGY 603	(3)	Systems Biology and Biophysics

15 credits of approved courses at the 500 or 600 level. Additional courses may be required at the discretion of the candidate's supervisory committee.

11.7.7 Master of Science (M.Sc.); Mathematics and Statistics (Thesis) — Computational Science and Engineering (47 credits)

Thesis Courses (24 credits)

MATH 600	(6)	Master's Thesis Research 1
MATH 601	(6)	Master's Thesis Research 2
MATH 604	(6)	Master's Thesis Research 3
MATH 605	(6)	Master's Thesis Research 4

Required Course

(1 credit)

MATH 669D1	(.5)	CSE Seminar
MATH 669D2	(.5)	CSE Seminar

Complementary Courses (22 credits)

(minimum 22 credits)

Two courses from List A, two courses from List B, and the remaining credits to be chosen from graduate (500- or 600-level) courses in the Department of Mathematics and Statistics. Two complementary courses must be taken outside the Department of Mathematics and Statistics.

List A - Scientific Computing Courses:

CIVE 602	(4)	Finite Element Analysis
COMP 522	(4)	Modelling and Simulation
COMP 540	(3)	Matrix Computations
COMP 566	(3)	Discrete Optimization 1
MATH 578	(4)	Numerical Analysis 1
MATH 579	(4)	Numerical Differential Equations

List B - Applications and Specialized Methods Courses:

ATOC 512	(3)	Atmospheric and Oceanic Dynamics
ATOC 513	(3)	Waves and Stability
ATOC 515	(3)	Turbulence in Atmosphere and Oceans
CIVE 572	(3)	Computational Hydraulics
CIVE 603	(4)	Structural Dynamics
CIVE 613	(4)	Numerical Methods: Structural Engineering
COMP 505	(3)	Advanced Computer Architecture
COMP 557	(3)	Fundamentals of Computer Graphics
COMP 558	(3)	Fundamentals of Computer Vision
COMP 567	(3)	Discrete Optimization 2
COMP 621	(4)	Program Analysis and Transformations
COMP 642	(4)	Numerical Estimation Methods
COMP 767	(4)	Advanced Topics: Applications 2
ECSE 507	(3)	Optimization and Optimal Control

ECSE 532	(3)	Computer Graphics
ECSE 547	(3)	Finite Elements in Electrical Engineering
ECSE 549	(3)	Expert Systems in Electrical Design
MATH 555	(4)	Fluid Dynamics
MATH 560	(4)	Optimization
MATH 651	(4)	Asymptotic Expansion and Perturbation Methods
MATH 761	(4)	Topics in Applied Mathematics 1
MECH 533	(3)	Subsonic Aerodynamics
MECH 537	(3)	High-Speed Aerodynamics
MECH 538	(3)	Unsteady Aerodynamics
MECH 539	(3)	Computational Aerodynamics
MECH 541	(3)	Kinematic Synthesis
MECH 545	(3)	Advanced Stress Analysis
MECH 572	(3)	Introduction to Robotics
MECH 573	(3)	Mechanics of Robotic Systems
MECH 576	(3)	Geometry in Mechanics
MECH 577	(3)	Optimum Design
MECH 610	(4)	Fundamentals of Fluid Dynamics
MECH 620	(4)	Advanced Computational Aerodynamics
MECH 632	(4)	Theory of Elasticity
MECH 642	(4)	Advanced Dynamics
MECH 650	(4)	Fundamentals of Heat Transfer
MECH 654	(4)	Compt. Fluid Flow and Heat Transfer

11.7.8 Master of Science (M.Sc.); Mathematics and Statistics (Non-Thesis) (45 credits)

Research Project (16 credits)

MATH 640	(8)	Project 1
MATH 641	(8)	Project 2

Complementary Courses (29 credits)

At least eight approved graduate courses, at the 500, 600, or 700 level, of 3 or more credits each.

11.7.9 Doctor of Philosophy (Ph.D.); Mathematics and Statistics

Thesis

Required Courses

MATH 700	(0)	Ph.D. Preliminary Examination Part A
MATH 701	(0)	Ph.D. Preliminary Examination Part B

Complementary Courses

Twelve approved graduate courses, at the 500, 600, or 700 level, of 3 or more credits each.

11.7.10 Doctor of Philosophy (Ph.D.); Mathematics and Statistics — Bioinformatics**Thesis****Required Courses (3 credits)**

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
MATH 700	(0)	Ph.D. Preliminary Examination Part A
MATH 701	(0)	Ph.D. Preliminary Examination Part B

Complementary Courses (6 credits)

(3-6 credits)

The twelve one-semester complementary courses for the Ph.D. degree must include at least two from the list below, unless a student has completed the M.Sc.-level option in Bioinformatics, in which case only one course from the list below must be chosen:

BINF 621	(3)	Bioinformatics: Molecular Biology
BMDE 652	(3)	Bioinformatics: Proteomics
BTEC 555	(3)	Structural Bioinformatics
COMP 618	(3)	Bioinformatics: Functional Genomics
PHGY 603	(3)	Systems Biology and Biophysics

11.8 Physics**11.8.1 Location**

Department of Physics
Ernest Rutherford Physics Building
3600 University Street
Montreal, QC H3A 2T8
Canada

Telephone: 514-398-6485 (Graduate Information)

Fax: 514-398-8434

Email: graduate.physics@mcgill.ca

Website: www.physics.mcgill.ca

11.8.2 About Physics

The Department of Physics currently has a faculty of more than 35 members which includes several holders of Canada Research Chairs and many other prestigious named chairs. Additionally we host an impressive number of postdoctoral fellows and research associates and run one of the largest and most vibrant graduate programs in North America. The graduate student enrolment is currently about 140.

