



Faculty of Medicine (Graduate)
Programs, Courses and University Regulations
2012-2013

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1 **Dean's Welcome**

To Graduate Students and Postdoctoral Fellows:

I am extremely pleased to welcome you to McGill University. Our world-class scholarly community includes o



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

2.3 General Statement Concerning Higher Degrees

Graduate and Postdoctoral Studies (GPS) oversees all programs leading to graduate diplomas, certificates, and higher degrees, with the exception of some programs in the School of Continuing Studies. It is responsible for admission policies, the supervision of graduate students' work, and for recommending to Senate those who may receive the degrees, diplomas, and certificates.

3 Important Dates 2012–2013

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

4 Graduate Studies at a Glance

4.1 Graduate and Postdoctoral Degrees Offered by Faculty

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

Faculty of Agricultural and Environmental Sciences	Degrees Available
: <i>Agricultural Economics</i>	M.Sc.
: <i>Animal Science</i>	M.Sc., M.Sc.A., Ph.D.
: <i>Bioresource Engineering</i>	M.Sc., M.Sc.A., Ph.D., Graduate Certificate
: <i>Biotechnology</i>	M.Sc.A., Graduate Certificate
: <i>Dietetics and Human Nutrition</i>	M.Sc., M.Sc.A., Ph.D., Graduate Diploma
: <i>Food Science and Agricultural Chemistry</i>	M.Sc., Ph.D.
: <i>Natural Resource Sciences</i>	M.Sc., Ph.D.
: <i>Parasitology</i>	M.Sc., Ph.D.
: <i>Plant Science</i>	M.Sc., M.Sc.A., Ph.D., Graduate Certificate
Faculty of Arts	Degrees Available
: <i>Anthropology</i>	M.A., Ph.D.
: <i>Art History</i>	M.A., Ph.D.
Classics – see : <i>History and Classical Studies</i>	N/A
: <i>Communication Studies</i>	M.A., Ph.D.
: <i>East Asian Studies</i>	M.A., Ph.D.
: <i>Economics</i>	M.A., Ph.D.
: <i>English</i>	M.A., Ph.D.
: <i>French Language and Literature</i>	M.A., Ph.D.
: <i>Geography</i>	M.A., Ph.D.
: <i>History and Classical Studies</i>	M.A., Ph.D.
: <i>Institute for the Study of International Development</i>	N/A
: <i>Islamic Studies</i>	M.A., Ph.D.

Degrees

Degree		Prerequisites
		Post-professional degree – an M.Arch. (professional degree) or equivalent professional degree.
Master of Business Administration	M.B.A.	An undergraduate degree from an approved university. See : M.B.A. Program .
Master of Business Administration with integrated Bachelor of Civil Law / Bachelor of Laws	M.B.A. with B.C.L./LL.B.	See : M.B.A. Program .
Master of Business Administration with Doctor of Medicine / Master of Surgery	M.B.A. with M.D.,C.M.	See : M.B.A. Program .
Master of Education	M.Ed.	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 Admission Requirements and Application Procedures .
Master of Library and Information Studies	M.L.I.S.	At least a bachelor's degree from a recognized university. See : Information Studies Admission Requirements and Application Procedures .
Master of Management	M.M.	See : Master of Management Programs Admission Requirements and Application Procedures .
Master of Manufacturing Management	M.M.M.	See : Master of Management Programs Admission Requirements and Application Procedures .
Master of Music	M.Mus.	Bachelor of Music or Bachelor of Arts with concentration in the area selected for graduate study. Applicants to the Performance program are required to pass auditions in their speciality. See : Schulich School of Music .
Master of Sacred Theology	S.T.M.	B.A. with specialization in religious studies or theology. See : Religious Studies Admission Requirements and Application Procedures .
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. Bachelor's degree in Social Work including courses in statistics and social science research methods. See : Social Work Admission Requirements and Application Procedures .W

Program	Thesis/Non-Thesis	Options
Post-professional	Non-Thesis	Architectural History and Theory, Cultural Mediations and Technology, Urban Design and Housing

Master of Arts (M.A.)

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

Program Areas	Thesis/Non-Thesis	Options
Anthropology	Thesis, Non-Thesis	Development Studies, Environment, Gender and Women's Studies (Thesis)
Art History	Non-Thesis	Gender and Women's Studies (Non-Thesis)
Classics	Thesis, Non-Thesis	N/A
Communication Studies	Thesis, Non-Thesis	Gender and Women's Studies (Thesis)
Counselling Psychology	Non-Thesis (Professional Internship), Non-Thesis (Project)	N/A
East Asian Studies	Thesis (<i>Ad Hoc</i>)	N/A
Economics	Thesis, Non-Thesis	Development Studies, Social Statistics (Non-Thesis)
Educational Psychology	Thesis	N/A
Education and Society	Thesis, Non-Thesis	Gender and Women's Studies (Thesis) Gender and Women's Studies, Jewish Education (Non-Thesis)
Educational Leadership	Thesis, Non-Thesis (Coursework), Non-Thesis (Project)	Gender and Women's Studies (Thesis) Gender and Women's Studies (Non-Thesis (Project))
English	Thesis, Non-Thesis	N/A
French	Thesis, Non-Thesis	Gender and Women's Studies (Thesis)
Geography	Thesis	Development Studies, Environment, Gender and Women's Studies, Neotropical Environment, Social Statistics (Thesis)
German	Thesis, Non-Thesis	N/A
Hispanic Studies	Thesis, Non-Thesis	N/A
		Development Studies, European Studies, Gender and Women's Studies (Neotropical Environment), Euro2s, Non-Thesis

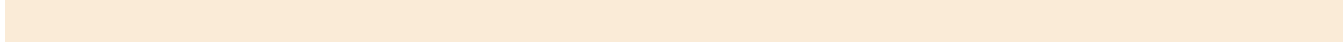
Program Areas	Thesis/Non-Thesis	Options
Political Science	Thesis, Non-Thesis	Development Studies, European Studies (Thesis) Development Studies, European Studies, Gender and Women's Studies, Social Statistics (Non-Thesis)
Psychology	Thesis	N/A
Religious Studies	Thesis, Non-Thesis	Bioethics, Gender and Women's Studies (Thesis)
Russian	Thesis	N/A Gender and Women's Studies (Thesis)

Program Areas	Thesis/Non-Thesis	Options
Food Science and Agricultural Chemistry	Thesis, Non-Thesis	Food Safety (Non-Thesis)
Genetic Counselling	Non-Thesis	N/A En

Program	Thesis/Non-Thesis	Options
Occupational Therapy	Non-Thesis	N/A
Physical Therapy	Non-Thesis	N/A
Plant Science	Non-Thesis	N/A

Master of Social Work (M.S.W.)

The M.S.W. degree represents a second level of professional study in which students build competence in a chosen field of practice.