Faculty members in the Department of Physics are recognized internationally for their excellence. Our members have received national and international prizes and fellowships including Les Prix Du Quebec, Steacie Prize, Sloan Fellowships, and others too many to list here. They are also in constant demand as reviewers and referees. Students who earn advanced degrees from the Department of Physics will not only get an excellent education, they will also receive valuable guidance and network contacts to help with subsequent career steps.

The Department offers full M.Sc. and Ph.D. degree programs in a wide range of disciplines including astrophysics, atmospheric physics, bio-physics, condensed-matter physics, high-energy physics, laser spectroscopy, material physics, non-linear dynamics, nuclear physics, statistical physics, and medical-radiation physics.

Although most of the teaching and research facilities are located in the Ernest Rutherford Physics Building, the Department has space and research facilities in the Wong Materials Science Centre, adjacent to the Rutherford Building on McGill's lower campus. Our groups also conduct research at laboratories around the world including Argonne, CERN, FermiLab, SLAC and TRIUMF.

Departmental researchers enjoy technical support in the areas of engineering, electronics, and precision machining. The Department maintains an excellent conventional machine shop as well as the McGill Nanotools-Microfab facility. Most of the scientific computing is done with an extensive in-house network of powerful workstations and several Beowulf clusters.

Remote access to supercomputing sites in Canada and the United States is also possible including the CLUMEQ super-computing facility which is a part of the nationwide network of High Performance Computing Installations in Quebec.

The Department of Physics currently guarantees financial support of \$19,200 per year for every graduate student. This minimum level of support can be supplemented by winning one of McGill's large number of in-house scholarships, which range in value from \$2,500 to \$25,000 per year. For details see www.physics.mcgill.ca/grads/finance.html.

Graduate students in the Department of Physics come from many different countries and cultures from all over the world, providing a stimulating cosmopolitan atmosphere in the department. This, coupled with the unique opportunities afforded by the city of Montreal, guarantees a quality of life that is second to none among Canadian universities. For graduate admission and application information, please visit www.physics.mcgill.ca/grads/application.html.

Fields of Research –

High Energy Physics

Theoretical: The McGill high energy theorists have interests in a wide range of areas within quantum field theory, string theory, quantum gravity, and cosmology. Research areas of the high energy theory faculty include applications of quantum field theory techniques to relativistic heavy ion collisions, baryogenesis, superstring cosmology, theory of cosmological perturbations, black hole physics, supergravity, three dimensional gravity, and various topics related to the physics and mathematics of superstring theory. The high energy theorists have close connections to the nuclear theory group, the astrophysics group, the high energy experimentalists, and to members of the Mathematics department.

Experimental: The experimental high energy physics group is engaged in a number of experiments at the research frontiers of the field, both in subatomic physics and in high energy astrophysics. These include:

- Electron-positron collisions: A group works on the BaBar experiment at SLAC and R&D for the proposed SuperB experiment at LNF in Italy, with specific interest in CKM matrix elements and physics beyond the Standard Model through studies of rare decays, and on R&D for a future International Linear Collider, with interest in calorimeter development.
- Electron-proton collisions: A group is studying high-energy lepton-quark interactions using data from the ZEUS experiment at DESY in Hamburg, with interest in deep inelastic scattering and flavour production.
- Hadron-hadron collisions: CDF and Dzero groups employ Fermilab's energy frontier Tevatron proton-antiproton accelerator to study top and bottom quarks and search for the Higgs boson. A group is also involved in major contributions to the next energy frontier at CERN's LHC, with work on the High Level Trigger for the ATLAS experiment.
- High-energy particle astrophysics: ground-based gamma-ray astronomy using the newly-commissioned VERITAS telescope array and development of the next-generation detector.

Students at the M.Sc. and Ph.D. levels are offered a strong program of research in a challenging and rapidly advancing field. Short term master's projects are based mainly on instrumentation or data analysis conducted on campus, while Ph.D. research may involve an extended stay at one of the world's major research laboratories.

Nuclear Physics

Theoretical: Current research programs include transport equations for heavy ion collisions at intermediate energy; nuclear equation of state from heavy ion collisions; fragmentation at intermediate energy; electromagnetic probes in relativistic heavy ion collisions; effective Lagrangians for hadronic systems at finite temperature; Quark-Gluon Plasma, QCD.

Experimental: Current research programs in experimental nuclear physics at McGill are focused on two main axes:

- The study of heavy-ion reactions at relativistic energies to determine the properties of nuclear matter at high temperatures and density. This program is being performed at the Brookhaven National Laboratory, and at the Large Hadron Collider facility at CERN.
- The study of ground state properties of unstable nuclei using laser spectroscopy techniques and ion traps. This work is being carried out using the Canadian Penning trap facility at the Argonne National Laboratory and at the accelerator ISOLDE (CERN), and the ISAC facility at TRIUMF.

Furthermore, the Nuclear Physics Group has an active in-house research program that applies the ion trap and laser techniques to the detection of trace quantities of material and contaminants, and to ion spectroscopy.

Condensed Matter Physics

Theoretical: Current research programs involve the nonequilibrium, ab-initio modelling of molecular and nanoelectronic systems and devices; the study of quantum effects in interacting mesoscopic electron systems; nonequilibrium phenomena in extended systems; and applications of statistical mechanics to problems in biophysics.