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

Program	Options	Offered by Faculty/School
Animal Science	Bioinformatics	Faculty of Agricultural and Environmental Sciences
Anthropology	Neotropical Environment	Faculty of Arts
Architecture	N/A	Faculty of Engineering
Art History	Gender and Women's Studies	Faculty of Arts
Atmospheric and Oceanic Sciences	N/A	Faculty of Science
Biochemistry	Bioinformatics, Chemical Biology	Faculty of Medicine
Biology	Bioinformatics, Developmental Biology, Environment, Neotropical Environment	Faculty of Science
Biomedical Engineering	Bioinformatics	Faculty of Medicine
Bioresource Engineering	Environment, Neotropical Environment	Faculty of Agricultural and Environmental Sciences
Biostatistics	N/A	Faculty of Medicine
Cell Biology	N/A	Faculty of Medicine
	AFaculty of Science	Faculty of Engineering

Program	Options	Offered by Faculty/School
Islamic Studies	Gender and Women's Studies	Faculty of Arts
Linguistics	Language Acquisition	Faculty of Arts
Management	N/A	Desautels Faculty of Management
Mathematics and Statistics	Bioinformatics	Faculty of Arts, Faculty of Science
Mechanical Engineering	N/A	Faculty of Engineering
Microbiology	N/A	Faculty of Agricultural and Environmental Sciences
Microbiology and Immunology	Bioinformatics, Environment	Faculty of Medicine
Mining and Materials Engineering	N/A	Faculty of Engineering
Music	(Composition, Music Education, Musicology, Music Technology, Sound Recording, Theory), Gender and Women's Studies	Schulich School of Music
Neuroscience	N/A	Faculty of Medicine
Nursing	Psychosocial Oncology	Ingram School of Nursing
Occupational Health	N/A	Faculty of Medicine
Parasitology	Bioinformatics, Environment	Faculty of Agricultural and Environmental Sciences
Pathology	N/A	Faculty of Medicine
Pharmacology	Chemical Biology	Faculty of Medicine
Philosophy	Environment, Gender and Women's Studies	Faculty of Arts
Physics	N/A	Faculty of Science
Physiology	Bioinformatics	Faculty of Medicine
Plant Science	Bioinformatics, Environment, Neotropical Environment	Faculty of Agricultural and Environmental Sciences
Political Science	Gender and Women's Studies	Faculty of Arts
Psychology	Language Acquisition, Psychosocial Oncology	Faculty of Arts, Faculty of Science
Rehabilitation Science	N/A	School of Physical and Occupational Therapy
Religious Studies	Gender and Women's Studies	Faculty of Religious Studies
Renewable Resources	Environment, Neotropical Environment	Faculty of Agricultural and Environmental Sciences
Russian	N/A	Faculty of Arts
School/Applied Child Psychology	N/A	Faculty of Education
Social Work	N/A	Faculty of Arts
Sociology	Environment, Gender and Women's Studies	Faculty of Arts

Joint Doctor of Philosophy Degrees

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)

Ad Hoc Doctor of Philosophy Degrees (Ph.D. (Ad Hoc))

Several departments offer the possibility of directly entering a Ph.D. program on an *ad hoc* basis, or, with the permission of the supervisor and the approval of the Graduate Program Director, exceptional students may transfer from the master's program to the *ad hoc* Ph.D. program.

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- 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 *Progr*



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, 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 *Programs, Courses and University Regulations > University Regulations and Resources > Graduate > Guidelines and Policies > : 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 grades reported **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 a

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 Graduate Admissions and Application Procedures

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

Revision, October 2012. Start of revision.

Application information and the online application form are av

See www.mcgill.ca/gradapplicants/apply/prepare/requirements/international-degree-equivalency for information on grade equivalencies and degree requirements from countries in Europe and around the world. These equivalencies and requirements are provided for information only and are subject to change without notice.

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

Revision, October 2012. End of revision.

6.3 Application Procedures (for All Admissions Starting Summer 2013)

Revision, October 2012. Start of revision.

Application Checklist

All supplemental application materials and supporting documents must be uploaded directly to the McGill admissions processing system. See www.mcgill.ca/gradapplicants/apply/submitting-your-documents for information and instructions.

- 1. Online Application for Admission form:** www.mcgill.ca/gradapplicants/apply/ready.
- 2. Application fee:** \$100 for each form you submit (you may indicate two programs on each form), payable by credit card when you submit the form. Some programs may charge additional fees. If applicable these will be automatically charged when you submit the application form.
- 3. Transcripts:** your complete record of study from each university-level institution you have attended to date. Uploaded copies will be considered as unofficial; final, official copies will be required once you are offered admission.
- 4.**

6.4 Admission Tests

Revision, October 2012. Start of revision.

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 ensure that official test results are sent to McGill directly by the testing service.

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 ensure that official results are released to McGill by the Graduate Management Admission Council (GMAC). The test is a standardized assessment offered by the GMAC to help business schools assess candidates for admission. For further information, see www.mba.com/the-gmat.

Revision, October 2012. End of revision.

6.5 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:

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 0G4
Telephone: 514-398-3990
Fax: 514-398-2626
Website: www.mcgill.ca/gps/students/funding/students-postdocs

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 countries in the list, which can be found at www.mels.gouv.qc.ca/sections/publications/index.asp?page=fiche&id=1039, are eligible for such exemptions. For more information and the necessary application materials, see 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 (DFWs) 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 postdoctoral scholars 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 Enrolment Services 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 is 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 Enrolment Services. Initial re

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 333.206.660.88 Tm(acil1;)Tj1 0 0 1 81.693 rok on(acil1;)Tj1 0 0j1 0 0 d personlp867 11;

8.4 Leave of Absence for Health and Parental/Familial Reasons

A leave of absence may be granted for maternity or parental reasons or for health reasons (see *Programs, Courses and University Regulations > University Regulations and Resources > Graduate > : 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 Enrolment Services. See procedure under *Programs, Courses and University Regulations > University Regulations and Resources > Graduate > : 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 felithpb148.934 3857.52 608.2wshipreasor(e. Res beensificate.)Tj1 2 0 125857.52 608.26 Tmocu Enrorm b to re >

- Guidelines and Regulations for Academic Units on Graduate F56 .41odent1 0 0 1 184.1306.77.56 Tm(AcademdvisingRe)TjSupervisionF1 8.1 T1 0 0 1 67.52 726.9

Current research projects include:

- cell biology of secretion
- cell biology of endocytosis
- signal transduction of cell receptors for growth factors and hormones
- synthesis and migration of glycoproteins
- subcomponents of the Golgi apparatus and their function
- biogenesis and function of lysosomes
- cell turnover in various tissues
- control of cell growth and proliferation
- molecular biology of extracellular matrix
- structure, composition, and function of basement membranes and connective tissue microfibrils
- cell and microfibrils
- cell and molecular biology of spermatogenesis
- genetic expression of proteins in the formation of cytoskeletal components of spermatozoa
- role of endocytosis and secretion by epididymal cells in sperm maturation
- molecular biology of Sertoli cell secretions and their interaction with germ cells
- synchronization of sperm production
- transferrin, transferrin receptors, and iron in germinal cells
- differentiation of B lymphocytes in bone marrow in relation to mechanisms of humoral immunity, immunodeficiency states, and B cell neoplasias
- control mechanisms and cytokines in B lymphopoiesis
- in situ organization and stromal cell-interactions of B lineage precursor cells in bone marrow
- microenvironmental regulation of hemopoiesis
- differentiation and regulation of cells mediating natural tumour immunosurveillance
- tumour cell biology
- cell and molecular biology of the formation of dental enamel, dentin, and bone
- structure of organic matrices and inorganic crystals of dental enamel
- role of hormones and their binding sites with calcified tissues
- secretion and degradation of the proteins of enamel matrix, hypothalamo-pituitary function and gonadotropin patterns in ovarian follicular development
- polycystic ovarian disease
- computer-assisted modelling of morphometric and kinetic data
- cell biology and molecular genetics of aging
- senescence and cell cycle-specific genes and their products
- cryo-electron microscopy

The **Human Systems Biology Stream** is offered as a complementary stream to the existing M.Sc. and Ph.D. programs entailing a multidisciplinary approach to achieving an M.Sc. and Ph.D. in Cell Biology and Anatomy. The primary objective of this stream is to offer graduate students academic training in Human Systems Biology. This is an exciting and new multidisciplinary field that aims to understand molecular human diseases at the systems level.

Research in the Department investigates the dynamics and organization of molecules, organelles, cells, and tissues in several major systems of the body. The work makes fundamental contributions to a number of established and emerging multidisciplinary fields: cell and molecular biology, cellular immunology and hematology, reproductive biology, calcified tissue biology, tumour cell biology, developmental biology, neurobiology, and aging.

The Department offers contemporary facilities for the wide range of techniques currently employed in research. Modern methods of cell and molecular biology, immunology, and biochemistry are used in conjunction with specialized microscopy in a variety of experimental systems. Techniques used by Department members include:

- labelling with radioisotopes and other tracers
- radioautography
- immunocytochemistry
- histochemistry
- cryo-immune microscopy
- fluorescence microscopy
- high-resolution electron microscopy
- scanning electron microscopy
- backscattered electron imaging

- confocal microscopy
- 3D cryo-electron microscopy
- microinjection
- video-microscopy in living cells
- X-ray microanalysis
- electron diffraction
- freeze-fracture replication
- computer reconstruction and quantitation
- chromatography
- subcellular fractionation
- recombinant DNA technology
- in situ hybridization
- tissue grafting
- cell and tissue culture
- mutant and transgenic mice
- hybridomas
- monoclonal antibodies

The Department has one of the largest and best-equipped electron microscope facilities in the world. Currently in use are four modern electron microscopes, including a Tecnai F20 and a Titan Krios. Combined with some of these microscopes are computer-aided analytical equipment capable of elemental microanalysis, histomorphometry, reconstruction, and quantitation. The high-voltage microscope is particularly useful for certain analytical electron optical procedures such as electron diffraction, lattice imaging, and three-dimensional electron microscopy.

section 11.1.5: Master of Science (M.Sc.); Cell Biology (Thesis) (45 credits)

Graduate research activities leading to the presentation of the M.Sc. thesis involve original experimental work in one of the areas being actively investigated

11.1.3.2 Application Procedures

McGill'

Associate MembersDavid Y. Thomas (*Biochemistry*)Jacalyn Vogel (*Biology*)Xiang-Jiao Yang (*Medicine*)**Adjunct Professors**

Michel Cayouette; Ph.D.(Laval)

Frédéric Charron; B.Sc.(Montr.), Ph.D.(McG.)

Miroslaw Cygler; M.Sc., Ph.D.(Lodz, Poland)

Daniel Cyr; B.Sc., M.Sc.(C'odia), Ph.D.(Manit.)

Michel Desjardins; M.Sc., Ph.D.(Montr.)

Jacques Drouin; B.Sc., D.Sc.(Laval)

David Hipfner; B.Sc., Ph.D.(Qu.)

Artur Kania; Ph.D.(Baylor)

André Nantel; B.Sc., M.Sc.(Laval), Ph.D.(Chapel Hill)

Alexei Pshezhetsky; Ph.D.(Russia)

Joseph Schrag; M.Sc., Ph.D.(Ill.)

Atilla Sik; M.Sc., Ph.D.(Hungary)

Pierre Thibault; Ph.D.(Montr.)

Faculty Lecturers

Ayman Behiery; M.B., Ch.B.(Cairo)

Geoffroy P. Noël; Ph.D.(Br. Col.)

11.1.5 Master of Science (M.Sc.); Cell Biology (Thesis) (45 credits)**Thesis Course (24 credits)**

ANAT 698 (24) M.Sc. Thesis Research 1

Required Course (12 credits)

ANAT 601 (3) MSc Seminar Examination

ANAT 695 (3) Seminars in Cell Biology 1

ANAT 696 (3) Seminars in Cell Biology 2

ANAT 697 (3) Seminars in Cell Biology 3

Complementary Courses (9 credits)

6 credits from one of two streams: Cell Developmental Biology Stream or Human Systems Biology Stream

Cell Developmental Biology Stream

ANAT 663D1 (4.5) Histology

ANAT 663D2 (4.5) Histology

ANAT 690D1 (3) Cell and Developmental Biology

ANAT 690D2 (3) Cell and Developmental Biology

section 11.2.8: Doctor of Philosophy (Ph.D.); Biochemistry

The Ph.D. in Biochemistry trains students in laboratory-based research at the highest level. The Ph.D. program is streamlined to emphasize independent research, and the many areas of biochemistry studied in our Department offer a wide choice of specialties. Students gain in-depth expertise in biochemistry and the biomedical sciences, with the opportunity to carry out research projects at a world-class level and build collaborations with other leading research groups. Graduates of the Ph.D. program are outstandingly prepared for leadership careers in the basic health sciences in industry, the public sector, or academia.

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

The Chemical Biology graduate option is centred on the pursuit of an original research project under the direction of one or more mentors. The program is supported by McGill University and by the Canadian Institutes of Health Research (CIHR) through its Strategic Training Initiatives program.

The program of training incorporates several important features, including a diverse curriculum and programs of seminars, workshops, and discussion groups designed to provide students with a well-rounded exposure to both the chemical and biological aspects of the discipline. The Ph.D. option provides advanced training in Chemical Biology based on independent research.

Financial support for students in the program is available from a variety of sources, including competitively awarded CIHR-funded Chemical Biology Scholarship awards.

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

Ph.D. level – 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.

The option consists of a number of interdisciplinary courses and a seminar designed to bring students from many backgrounds together and to provide a thorough overview of research in this field.

11.2.3 Biochemistry Admission Requirements and Application Procedures

11.2.3.1 Admission Requirements

Revision, October 2012. Start of revision.

Admission is based on the candidate's academic record, letters of recommendation, curriculum vitae, and personal statement. A minimum grade point average of 3.2/4.0 (B+) is required. Once a student has submitted all the required documents, the applicant's file will be reviewed by the Graduate Admission Committee. Files that do not meet the minimum requirement will not be considered. Applicants must also be accepted by a research supervisor who is a faculty member or associate member of the Department of Biochemistry. Recommendation for admission will be made once the applicant has secured a supervisor and adequate financial support. Financial support should be in the form of a stipend from the supervisor's research grant or a fellowship held by the student.

Master's Program

Candidates for the M.Sc. degree must hold a B.Sc. degree or its equivalent in Biochemistry or in related disciplines (e.g., biology, chemistry, physiology, microbiology).

Doctoral Program

Candidates who have a degree in a related field must hold a B.Sc. degree or its equivalent in Biochemistry or in related disciplines (e.g., biology, chemistry, physiology, microbiology).

or

IELTS: Minimum overall band score of 6.5.

International students who have received their degree outside North America should submit the following:

GRE: Subject Test in Biochemistry, Cell and Molecular Biology with a minimum score of 550. (Not required, but strongly recommended.)

Admission Requirements – Chemical Biology Option

As for the regular graduate programs of the Biochemistry Department, acceptance into the Chemical Biology option consists of two steps:

1. Preliminary approval by the Department's Graduate Admission Committee based on the student's transcript, references, and other documents submitted with the application. The criteria for assessment at this level are the same as for the regular graduate programs of the Department.
2. Acceptance by a Chemical Biology research director. The director must propose a research project for the student that provides training in the methods and philosophy of Chemical Biology. Project proposals are assessed by the Chemical Biology Program Committee.