Experimental: Current research programs involve the study of the time evolution of non-equilibrium systems via x-ray diffraction, fundamental quantum properties of strongly-correlated systems at temperatures very near absolute zero, macromolecular interactions in living cells using single photon and two-photon imaging, molecular electronics and nanoelectronic systems by scanning probe microscopy, dynamics and mechanical properties of soft matter systems and spatial organization and dynamics in living cells, mechanical behavior of very small systems by high-resolution force microscopy, electronic properties which emerge at the limits of miniaturization and quantum computing, and nuclear methods to study interactions in magnetic materials that lead to exotic magnetic ordering behaviour. This includes studies of novel materials such as carbon nanotubes, graphene, unconventional superconductors, quantum dots, heterostructures, amorphous systems, and spin glasses.

Astrophysics

Research in the astrophysics group covers a wide range of topics including cosmology, galaxy formation, high energy astrophysics, and extrasolar planets. This involves observations at all wavelengths, from gamma rays and X-rays to sub-mm, infrared and radio, using international observatories in space and

on the ground. Experimental groups at McGill are involved in development and operation of ground-based high energy gamma-ray observatories, and cosmic microwave background experiments. Theoretical work includes studies of how astrophysics and observational cosmology can experimentally determine the most important properties of dark matter and dark energy, studies of the diverse physics of neutron stars, and extrasolar planet formation.

Nonlinear Variability in Geophysics

This group studies nonlinear dynamical processes in the atmosphere and other geophysical systems, especially those associated with turbulent, chaotic, and extremely variable behaviour. Emphasis is placed on multifractal analysis and modelling as well as the development of new theories and techniques covering wide ranges of scale in time and space. Data from a variety of in situ and remotely sensed sources are used. This includes satellite data of the Earth's atmosphere and surface as well as high quality precipitation data from the McGill Radar Weather Observatory.

section 11.8.5: Master of Science (M.Sc.); Physics (Thesis) (45 credits)

McGill graduates have gone on to successful careers in academia and industry as well as in government. Our former students teach in colleges and universities world-wide and others have research positions in governmental and industrial laboratories. Still others work in the financial sector or as entrepreneurs making good use of the analytic and quantitative problem-solving skills acquired during their education as physicists. Consult the Department for more information about this program.

section 11.8.6: Doctor of Philosophy (Ph.D.); Physics

McGill graduates have gone on to successful careers in academia and industry as well as in government. Our former students teach in colleges and universities world-wide and others have research positions in governmental and industrial laboratories. Still others work in the financial sector or as entrepreneurs making good use of the analytic and quantitative problem-solving skills acquired during their education as physicists. Consult the Department for more information about this program.

11.8.3 Physics Admission Requirements and Application Procedures

11.8.3.1 Admission Requirements

M.Sc.

Normal requirement is a B.Sc. in Physics or equivalent, with high standing.

Ph.D.

Normal requirement is an M.Sc. in Physics or equivalent. Candidates in good standing may have the option of transferring into this program from the M.Sc. program after one year.

11.8.3.2 Application Procedures

An application package is available upon request. It includes a brochure with a detailed description of the research activities in the Department. Inquiries should be addressed to the Graduate Coordinator (Lauren Kay, Department of Physics). Please also check our website (www.physics.mcgill.ca) for information about our graduate program and to apply online.

Applications will be considered upon receipt of:

1. application form;
2. two official transcripts;
3. two letters of reference written on institutional letterhead paper;
4. \$100 application fee;
5. test result: TOEFL (minimum score 550 on the paper-based test or 86 on the Internet-based test, with each component score not less than 20) or IELTS (minimum score 6.5).

All information is to be submitted to the Graduate Coordinator.

Dates for Guaranteed Consideration

For dates for guaranteed consideration, please consult the following website: www.mcgill.ca/gradapplicants/programs. Then select the appropriate program.

Financial Assistance

Financial assistance will be offered to students in the form of a bursary, teaching, and research assistantships. For new students, financial support will be offered at the time of acceptance. Forms are given and filled out on registration day.

11.8.4 Physics Faculty

Chair

C. Gale

Director of Graduate Studies

S. Jeon

Emeritus ProfessorsS. Das Gupta; B.Sc., M.Sc.(Calc.), Ph.D.(McM.) (*Macdonald Emeritus Professor of Physics*)

N.B. DeTakaesy; B.Sc., M.Sc.(Montr.), Ph.D.(McG.)

C.S. Lam; B.Sc.(McG.), Ph.D.(MIT)

M.P. Langleben; B.Sc., M.Sc., Ph.D.(McG.), F.R.S.C.

S.K. Mark; B.Sc., M.Sc., Ph.D.(McG.) (*Macdonald Emeritus Professor of Physics*)D.G. Stairs; B.Sc., M.Sc.(Qu.), Ph.D.(Harv.) (*Macdonald Emeritus Professor of Physics*)

J.O. Strom-Olsen; B.A., M.S., Ph.D.(Camb.)

M.J. Zuckermann; M.A., D.Phil.(Oxf.), F.R.S.C.

Post-Retirement Professors

J. Barrette; M.Sc., Ph.D.(Montr.)

J.E. Crawford; B.A., M.A.(Tor.), Ph.D.(McG.)

R. Harris; B.A.(Oxf.), Ph.D.(Sus.)

J.K.P. Lee; B.Eng., M.Sc., Ph.D.(McG.)

R.B. Moore; B.Eng., M.Sc., Ph.D.(McG.)