Professors

Nicole Beauchemin; B.Sc., M.Sc., Ph.D.(Montr.) (*joint appt. with Oncology and Medicine*)

Albert Berghuis; B.Sc., M.Sc.(Rijks Univ. Groningen, The Netherlands), Ph.D.(Br. Col.) (*Canada Research Chair in Structural Biology*)

Philip E. Branton; B.Sc., M.Sc., Ph.D.(Tor.), F.R.S.C. (*Gilman Cheney Professor of Biochemistry*)

Kalle Gehring; B.A.(Brown), M.Sc.(Mich.), Ph.D.(Calif., Berk.) (*Chercheur National du FRSQ*)

Vincent Giguère; B.Sc., Ph.D.(Laval) (s), *Ph.D.(BrMontr*

11.2.5 Master of Science (M.Sc.); Biochemistry (Thesis) (45 credits)

Thesis Cour

BIOC 690 (1) Seminars in Chemical Biology 4

At least 3 credits from the following:

CHEM 502 (3) Advanced Bio-Organic Chemistry

CHEM 503 (3) Drug Design and Development 1
Drug Discov

Required Courses (6 credits)

BIOC 696	(3)	Seminars in Biochemistry
COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar

Complementary Courses* (9 credits)

3 credits to be chosen from the following courses:

BIOC 570	(3)	Biochemistry of Lipoproteins
BIOC 600	(3)	Advanced Strategies in Genetics and Genomics
BIOC 603	(3)	Genomics and Gene Expression
BIOC 604	(3)	Macromolecular Structure
BIOC 605	(3)	Structural Biology and Proteomics
EXMD 615	(3)	Essentials of Glycobiology
EXMD 635D1	(3)	Experimental/Clinical Oncology
EXMD 635D2	(3)	Experimental/Clinical Oncology

Plus 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

* Complementary courses are chosen in consultation with the Research Director.

The Graduate Advisory Committee may stipulate additional coursework depending on the background of the candidate. BIOC 450 (Protein Structure and Function) and BIOC 454 (Nucleic Acids) are additional requirements for those who have not previously completed equivalent courses in their prior training.

11.2.8 Doctor of Philosophy (Ph.D.); Biochemistry**Thesis**

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Required Courses (3 credits)

BIOC 696*	(3)	Seminars in Biochemistry
BIOC 701**	(0)	Research Seminar 1
BIOC 702**	(0)	Ph.D. Thesis Proposal
BIOC 703**	(0)	Research Seminar 2

*Students promoted directly from the M.Sc. to the Ph.D. program, and who registered for and passed BIOC 696 at the M.Sc. level, do not register for BIOC 696 at the Ph.D. level.

** NOTE: Students DO NOT register for these courses until notified by the Student Affairs Officer.

Students must complete BIOC 701 in the third term after admission to the program, BIOC 702 in the fifth or sixth term, and BIOC 703 approximately six months prior to submission of the Ph.D. thesis.

Complementary Courses*** (6 credits)

At least 3 credits selected from:

BIOC 570	(3)	Biochemistry of Lipoproteins
BIOC 600	(3)	Advanced Strategies in Genetics and Genomics
BIOC 603	(3)	Genomics and Gene Expression
BIOC 604	(3)	Macromolecular Structure
BIOC 605	(3)	Structural Biology and Proteomics
EXMD 615	(3)	Essentials of Glycobiology
EXMD 635D1	(3)	Experimental/Clinical Oncology
EXMD 635D2	(3)	Experimental/Clinical Oncology

Plus additional credits to a minimum of 6 total complementary course credits of 500- or higher-level courses in the biomedical and allied sciences.

*** Complementary courses are chosen in consultation with the Research Director.

The Graduate Advisory Committee may stipulate additional course work depending on the background of the candidate. BIOC 450 (Protein Structure and Function) and BIOC 454 (Nucleic Acids) are additional requirements for those who have not previously completed equivalent courses in their prior training.

11.2.9 Doctor of Philosophy (Ph.D.); Biochemistry — Chemical Biology

Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Required Courses (7 credits)

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
BIOC 696*	(3)	Seminars in Biochemistry
BIOC 701**	(0)	Research Seminar 1
BIOC 702**	(0)	Ph.D. Thesis Proposal
BIOC 703**	(0)	Research Seminar 2

* Students promoted directly from the M.Sc. to the Ph.D. program, and who registered for and passed BIOC 696 at the M.Sc. level, do not register for BIOC 696 at the Ph.D. level.

** NOTE: Students DO NOT register for these courses until notified by the Student Affairs Officer.

Students must complete BIOC 701 in the third term after admission to the program, BIOC 702 in the fifth or sixth term, and BIOC 703 approximately six months prior to submission of the Ph.D. thesis.

Complementary Courses*** (9 credits)

At least 3 credits from the following:

CHEM 502	(3)	Advanced Bio-Organic Chemistry
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CHEM 503	(3)	Drug Design and Development 1
PHAR 503	(3)	Drug Discovery and Development 1

At least 3 credits from the following:

BIOC 570	(3)	Biochemistry of Lipoproteins Advanced Strate
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BIOC 703**	(0)	Research Seminar 2
COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar

* Students promoted directly from the M.Sc. to the Ph.D. program, and who registered for and passed BIOC 696 at the M.Sc. level, do not register for BIOC 696 at the Ph.D. level.

** NOTE: Students DO NOT register for these courses until notified by the Student Affairs Officer.

Students must complete BIOC 701 in the third term after admission to the program, BIOC 702 in the fifth or sixth term, and BIOC 703 approximately six months prior to submission of the Ph.D. thesis.

Complementary Courses* (9 credits)**

3 credits from the following:

BIOC 570	(3)	Biochemistry of Lipoproteins
BIOC 600	(3)	Advanced Strategies in Genetics and Genomics
BIOC 603	(3)	Genomics and Gene Expression
BIOC 604	(3)	Macromolecular Structure
BIOC 605	(3)	Structural Biology and Proteomics
EXMD 615	(3)	Essentials of Glycobiology
EXMD 635D1	(3)	Experimental/Clinical Oncology
EXMD 635D2	(3)	Experimental/Clinical Oncology

Plus 6 credits from the following:

Bioinformatics: Molecular Structure from the f.(from the DE65.3L 13 41ular Structure

section 11.4.6: Master of Engineering (M.Eng.); Biomedical Engineering (Thesis) — Bioinformatics (45 credits)

fluent in the concepts, language, approaches, and limitations of the field. The option consists of a number of interdisciplinary courses and a seminar designed to bring students from many backgrounds together and to provide a thorough overview of research in this field.

section 11.4.7: Doctor of Philosophy (Ph.D.); Biomedical Engineering

In the first Biomedical Engineering (BME) department in Canada, BME internationally renowned staff provide frequent and stimulating interactions with physicians, scientists in many fields and with the biomedical industry. McGill BME provides opportunities to receive training in a unique multidisciplinary environment, taking advantage of research collaborations between staff in the Faculties of Medicine, Science, and Engineering. BME offers only thesis-based graduate degrees (Ph.D.) spanning broad themes in biomodelling, biosignal processing, medical imaging, nanotechnology, artificial cells and organs, probiotics, bioinformatics, bioengineering, biomaterials, and orthopaedics. For details, please refer to the BME website: www.mcgill.ca/bme. The best preparation is with a bachelor's degree in engineering, science, or medicine and a master's degree in biomedical engineering, bioengineering, biotechnology, electrical engineering, physiology, chemical engineering, biomaterial, system engineering, imaging, or other related areas. BME graduates have secured positions in academia, biomedical, and other industries, and government or regulatory sectors. To our knowledge, all of our graduates have secured suitable employment either before or within a few months of graduation.

section 11.4.8: Doctor of Philosophy (Ph.D.); Biomedical Engineering — 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 Ph.D. 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 will be fluent in the concepts, language, approaches, and limitations of the field, and will be capable of developing an independent Bioinformatics research program. The option consists of a number of interdisciplinary courses and a seminar designed to bring students from many backgrounds together and to provide a thorough overview of research in this field.

11.4.3 Biomedical Engineering Admission Requirements and Application Procedures**11.4.3.1 Admission Requirements**

Revision, October 2012. Start of revision.