P.M. Patel; B.Sc., M.Sc.(Manc.), Ph.D.(Harv.)

ProfessorsJ. Brandenberger; Dip.(ETH), A.M., Ph.D.(Harv.) (*Canada Research Chair*)

J. Cline; B.S.(Harvey Mudd), M.Sc., Ph.D.(Cal. Tech.)

F. Corriveau; B.Sc.(Laval), M.Sc.(Br. Col.), Ph.D.(ETH)

C. Gale; B.Sc.(Ott.), M.Sc., Ph.D.(McG.) (*James McGill Professor*)M. Grant; B.Sc.(PEI), M.Sc., Ph.D.(Tor.), F.R.S.C. (*James McGill Professor*)P. Grutter; Dip., Ph.D.(Basel), F.R.S.C. (*James McGill Professor*)H. Guo; B.Sc.(Sichuan), M.Sc., Ph.D.(Pitt.), F.R.S.C. (*James McGill Professor*)D. Hanna; B.Sc.(McG.), A.M., Ph.D.(Harv.) (*Macdonald Professor of Physics*)V. Kaspi; B.Sc.(McG.), M.A., Ph.D.(Princ.), F.R.S.C. (*Canada Research Chair*) (*Lorne Trottier Chair in Astrophysics and Cosmology*)

S. Lovejoy; B.Sc.(Camb.), Ph.D.(McG.)

K. Ragan; B.Sc.(Alta.), Ph.D.(Geneva) (*Macdonald Professor of Physics*)

D.H. Ryan; B.A., Ph.D.(Dub.)

M. Sutton; B.Sc., M.Sc., Ph.D.(Tor.) (*Rutherford Chair in Physics*)**Associate Professors**A. Clerk; B.Sc.(Tor.), Ph.D.(C' nell) (*Canada Research Chair*)

A. Cumming; B.A.(Camb.), Ph.D.(Calif., Berk.)

K. Dasgupta; M.Sc., Ph.D.(TIFR)

G. Gervais; B.Sc.(Sher.), M.Sc.(McM.), Ph.D.(N' western)

M. Hilke; B.Sc., M.Sc., Ph.D.(Geneva)

G. Holder; B.Sc., M.Sc.(Qu.), Ph.D.(Chic.) (*Canada Research Chair*)

S. Jeon; B.Sc.(Seoul National), M.Sc., Ph.D.(Wash.)

Associate Professors

G. Moore; B.S.(Harvey Mudd), Ph.D.(Princ.)
 S. Robertson; B.Sc.(Calg.), M.Sc., Ph.D.(Vic., BC)
 R. Rutledge; B.Sc.(USC), Ph.D.(MIT)
 B. Vachon; B.Sc.(McG.), Ph.D.(Vic., BC) (*Canada Research Chair*)
 A. Warburton; B.Sc.(Vic., BC), M.Sc., Ph.D.(Tor.)
 P. Wiseman; B.Sc.(St. FX), Ph.D.(W. Ont.) (*joint appt. with Chemistry*)

Assistant Professors

B. Coish; Ph.D.(Basel)
 D. Cooke; Ph.D.(Alta.)
 M. Dobbs; B.Sc.(McG.), Ph.D.(Vic., BC) (*Canada Research Chair*)
 P. Francois; Ph.D.(Paris VII)
 A. Maloney; B.S., M.S.(Stan.), Ph.D.(Harv.) (*William Dawson Scholar*)
 T. Pereg-Barnea; Ph.D.(Br. Col.)
 W. Reisner; B.A.(Reed), Ph.D.(Princ.)
 B. Siwick; B.Sc., M.Sc., Ph.D.(Tor.) (*Canada Research Chair*) (*joint appt. with Chemistry*)
 J. Walcher; Dip., Ph.D.(ETH) (*joint appt. with Mathematics*)
 T. Webb; B.Sc.(Tor.), M.Sc.(McM.), Ph.D.(Tor.)

Lecturers

Z. Altounian, F. Buchinger

Associate Members

M. Chacron (*Physiology*), K. Gehring (*Biochemistry*), P. Hayden (*Computer Science*), M. Mackey (*Physiology*), Z. Mi (*Electrical and Computer Engineering*), J. Nadeau (*Biomedical Engineering*), E. Podgorsak (*Medical Physics*), D. Rassier (*Kinesiology*), D. Ronis (*Chemistry*), J. Seuntjens (*Medical Physics*), T. Szkopek (*Electrical and Computer Engineering*), F. Verhaegen (*Medical Physics*)

Adjunct Professors

G. Austing, J. Cadogan, F. Drolet, M. Dubé, M. Grisar, L. Piché, N. Provatas, A. Sachrajda

11.8.5 Master of Science (M.Sc.); Physics (Thesis) (45 credits)**Thesis Courses (30 credits)**

PHYS 690	(24)	M.Sc. Thesis
PHYS 692	(6)	Thesis Project

Complementary Courses (15 credits)

12 credits at the 500, 600, or 700 level.

3 credits at the 600 or 700 level:

Students with an appropriate background may request Departmental permission to substitute up to 6 credits chosen from the following courses:

PHYS 691	(3)	Thesis Preparation
PHYS 693	(3)	M.Sc. Research

Students must also successfully complete all the other normal requirements of Graduate and Postdoctoral Studies.