See [section 6.2: Admission Requirements \(minimum requirements to be considered for admission\)](#). In addition, please see the Department website: www.mcgill.ca/bme.

11.4.3.2 Application Procedures

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

See [section 6.3: Application Procedures \(for All Admissions Starting Summer 2013\)](#) for detailed application procedures.

Please address enquiries directly to the Department.

11.4.3.3 Dates for Guaranteed Consideration

Canadian	International	Special/Exchange/Visiting
Fall: March 15	Fall: March 15	Fall: March 15
Winter: Oct. 15	Winter: Sept. 15	Winter: Same as Canadian/International
Summer: N/A	Summer: N/A	Summer: N/A



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

Revision, October 2012. End of revision.

11.4.4 Biomedical Engineering Faculty**Chair**

H.L. Galiana

Emeritus Professor

T.M.S. Chang; B.Sc., M.D., C.M., Ph.D.(McG.), F.R.C.P.(C) F.R.S.(C) (joint appt. with Physiology)

Professors

J.D. Bobyn; B.Sc., M.Sc.(McG.), Ph.D.(Tor.) (*joint appt. with Surgery*)
 D.L. Collins; B.Sc., M.Eng., Ph.D.(McG.) (*joint appt. with Neurology and Neurosurgery*)
 A.C. Evans; B.Sc.(Liv.), M.Sc.(Sur.), Ph.D.(Leeds) (*joint appt. with Neurology and Neurosurgery*)
 H.L. Galiana; B.Eng., M.Eng., Ph.D.(McG.)
 R.E. Kearney; B.Eng., M.Eng., Ph.D.(McG.)
 G.B. Pike; B.Eng., M.Eng., Ph.D.(McG.) (*joint appt. with Neurology and Neurosurgery*)
 S. Prakash; B.Sc.(Hon.), M.Sc., M.Tech.(BHU), Ph.D.(McG.)
 M. Tabrizian; B.Sc.(Iran), M.Sc., Ph.D.(PMC-France), M.B.A.(HEC) (*joint appt. with Dentistry*)

Associate Professors

W.R.J. Funnell; B.Eng., M.Eng., Ph.D.(McG.) (*joint appt. with Otolaryngology*)
 D. Juncker; Dipl., Ph.D.(Neuch-Switzerland)
 J.L. Nadeau; B.A., Ph.D.(Minn.)

Assistant Professor

C. Grova; B.Sc. M.Sc.(UTC-France), Ph.D.(Rennes)

Associate Members

S. Baillet (*Neurology and Neurosurgery*), C. Baker (*Ophthalmology*), F. Barthelat (*Mechanical Engineering*), K. Cullen (*Physiology*), I. El Naqa (*Oncology*), J. Gotman (*Neurology and Neurosurgery*), D. Guitton (*Neurology and Neurosurgery*), E. Jones (*Chemical Engineering*), A. Katsarkas (*Otolaryngology*), A.M. Lauzon (*Medicine*), R. Leask (*Chemical Engineering*), T. Milner (*Kinesiology & Physical Education*), L. Mongeau (*Mechanical Engineering*), R. Mongrain (*Mechanical Engineering*), A. Reader (*Neurology and Neurosurgery*), A. Shmuel (*Neurology and Neurosurgery*)

Adjunct Professors

P.G. Charette (Sher.), J.-M. Lina (ETS), T. Veres (NRC)

11.4.5 Master of Engineering (M.Eng.); Biomedical Engineering (Thesis) (45 credits)**Thesis Courses (24 credits)**

BMDE 695	(12)	Thesis Submission
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12 credits selected from the following courses:

BMDE 690	(3)	Thesis Research 1
BMDE 691	(3)	Thesis Research 2
BMDE 692	(3)	Thesis Research 3
BMDE 693	(6)	Thesis Research 4
BMDE 694	(6)	Thesis Research 5

Complementary Courses (21 credits)

12 credits of courses which have both biomedical content and content from the physical sciences, engineering, or computer science selected from the following:

BIOT 505	(3)	Selected Topics in Biotechnology
BMDE 500D1	(1.5)	Seminars in Biomedical Engineering
BMDE 500D2	(1.5)	Seminars in Biomedical Engineering
BMDE 501	(3)	Selected Topics in Biomedical Engineering

BMDE 502	(3)	BME Modelling and Identification
BMDE 503	(3)	Biomedical Instrumentation
BMDE 504	(3)	Biomaterials and Bioperformance
BMDE 505	(3)	Cell and Tissue Engineering
BMDE 506	(3)	Molecular Biology Techniques
BMDE 508	(3)	Introduction to Micro and Nano-Bioengineering
BMDE 519	(3)	Biomedical Signals and Systems
BMDE 650	(3)	Advanced Medical Imaging
BMDE 651	(3)	Orthopaedic Engineering
BMDE 652	(3)	Bioinformatics: Proteomics
COMP 526	(3)	Probabilistic Reasoning and AI
COMP 558	(3)	Fundamentals of Computer Vision
COMP 646	(4)	Computational Perception
COMP 761	(4)	Advanced Topics Theory 2
ECSE 523	(3)	Speech Communications
ECSE 526	(3)	Artificial Intelligence
ECSE 529	(3)	Computer and Biological Vision
ECSE 626	(4)	Statistical Computer Vision
ECSE 681	(4)	Colloquium in Electrical Engineering
EXMD 610	(3)	Molecular Methods in Medical Research
MDPH 607	(3)	Introduction to Medical Imaging
MDPH 611	(2)	Medical Electronics
MDPH 612	(2)	Computers in Medical Imaging
MECH 500	(3)	Selected Topics in Mechanical Engineering
MECH 561	(3)	Biomechanics of Musculoskeletal Systems
PHGY 517	(3)	Artificial Internal Organs
PHGY 518	(3)	Artificial Cells

or, with the approval of the student's Graduate Advisory Committee and the Graduate Program Chair, other graduate-level courses with content of interest to biomedical engineering students.

9 credits selected from the courses listed above, or with approval of the Graduate Chair and Supervisor.

11.4.6 Master of Engineering (M.Eng.); Biomedical Engineering (Thesis) — Bioinformatics (45 credits)

Thesis Courses (24 credits)

BMDE 693	(6)	Thesis Research 4
BMDE 694	(6)	Thesis Research 5
BMDE 695	(12)	Thesis Submission

Required Courses (3 credits)

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

Complementary Courses (18 credits)

12 credits of courses which have both biomedical content and content from the physical sciences, engineering, or computer science selected from the following:

BIOT 505	(3)	Selected Topics in Biotechnology
BMDE 500D1	(1.5)	Seminars in Biomedical Engineering
BMDE 500D2	(1.5)	Seminars in Biomedical Engineering
BMDE 501	(3)	Selected Topics in Biomedical Engineering
BMDE 502	(3)	BME Modelling and Identification
BMDE 503	(3)	Biomedical Instrumentation
BMDE 504	(3)	Biomaterials and Bioperformance
BMDE 505	(3)	Cell and Tissue Engineering
BMDE 506	(3)	Molecular Biology Techniques
BMDE 508	(3)	Introduction to Micro and Nano-Bioengineering
BMDE 519	(3)	Biomedical Signals and Systems
BMDE 650	(3)	Advanced Medical Imaging
BMDE 651	(3)	Orthopaedic Engineering
COMP 526	(3)	Probabilistic Reasoning and AI
COMP 558	(3)	Fundamentals of Computer Vision
COMP 646	(4)	Computational Perception
COMP 761	(4)	Advanced Topics Theory 2
ECSE 523	(3)	Speech Communications
ECSE 526	(3)	Artificial Intelligence
ECSE 529	(3)	Computer and Biological Vision
ECSE 626	(4)	Statistical Computer Vision
ECSE 681	(4)	Colloquium in Electrical Engineering
EXMD 610	(3)	Molecular Methods in Medical Research
MDPH 607	(3)	Introduction to Medical Imaging
MDPH 611	(2)	Medical Electronics
MDPH 612	(2)	Computers in Medical Imaging
MECH 500	(3)	Selected Topics in Mechanical Engineering
MECH 561	(3)	Biomechanics of Musculoskeletal Systems
PHGY 517	(3)	Artificial Internal Organs
PHGY 518	(3)	Artificial Cells

6 credits selected 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

In addition, students are required to present their work as a conference paper or departmental (PHGY 603)Tj1 e)

11.4.7 Doctor of Philosophy (Ph.D.); Biomedical Engineering

Thesis

A thesis for the doctoral de

section 11.5.7: Doctor of Philosophy (Ph.D.); Communication Sciences and Disorders

Selected candidates may be accepted for the Ph.D. research degree. Each student's thesis supervisor and Thesis Committee design an individualized program of study in collaboration with the student. The program can include graduate courses offered by the School and by other departments at McGill.