11.8.6 Doctor of Philosophy (Ph.D.); Physics

Thesis

Required Courses

Candidates must successfully complete two 3-credit graduate courses at the 600 level or above; one of these courses should be in the candidate's area of specialization. If the candidate completed two or more courses at the 600 level as part of the McGill Physics M.Sc. program, then one of these courses may be used as a substitute for one of the required courses. In all cases, candidates must also pass the Ph.D. preliminary examination (PHYS 700).

PHYS 700 (0) Preliminary Ph.D. Examination

11.9 Psychology

11.9.1 Location

Stewart Biological Sciences Building, Room W8/33A
1205 Dr. Penfield Avenue
Montreal, QC H3A 1B1
Canada

Telephone: 514-398-6124 / 514-398-6100
Fax: 514-398-4896
Email: gradsec@ego.psych.mcgill.ca
Website: www.psych.mcgill.ca

11.9.2 About Psychology

The aim of the Experimental program is to provide students with an environment in which they are free to develop skills and expertise that will serve during a professional career of teaching and research as a psychologist. Coursework and other requirements are at a minimum. Success in the program depends on the student's ability to organize unscheduled time for self education. Continuous involvement in research planning and execution is considered a very important component of the student's activities. Students are normally expected to do both master's and doctoral study.

M.A. and M.Sc. degrees may be awarded in Experimental Psychology, but only as a stage - students undergo formal evaluation in the Ph.D. program.

The Clinical program adheres to the scientist practitioner model and as such is designed to train students for careers in university teaching or clinical research, and for service careers – working with children or adults in a hospital, clinical, or educational setting. Most of our clinical graduates combine service and research roles. While there are necessarily many more course requirements than in the Experimental program, the emphasis is again on research training. There is no master's program in Clinical Psychology; students are expected to complete the full program leading to a doctoral degree.

Research interests of members of the Psychology Department include animal learning, behavioural neuroscience, clinical, child development, cognitive science, health psychology, psychology of language, perception, quantitative psychology, social psychology, and personality psychology.

Facilities for advanced research in a variety of fields are available within the Department itself. In addition, arrangements exist with the Departments of Psychology at the Montreal Neurological Institute, Allan Memorial Institute, Douglas Hospital, Jewish General Hospital, Montreal Children's Hospital, and the Montreal General Hospital, to permit graduate students to undertake research in a hospital setting.

For full information about all programs and financial aid, and for application forms, contact the Graduate Program Coordinator, Department of Psychology.

Ph.D. Option in Language Acquisition (LAP)

Information about this option is available from the Department and at: <http://ego.psych.mcgill.ca/lap.html>.

Ph.D. Option in Psychosocial Oncology (PSO)

A cross-disciplinary option in Psychosocial Oncology is offered within the existing Ph.D. program in Psychology. Information about this option is available from the Department and at: www.medicine.mcgill.ca/oncology/programs/programs_psychosocialoncology.asp.

Faculty of Arts > Academic Programs > Psychology > : Master of Arts (M.A.); Psychology (Thesis) (45 credits)

Candidates must demonstrate a sound knowledge of modern psychological theory, of its historical development, and of the logic of statistical methods as used in psychological research. Candidates will be expected to have an understanding of the main lines of current work in areas other than their own field of specialization.

Faculty of Science > Academic Programs > Psychology > [section 11.9.5: Master of Science \(M.Sc.\); Psychology \(Thesis\) \(45 credits\)](#)

Candidates must demonstrate a sound knowledge of modern psychological theory, of its historical development, and of the logic of statistical methods as used in psychological research. Candidates will be expected to have an understanding of the main lines of current work in areas other than their own field of specialization.

[section 11.9.6: Doctor of Philosophy \(Ph.D.\); Psychology](#)

Please contact the Department for more information about this program.

[section 11.9.7: Doctor of Philosophy \(Ph.D.\); Psychology — Language Acquisition](#)

This unique interdisciplinary program focuses on the scientific exploration of language acquisition by different kinds of learners in diverse contexts. Students in the Language Acquisition Program are introduced to theoretical and methodological issues on language acquisition from the perspectives of cognitive neuroscience, theoretical linguistics, psycholinguistics, education, communication sciences and disorders, and neuropsychology.

[section 11.9.8: Doctor of Philosophy \(Ph.D.\); Psychology — Psychosocial Oncology](#)

The Department of Oncology, in conjunction with the School of Nursing, the Department of Psychology and the School of Social Work, has developed the cross-disciplinary Psychosocial Oncology Option (PSOO). This option is open to doctoral students in the School of Nursing and in the Department of Psychology who are interested in broadening their knowledge of psychosocial issues in oncology.

11.9.3 Psychology Admission Requirements and Application Procedures**11.9.3.1 Admission Requirements**

Admission to the graduate program depends on an evaluation of students' research interests and their aptitude for original contributions to knowledge and, if applicable, for professional contributions in the applied field.

The usual requirement for admission is an honours or majors degree (B.A. or B.Sc.) in Psychology. This usually includes an introductory course plus twelve courses in psychology (each equivalent to three term hours). Courses in experimental psychology, the theoretical development of modern ideas in psychology, and statistical methods as applied to psychological problems (equivalent to an introductory course) are essential. Applicants' knowledge of relevant biological, physical, and social sciences is considered.

Applicants who hold a bachelor's degree but who have not met these usual requirements should consult the Graduate Program Director to determine which (if any) courses must be completed before an application can be considered. Students with insufficient preparation for graduate work may register as Special students (undergraduate level) in the Faculty of Arts or the Faculty of Science, and follow an appropriate course of study. Such registration requires the permission of the Department but carries no advantage with respect to a student's eventual admission to graduate studies.

11.9.3.2 Application Procedures**Dates for Guaranteed Consideration**

For dates for guaranteed consideration, please consult the following website: www.mcgill.ca/gradapplicants/programs. Then select the appropriate program.

Please take note that we no longer distribute paper applications. The following items must be submitted to apply to our program:

1. **web application**, available at www.mcgill.ca/gradapplicants/apply;
2. application fee of CAD\$100, by credit card only;
3. a completed Psychology **summary sheet**;
4. transcripts – two official copies (sent directly from your university);
5. letters of recommendation – three letters of recommendation on institution letterhead with original signatures must be provided. There are no forms for these letters. Please remind your recommenders to include your FULL NAME on all letters;
6. Graduate Record Examination (GRE) – official reports and a photocopy of scores on the General and Subject GRE. Applicants with little or no background in psychology are not required to submit scores on the subject component of the GRE. We highly recommend to all other students to submit scores on the subject component of the GRE. If you did not take the GRE subject test and are accepted into the program, you may be asked to take it in April. All applicants must take the GRE if they have studied in an English-speaking university. Canadians who have not studied in an English institution are not required to submit GRE. Applicants to graduate studies whose mother tongue is not English and who have not completed an undergraduate or graduate degree from a recognized foreign institution where English is the language of instruction or from a recognized Canadian institution (anglophone or francophone) must submit a TOEFL score (www.ets.org/toefl);
7. a personal statement (sent separately or completed on the online application form, “applicant statement”). Describe in as much detail as possible your interests in psychology and your career goals. Also indicate the area of psychology that you want to study (e.g., developmental, social, etc.) and the name of one or more staff members with whom you would like to work.

Supporting documents are submitted directly to the Department of Psychology:

Graduate Admissions

Department of Psychology
 McGill University
 1205 Dr. Penfield Avenue
 Montreal, QC H3A 1B1
 Canada

Applicants should note that the deadline for many scholarships and fellowships is about four months earlier than the application dates for guaranteed consideration and that applications for scholarships and fellowships should be submitted through their home university.

11.9.4 Psychology Faculty

Chair

David Zuroff

Emeritus Professors

A.S. Bregman; M.A.(Tor.), Ph.D.(Yale)
 D. Donderi; B.A., B.Sc.(Chic.), Ph.D.(C'nell)
 V. Douglas; B.A.(Qu.), M.A., M.S.W., Ph.D.(Mich.)
 A.A.J. Marley; B.Sc.(Birm.), Ph.D.(Penn.)
 R. Melzack; B.Sc., M.Sc., Ph.D.(McG.) (*E.P. Taylor Emeritus Professor of Psychology*)
 P. Milner; B.Sc.(Leeds), M.Sc., Ph.D.(McG.)
 J.O. Ramsay; B.Ed.(Alta.), Ph.D.(Princ.)

Professors

F.E. Aboud; B.A.(Tor.), M.A., Ph.D.(McG.)
 M. Baldwin; B.A.(Tor.), M.A., Ph.D.(Wat.)
 I.M. Binik; B.A.(NYU), M.A., Ph.D.(Penn.)
 B. Ditto; B.S.(Iowa), Ph.D.(Ind.)
 K.B.J. Franklin; B.A., M.A.(Auck.), Ph.D.(Lond.)
 F.H. Genesee; B.A.(W. Ont.), M.A., Ph.D.(McG.)
 R. Koestner; B.A., Ph.D.(Roch.)
 J. Lydon; B.A.(Notre Dame), M.A., Ph.D.(Wat.)
 J. Mogil; B.Sc.(Tor.), Ph.D.(Calif.-LA) (*E.P. Taylor Professor of Psychology*)
 D.S. Moskowitz; B.S.(Kirkland), M.A., Ph.D.(Conn.)
 Y. Oshima-Takane; B.A.(Tokyo Women's Christian U.), M.A.(Tokyo), Ph.D.(McG.)
 D.J. Ostry; B.A.Sc., M.A.Sc., Ph.D.(Tor.)
 C. Palmer; B.Sc.(Mich.), M.Sc.(Rutg.), Ph.D.(C'nell)
 M. Petrides; B.Sc., M.Sc.(Lond.), Ph.D.(Cant.)
 R.O. Pihl; B.A.(Lawrence), Ph.D.(Ariz.)
 B. Sherwin; B.A., M.A., Ph.D.(C'dia) (*James McGill Professor*)
 T.R. Shultz; B.A.(Minn.), Ph.D.(Yale)
 M. Sullivan; B.A.(McG), M.A., Ph.D.(C'dia)
 Y. Takane; B.L., M.A.(Tokyo), Ph.D.(N. Carolina)
 D.M. Taylor; M.A., Ph.D.(W. Ont.)
 N. White; B.A.(McG.), M.A., Ph.D.(Pitt.)
 D.C. Zuroff; B.A.(Harv.), M.A., Ph.D.(Conn.)