Students pursuing a Ph.D. in SCSD have varied educational backgrounds, including both clinical and related non-clinical fields. Students who enter the program from a related field (e.g., Psychology, Linguistics) or without a master's thesis complete a Qualifying year, which includes coursework and a research project. This flexible entry attracts independent scholars with diverse backgrounds and interests, which creates a stimulating and enriched training environment. The main component of the Ph.D. program (beyond the Qualifying year) has minimal required coursework and is structured to support students as they develop and pursue an innovative, individualized program of doctoral studies. Admission to the doctoral program requires identification of a SCSD professor(s) with relevant expertise to mentor the student in this process. Ph.D. students have the opportunity to pursue an interdisciplinary specialization in language acquisition through the McGill Language Acquisition Program, which intersects with McGill departments of Linguistics, Psychology, and Education. Our Ph.D. graduates typically pursue academic careers in universities or research institutes, but some work in settings that combine research and professional activities.

section 11.5.8: Doctor of Philosophy (Ph.D.); Communication Sciences and Disorders — Language Acquisition

Information about this option is available from the School and at www.psych.mcgill.ca/lap.html. This unique interdisciplinary Ph.D. program is available for doctoral students across four departments at McGill including SCSD, Linguistics, Psychology, and Integrated Studies in Education. The program is designed to provide enriched training focused 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. In addition to the SCSD Ph.D. requirements, students in this program must complete 6 credits of coursework in language acquisition (including at least one course that is not in their home department), and four interdisciplinary seminars (2 credits each) and must include a faculty member in the Language Acquisition Program on their thesis committee.

11.5.3 Communication Sciences and Disorders Admission Requirements and Applications Procedures

11.5.3.1 Admission Requirements

Revision, October 2012. Start of revision.

M.Sc. (Applied)

An applicant must hold an undergraduate degree with a minimum B average (3.0 on a 4.0-point scale) or better in areas relevant to the selected field of specialization. Specific requirements are 6 credits in statistics, a total of 18 credits across the disciplines of psychology and linguistics (with a minimum of 6 credits in each discipline). Knowledge of physiology is also desirable.

M.Sc. in Communication Sciences and Disorders

The M.Sc. provides research training for:

1. students who are also taking courses for professional qualification;
2. students who have a non-thesis professional degree in Communication Sciences and Disorders; and
3. students with degrees in related fields who wish to do research but not obtain professional qualification in Communication Sciences and Disorders.

Ph.D. in Communication Sciences and Disorders

Applicants should normally have a master's degree with thesis or its equivalent in Communication Sciences and Disorders or a related field (e.g., psychology, linguistics).

Students who possess an appropriate bachelor's degree or master's degree without thesis will also be considered for the Ph.D. program, but, if admitted, must first complete a Qualifying year of coursework and a research project.

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 documented proof of competency in oral and written English **prior to admission**: the Test of English as a Foreign Language (TOEFL) with a minimum score of 587 (paper-based) or 95 on the Internet-based test with minimum component scores of 24 in both Speaking and Writing and 21 in both Reading and Listening, or the International English Language Testing System (IELTS) with a minimum overall band score of 7.0.

11.5.3.2 Application Procedures

McGill's online application form for graduate program candidates is available at www.mcgill.ca/grscore of 587 1 231.173 27thesis committee.

All applications received by the Dates for Guaranteed Consideration are automatically considered for any internal funding or awards made available to the Department for recruitment purposes. Students who apply for Fall admission generally have the most options with respect to applying for external funding as well as for being considered for internal support.

11.5.3.2.1 Additional Requirements

The items and clarifications below are additional requirements set by this department:

- Prerequisite Form

Applications will be considered upon receipt of supporting documents as outlined above. All applicants are strongly encouraged to submit reports of their performance on the Graduate Record Examination (GRE).

11.5.3.3 Dates for Guaranteed Consideration

Canadian	International	Special/Exchange/Visiting
Fall: Jan. 15	Fall: Jan. 15	Fall: Jan. 15
Winter: Sept. 15	Winter: Sept. 15	Winter: Sept. 15
Summer: N/A	Summer: N/A	Summer: N/A

Revision, October 2012. End of revision.

11.5.4 Communication Sciences and Disorders Faculty

Director and Associate Dean

Marc Pell

Research Director

Linda Polka

Emeritus Professor

Donald Doehring; B.A.(Buff.), M.A.(N.M.), Ph.D.(Ind.)

Professors

Shari Baum; B.A.(C'nell), M.S.(Vermont), M.A., Ph.D.(Brown)

Athanasios Katsarkas; M.D.(Thess.), M.Sc.(McG.), F.R.C.P.(C)

Marc Pell; B.A.(Ott.), M.Sc., Ph.D.(McG.)

Associate Professors

Vincent Gracco; B.A., M.A.(San Diego), Ph.D.(Wisc.-Madison)

Linda Polka; B.A.(Slippery Rock), M.A.(Minn.), Ph.D.(S. Flor.)

Susan Rvachew; B.Sc.(Alta.), M.Sc., Ph.D.(Calg.)

Karsten Steinhauer; M.Sc., Ph.D.(Dr.rer.nat)(Free Univ., Berlin)

Elin Thordardottir; B.A., M.Sc., Ph.D.(Wisc.-Madison)

Assistant Professors

Meghan Clayards; B.Sc.(Vic., BC), M.A., Ph.D.(Roch.)

Laura Gonnerman; B.A.(Boston), M.A.(Middlebury), Ph.D.(USC)

Aparna Nadig; B.A.(Reed), M.S., Ph.D.(Brown)

Assistant Professors (Part-Time)

Christina Lattermann; Staatlich anerkannte Logopaedin(Westfaelische Wilhelms-Universitaet, Muenster), M.Sc.(McG.), Ph.D.(Kassel)

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Assistant Professors (Part-Time)

Rosalee Shenker; B.Sc.(Syrac.), M.A.(Calif. St.), Ph.D.(McG.)

Faculty Lecturer

Anne Vogt; B.Ed., B.A.(Tel Aviv), M.Sc.A.(McG.)

Faculty Lecturers (Part-Time)

Monique Bois; B.A., M.A., Ph.D.(Montr.), M.Sc.A.(Ott.)

Catherine Bosse; B.Ed.(Montr.), M.Sc.A.(McG.)

Francois-Xavier Brajot; B.A.(Georgia), M.Sc.(Pitt.)

Myrto Brandeker; M.Sc.(Karolinska Inst.)

Liliane Brunetti; B.Sc.(C'dia), M.Cl.Sc.(W. Ont.)