Associate Professors

A.G. Baker; B.A.(Br. Col.), M.A., Ph.D.(Dal.)
 E.S. Balaban; B.A.(Mich. St.), Ph.D.(Rockefeller)
 H. Hwang; B.A.(Chung-Ang), Ph.D.(McG.)
 B. Knauper; Dr. phil.(Germany, Mannheim)
 D.J. Levitin; A.B.(Stan.), M.S., Ph.D.(Ore.) (*Bell Professor of Psychology and E-Commerce*)
 M.J. Mendelson; B.Sc.(McG.), A.M., Ph.D.(Harv.)
 K. Nader; B.Sc., Ph.D.(Tor.)
 G. O'Driscoll; B.A.(Welles.), Ph.D.(Harv.) (*William Dawson Scholar*)
 K. Onishi; B.A.(Brown), M.A., Ph.D.(Ill.)
 M. Pompeiana; M.D., Ph.D.(Pisa)
 Z. Rosberger; B.Sc.(McG.), M.A., Ph.D.(C'dia) (*Part-time*)
 D. Titone; B.A.(NYU), M.A., Ph.D.(SUNY, Binghamton)

Assistant Professors

I. Bradley; B.Sc., M.Sc.(Tor.), Ph.D.(Wat.) (*Part-time*)
 Y. Chudasama; B.Sc., Ph.D.(Cardiff)
 M. Dirks; B.A.(McM.), M.S., M.Phil., Ph.D.(Yale)
 J. Ristic; B.A., M.A., Ph.D.(Br. Col.)
 H.-T. Yu; B.S.(Taiwan), M.S., M.A., Ph.D.(Ill.-Urbana-Champaign)

Lecturers

R. Amsel, P. Carvajal

Associate Members

Anesthesia: T. Coderre
Douglas Hospital Research Centre: S. King, J. Pruessner, H. Steiger
Jewish General Hospital: P. Zelkowitz
McGill Vision Research Centre: C. Baker, R. Hess, F.A.A. Kingdom, K. Mullen
Montreal Neurological Institute: J. Armony, L.K. Fellows, D. Guitton, M. Jones-Gotman, M. Lepage, B. Milner, E. Ruthazer, W. Sossin, V. Sziklas, R. Zatorre
Music: S. MacAdams
Psychiatry: D. Dunkley, M. Leyton, A. Raz
School of Nursing, Psychiatry: F. Abbott

Adjunct Professors

M. Bruck, S. Burstein, P. Delisle, P. Gregoire, D. Sookman, P. Zelazo

Affiliate Member

L. Kowski (*Medicine*)

Part-Time Appointments

J. Bernstein, E. Foley, O. Hardt, J. LeGallais, J. MacDougall, V. Miguez, Z. Pleszewski

11.9.5 Master of Science (M.Sc.); Psychology (Thesis) (45 credits)**Thesis Courses (27 credits)**

PSYC 690	(15)	Masters Research 1
PSYC 699	(12)	Masters Research 2

Required Courses (18 credits)

PSYC 601	(6)	Master's Comprehensive
PSYC 650	(3)	Advanced Statistics 1
PSYC 651	(3)	Advanced Statistics 2
PSYC 660D1	(3)	Psychology Theory
PSYC 660D2	(3)	Psychology Theory

11.9.6 Doctor of Philosophy (Ph.D.); Psychology

All candidates for the Ph.D. degree must demonstrate broad scholarship, mastery of current theoretical issues in psychology and their historical development, and a detailed knowledge of their special field. Great emphasis is placed on the development of research skills, and the dissertation forms the major part of the evaluation at the Ph.D. level.

Ph.D. students in Clinical Psychology must fulfil similar requirements to Ph.D. students in the Experimental Program and must also take a variety of specialized courses, which include practicum and internship experiences.

Thesis**Required Course (6 credits)**

PSYC 701	(6)	Doctoral Comprehensive Examination
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One graduate seminar each term during Year 2 and Year 3 chosen from seminar courses PSYC 710 to PSYC 758.

Note: The Department of Psychology does not ordinarily require an examination in a foreign language. However, all students planning on practicing clinical psychology in the province of Quebec will be examined based on their proficiency in French before being admitted to the professional association.

Note: If the student has a non-McGill Master's degree then the following courses are also required:

PSYC 650	(3)	Advanced Statistics 1
PSYC 651	(3)	Advanced Statistics 2
PSYC 660D1	(3)	Psychology Theory
PSYC 660D2	(3)	Psychology Theory

11.9.7 Doctor of Philosophy (Ph.D.); Psychology — Language Acquisition

Students must satisfy all program requirements for the Ph.D. in Psychology. The Ph.D. thesis must be on a topic relating to language acquisition, approved by the LAP committee.

Thesis**Required Courses (14 credits)**

EDSL 711	(2)	Language Acquisition Issues 3
LING 710	(2)	Language Acquisition Issues 2
PSYC 701	(6)	Doctoral Comprehensive Examination

PSYC 709	(2)	Language Acquisition Issues 1
SCSD 712	(2)	Language Acquisition Issues 4

One graduate seminar each term during Year 2 and Year 3 chosen from seminar courses PSYC 710 to PSYC 758.

Note: The Department of Psychology does not ordinarily require an examination in a foreign language however, all students planning on practicing clinical psychology in the province of Quebec will be examined based on their proficiency in French before being admitted to the professional association.

Note: If the student has a non-McGill Master's degree then the following courses are also required:

PSYC 650	(3)	Advanced Statistics 1
PSYC 651	(3)	Advanced Statistics 2
PSYC 660D1	(3)	Psychology Theory
PSYC 660D2	(3)	Psychology Theory

Complementary Courses (9 credits)

One graduate-level course in statistics, such as:

EDPE 676	(3)	Intermediate Statistics
EDPE 682	(3)	Univariate/Multivariate Analysis
PSYC 650	(3)	Advanced Statistics 1
PSYC 651	(3)	Advanced Statistics 2

Students who have taken an equivalent course in statistics, or are currently taking an equivalent course as part of their Ph.D. program requirements, will be deemed to have satisfied this requirement for the Language Acquisition Option.

Two courses selected from the following list, at least one course must be outside the Department of Psychology:

EDSL 620	(3)	Critical Issues in Second Language Education
EDSL 623	(3)	Second Language Learning
EDSL 624	(3)	Educational Sociolinguistics
EDSL 627	(3)	Classroom-Centred Second Language Research
EDSL 629	(3)	Second Language Assessment
EDSL 632	(3)	Second Language Literacy Development
EDSL 664	(3)	Second Language Research Methods
LING 555	(3)	Language Acquisition 2
LING 590	(3)	Language Acquisition and Breakdown
LING 651	(3)	Topics in Acquisition of Phonology
LING 655	(3)	Theory of L2 Acquisition
LING 755	(3)	Advanced Seminar: Language Acquisition
PSYC 734	(3)	Developmental Psychology and Language
PSYC 735	(3)	Developmental Psychology and Language
PSYC 736	(3)	Developmental Psychology and Language
PSYC 737	(3)	Developmental Psychology and Language
SCSD 619	(3)	Phonological Development
SCSD 632	(3)	Phonological Disorders: Children
SCSD 633	(3)	Language Development

SCSD 637	(3)	Developmental Language Disorders 1
SCSD 643	(3)	Developmental Language Disorders 2
SCSD 652	(3)	Advanced Research Seminar 1
SCSD 653	(3)	Advanced Research Seminar 2

11.9.8 Doctor of Philosophy (Ph.D.); Psychology — Psychosocial Oncology

The Ph.D. thesis topic must be germane to psychosocial oncology and approved by the PSO coordinating committee.

Thesis

Required Courses (12 credits)

NUR2 705	(3)	Palliative Care
NUR2 783	(3)	Psychosocial Oncology Research
PSYC 701	(6)	Doctoral Comprehensive Examination

One graduate seminar each term during Year 2 and Year 3 chosen from seminar courses PSYC 710 to PSYC 758.

Note: The Department of Psychology does not ordinarily require an examination in a foreign language, however, all students planning on practicing clinical psychology in the province of Quebec will be examined based on their proficiency in French before being admitted to the professional association.

Note: If the student has a non-McGill Master's then the following courses are also required:

PSYC 650	(3)	Advanced Statistics 1
PSYC 651	(3)	Advanced Statistics 2
PSYC 660D1	(3)	Psychology Theory
PSYC 660D2	(3)	Psychology Theory

Complementary Course (3 credits)

One of the following courses:

PSYC 507	(3)	Emotions, Stress, and Illness
PSYC 753	(3)	Health Psychology Seminar 1
SWRK 609	(3)	Understanding Social Care
SWRK 668	(3)	Living with Illness, Loss and Bereavement

11.10 Redpath Museum

11.10.1 Location

Redpath Museum
 859 Sherbrooke Street West
 Montreal, QC H3A 2K6
 Canada

Telephone: 514-398-4086

Fax: 514-398-3185

Website: www.mcgill.ca/redpath

11.10.2 About Redpath Museum

The Redpath Museum is an institution with extensive collections of ancient and modern organisms, minerals, and ethnological artifacts. It is a unique interdisciplinary unit within the Faculty of Science offering graduate training in research devoted to biosystematics, ecology, conservation biology, and evolutionary biology, leading to M.Sc. and Ph.D. degrees. Research and teaching is centred on collections-based study, object-oriented investigation, and fieldwork. The Museum also has labs that are equipped for graduate research in both the Redpath Museum building and the Stewart Biology building.

11.10.3 Redpath Museum Admission Requirements and Application Procedures

11.10.3.1 Admission Requirements

The Redpath Museum does not have its own graduate program. All graduate students of the professors in the Redpath Museum have home departments in either Biology, Earth and Planetary Sciences, Anthropology, Natural Resource Sciences, or Education. Admission requirements are subject to those home departments' regulations.

11.10.3.2 Application Procedures

Students in the Redpath Museum may enrol in McGill's Department of Biology or other units, including the Department of Earth and Planetary Sciences, the Department of Anthropology, the Department of Natural Resource Sciences, or the Faculty of Education. Anyone interested should contact the unit concerned.

11.10.4 Redpath Museum Faculty

Director

David M. Green

Emeritus Professor

Robert L. Carroll; B.Sc.(Mich.), Ph.D.(Harv.), F.R.S.C., F.L.S.

Professor

David M. Green; B.Sc.(Br. Col.), M.Sc., Ph.D.(Guelph), F.L.S.

Associate Professors

Andrew Hendry; B.Sc.(Vic., BC), M.Sc., Ph.D.(Wash.) (*joint appt. with Biology*)

Hans C.E. Larsson; B.Sc.(McG.), Ph.D.(Chic.) (*CRC Tier 2 Chair in Paleontology*)

Anthony Ricciardi; B.Sc.(Agr.), M.Sc., Ph.D.(McG.) (*joint appt. with MSE*)

Assistant Professors

Claire de Mazancourt; M.Sc.(École des Mines), DEA, Ph.D.(Paris VI)

Virginie Millien; Maîtrise(Paris VI), DEA, Ph.D.(Montpellier II)

Faculty Lecturer

Linda Cooper; B.A.(C'dia), M.A.(McM.)

Associate Members

Biology: Graham A.C. Bell, Lauren Chapman

Earth & Planetary Sciences: Jeanne Paquette

McGill School of Environment: Colin Chapman

Adjunct Professors

Robert Holmes, Henry M. Reiswig, Michael Woloch