Henry Cheang; B.A.(C'dia), M.Sc., Ph.D.(McG.)

Patricia Coffin; B.A.(PEI), M.Sc.(Dal.)

Isabelle Deschamps; B.A.(McG)

Karen Evans; Licentiate(L.C.S.T.), M.A.(Car.), M.Sc.(McG.)

Ariana Fraid; B.A., M.Sc.A.(McG.)

Esther Lando; B.A.(Manit.), M.Sc.A.(McG.)

James Lapointe; B.A., M.Sc.A.(McG.)

Zinta Mateus; B.S.(Rutg.), B.Ed., M.Sc.A.(McG.)

Mariannne Paul; B.A.(UQAM), B.A., M.Sc.A., M.Sc.(McG.)

Judith Robillard-Shultz; B.A., M.Sc.A.(McG.)

Aruna Sudarshan; B.Sc., M.Sc.(Institute of Speech and Hearing, Bangalore)

Colleen Timm; B.A.(C'dia), M.Sc.A.(McG.)

Associate Members

Eva Kehayia (*Physical and Occupational Therapy*)

Yuriko Oshima-Takane (*Psychology*)

Adjunct Members

Howard Chertkow (*Jewish Gen.*), David McFarland (*Montr.*), Lucie Menard (*UQAM*)

Master of Science, Applied (M.Sc.A.); Communication Sciences & Disorders (Non-Thesis) — Speech-Languag

SCSD 632	(3)	Phonological Disorders: Children
SCSD 633	(3)	Language Development
SCSD 636	(3)	Fluency Disorders
SCSD 637	(3)	Developmental Language Disorders 1
SCSD 638	(3)	Neurolinguistics
SCSD 639	(3)	Voice Disorders
SCSD 642	(3)	Aural Rehabilitation
SCSD 643	(3)	Developmental Language Disorders 2
SCSD 644	(3)	Applied Neurolinguistics
SCSD 646	(2)	Introductory Clinical Practicum
SCSD 669	(3)	ASD and Neurodevelopmental Disorders
SCSD 679	(2)	Advanced Clinical Practicum
SCSD 680	(3)	Deglutition and Dysphagia
SCSD 681	(1)	Practicum and Seminar 1
SCSD 682	(1)	Practicum and Seminar 2
SCSD 683	(1)	Practicum and Seminar 3
SCSD 684	(1)	Practicum and Seminar 4
SCSD 689	(1)	Management Cranio-Facial Disorders

Complementary Courses (6 credits)

Two of the following:

SCSD 634	(3)	Research and Measurement Methods 2
SCSD 664	(3)	Communication Sciences and Disorders 1
SCSD 666	(3)	Communication Sciences and Disorders 3
SCSD 667	(3)	Communication Sciences and Disorders 4
SCSD 670	(3)	Communication Sciences and Disorders 2
SCSD 678	(3)	Special Topics 4

11.5.6 Master of Science (M.Sc.); Communication Sciences and Disorders (Thesis) (45 credits)

Thesis Courses (24 credits)

SCSD 671	(12)	M.Sc. Thesis 1
SCSD 672	(12)	M.Sc. Thesis 2

Complementary Courses (21 credits)

6-21 credits chosen from:

SCSD 675	(12)	Special Topics 1
SCSD 676	(9)	Special Topics 2
SCSD 677	(6)	Special Topics 3
SCSD 678	(3)	Special Topics 4

0-15 credits chosen from:

SCSD 673	(12)	M.Sc. Thesis 3
SCSD 674	(3)	M.Sc. Thesis 4

or courses in other departments, as arranged with the student's thesis supervisor.

11.5.7 Doctor of Philosophy (Ph.D.); Communication Sciences and Disorders

Thesis

SCSD 712 (2) Language Acquisition Issues 4

Complementary Courses (9 credits)

3 credits of graduate-level statistics from courses 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.

At least two courses, selected from the following list.

One of these two courses must be from outside Communication Sciences and Disorders.

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
PSYC 561	(3)	Methods: Developmental Psycholinguistics
PSYC 734	(3)	Developmental Psychology and Language
PSYC 736	(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

11.6 Epidemiology and Biostatistics**11.6.1 Location**

Department of Epidemiology, Biostatistics and Occupational Health
1020 Pine Avenue West
Montreal, QC H3A 1A2
Canada

Telephone: 514-398-6258

Email: graduate.eboh@mcgill.ca

Website: www.mcgill.ca/epi-biostat-occh

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Professors

O.S. Miettinen; M.D.(Helsinki), M.P.H., M.S., Ph.D.(Minn.)
 G. Paradis; M.D.(Montr.), M.Sc.(McG.)
 R.W. Platt; M.Sc.(Manit.), Ph.D.(Wash.) (*joint appt. with Pediatrics*)
 S. Suissa; M.Sc.(McG.), Ph.D.(Flor.) (*joint appt. with Medicine*) (*James McGill Professor*)
 R. Tamblyn; M.Sc.(McM.), Ph.D.(McG.) (*joint appt. with Medicine*) (*James McGill Professor*)
 C. Wolfson; B.Sc., M.Sc., Ph.D.(McG.) (*joint appt. with Medicine*)

Associate Professors

O. Basso; Ph.D.(Milan) (*joint appt. with Obstetrics & Gynecology*)
 D. Buckeridge; M.D.(Qu.), M.Sc.(Tor.), Ph.D.(Stan.) (*Canada Research Chair*)
 A. Ciampi; M.Sc., Ph.D.(Qu.), Ph.D.(Rome)
 N. Dendukuri; M.Sc.(IIT), Ph.D.(McG.) (PT) (*joint appt. with Medicine*)
 C. Greenwood; B.Sc.(McG.), M.Sc.(Wat.), Ph.D.(Tor.) (*joint appt. with Oncology*)
 P. Héroux; B.Sc.(Laval), M.Sc., Ph.D.(I.N.R.S.)
 J. Kaufman; B.A.(Johns Hop.), Ph.D.(Mich.)
 A. Manges; B.A.(Col.), M.P.H., Ph.D.(Calif., Berk.)
 M. Pai; M.B.B.S.(Stanley Med. Coll.), M.D.(Christian Medical Coll.), Ph.D.(Calif., Berk.)
 J. Pickering; B.A.(Tor.), M.D., M.Sc.(McG.) (*joint appt. with Medicine*)
 A. Quesnel-Vallée; B.A., M.Sc.(Montr.), M.A., Ph.D.(Duke) (*joint appt. with Sociology*)
 M. Rossignol; B.Sc., M.D.(Sher.), M.Sc.(McG.)
 P. Tousignant; B.A., M.D.(Laval), M.Sc.(McG.), F.R.C.P.(C) (PT)

Assistant Professors

A. Adrien; M.D., M.Sc.(McG.)
 A. Benedetti; B.Sc., M.Sc., Ph.D.(McG.) (*joint appt. with Medicine*)
 J. Cox; B.Sc., B.A., M.D.(Dal.), M.Sc.(McG.), C.C.F.P., F.R.C.P.(C) (*joint appt. with Family Medicine*)
 S. Harper; B.A.(Westminster Coll.), M.S.P.H.(S. Carolina), Ph.D.(Mich.)
 A. Labbe; M.Sc.(Montr.), Ph.D.(Wat.) (*joint appt. with Psychiatry*)
 S. Martin; M.D.(Tor.), M.Sc.(McG.) (PT)
 E.E.M. Moodie; B.A.(Winn.), M.Phil.(Camb.), Ph.D.(Wash.)
 A. Nandi; B.S.(College of New Jersey), M.P.H.(Col.), Ph.D.(Johns Hop.) (*joint appt. with Institute for Health & Social Policy*)
 L. Patry; B.Sc., M.D.(Laval), F.R.C.P.(C) (PT)
 E. Strumpf; B.A.(Smith), Ph.D.(Harv.) (*joint appt. with Economics*)
 G. Tan; D.Phil.(Oxf.) (PT)

Associate Members

Biomedical Ethics Unit: N. King

Dentistry: P. Allison, J. Feine

Dietetics and Human Nutrition: K. Gray-Donald

Family Medicine: A. Andermann, J. Haggerty, T. Tannenbaum

Geography: N. Ross

Medicine: A. Barkun, M. Behr, S. Bernatsky, J. Bourbeau, P. Brassard, T. Brewer, A. Clarke, K. Dasgupta, M. Eisenberg, P. Ernst, M. Goldberg, C. Greenaway, S. Kahn, M. Klein, N. Mayo, N. Pant Pai, L. Pilote, E. Rahme, B. Richards, K. Schwartzman, M. Sewitch, I. Shrier, V. Tagalakis

Associate Members

Ob/Gyn: H. Abenheim, R. Gagnon

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Canadian	International	Special/Exchange/Visiting
Fall: Dec. 15	Fall: Dec. 15	Fall: Apr. 30
Winter: N/A	Winter: N/A	Winter: Sept. 15
Summer: N/A	Summer: N/A	Summer: Feb. 28

Revision, October 2012. End of revision.

11.6.4.2 Master of Science (M.Sc.); Epidemiology (Thesis) (48 credits)

Students will study the foundations and principles of epidemiology and applied biostatistics, in order to design, conduct, and analyze clinical, population-based, environmental, policy, and methodological health-related research. Graduates will be prepared to engage in scientific collaboration, and communicate results to other scientists and diverse audiences.

Thesis Course (24 credits)

EPIB 690 (24) M.Sc. Thesis

Required Courses (22 credits)

Students exempted from any of the courses listed below must replace them with additional complementary course credits.

EPIB 601	(4)	Fundamentals of Epidemiology
EPIB 602	(3)	Foundations of Population Health
EPIB 603	(4)	Intermediate Epidemiology
EPIB 605	(1)	Critical Appraisal in Epidemiology
EPIB 607	(4)	Inferential Statistics
EPIB 613	(1)	Introduction to Statistical Software
EPIB 614	(1)	Basics of Measurement in Epidemiology
EPIB 621	(4)	Data Analysis in Health Sciences

Complementary Course (2 credits)

2 credits of coursework, at the 500 level or higher, chosen in consultation with the student's academic adviser or supervisor.

11.6.4.3 Master of Science (M.Sc.); Public Health (Non-Thesis) (60 credits)

Students will study the foundations and principles of epidemiology and biostatistics as applied to public health research and practice, in order to design, conduct, and analyze clinical, population-based, environmental, policy, and methodological public health-related research. The program will include a three-month practicum after the first year.

Research Project (14 credits)

EPIB 630 (14) Public Health Project

Required Courses (25 credits)

Students exempted from any of the courses listed below must replace them with additional complementary course credits.

EPIB 601	(4)	Fundamentals of Epidemiology
EPIB 602	(3)	Foundations of Population Health
EPIB 603	(4)	Intermediate Epidemiology
EPIB 605	(1)	Critical Appraisal in Epidemiology
EPIB 607	(4)	Inferential Statistics
EPIB 612	(3)	Principles of Public Health Practice

ENVR 519	(3)	Global Environmental Politics
ENVR 544	(3)	Environmental Measurement and Modelling
ENVR 620	(3)	Environment and Health of Species

Complementary Courses (18 credits)

18 credits of coursework, at the 500 level or higher, chosen in consultation with the student's academic adviser or supervisor.

11.6.5.4 Doctor of Philosophy (Ph.D.); Biostatistics

Students will study theoretical and applied statistics and related fields; the program will train them to become independent scientists able to develop and apply statistical methods in medicine and biology and make original contributions to the theoretical and scientific foundations of statistics in these disciplines. Graduates will be prepared to develop new statistical methods as needed and apply new and existing methods in a range of collaborative projects. Graduates will be able to communicate methods and results to collaborators and other audiences, and teach biostatistics to biostatistics students, students in related fields, and professionals in academic and other settings.

Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Required Courses

2gltinat9lt.5gin99n46i478 4920583 T 0 Irt 2gltiPh.D. Complementary Examinations 11.6.5.4 83 Tm(A)Tjj1 86 492.Dn99nIr27 e1 099nIr27s,c3 Tm(A)Tjj6 492.Dn993mnF

section 11.9.8: Master of Science (M.Sc.); Genetic Counselling (Non-Thesis) (48 credits)

The M.Sc. in Genetic Counselling program provides the academic foundation and clinical training required for the contemporary practice of genetic counselling. Genetic counsellors are health professionals who provide information and support to families who have members with birth defects or genetic disorders and to families who may be at risk for a variety of inherited conditions. Genetic counsellors investigate the problem present in the family, analyze inheritance patterns and risks of recurrence, and review available options with the family. Some counsellors also work in administrative and academic capacities, and many engage in research activities. The curriculum includes a variety of required courses in human genetics and other departments, and 40 weeks of supervised clinical training spread over four semesters. Graduates will be eligible to sit for both the Canadian Association of Genetic Counsellors and the American Board of Genetic Counselling certification examinations. Upon completion of the M.Sc. in Genetic Counselling program, students will demonstrate competence in, or satisfactory knowledge of: principles of human genetics, including cytogenetics, biochemical, molecular, and population genetics; methods of interviewing and counselling, and the dynamics of human behaviour in relation to genetic disease; and social, legal, and ethical issues in genetics. Enrolment will be limited to four students.

section 11.9.9: Doctor of Philosophy (Ph.D.); Human Genetics

The Department of Human Genetics provides a unified curriculum of study in genetics. Areas of specialization include: biochemical genetics, genetics of development, animal models of human diseases, cancer genetics, molecular pathology, gene therapy, genetic dissection of complex traits, genetics of infectious and inflammatory diseases, non-mendelian genetics, bioinformatics, behavioural genetics, neurogenetics, bioethics, and genomics. Many of our faculty hold cross-appointments in various departments (including: biochemistry, biology, cardiology, medicine, microbiology, immunology, neurology, pathology, paediatrics, pharmacology, psychiatry) within the Faculties of Science and Medicine. This enables numerous opportunities for interdisciplinary research and collaboration.

11.9.3.2 Application Procedures

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

See *section 6.3: Application Procedures (for All Admissions Starting Summer 2013)* for detailed application procedures.

11.9.3.2.1 Additional Requirements

The items and clarifications below are additional requirements set by this department:

M.Sc. in Genetic Counselling

- Three reference letters
- Personal Statement
- Interview

Documentation and online application must be received by January 15th. Interviews will be arranged during the weeks of March 1–April 15 for the top 18 candidates.

Graduate Program Coordinator

T. Leslie

Assistant Graduate Program Coordinator

C. Tao

Emeritus Professors

V. Der Kaloustian; B.A.(Acad.), M.Sc., Ph.D., M.D.,C.M.(McG.), D.Sc.(Acad.), F.R.S.C., F.R.C.P.S.(C)

F.C. Fraser; B.Sc.(Acad.) M.Sc., Ph.D., M.D.,C.M., D.Sc.(McG), O.C., F.R.S.C.

K. Glass; M.A.(Barat), B.C.L., D.C.L.(McG)

B. Mukherjee; B.Sc.(Calc.), M.S.(Brig. Young), Ph.D.(Utah)

L. Pinsky; M.D..C., F

11.9.5 Master of Science (M.Sc.); Human Genetics (Thesis) (45 credits)

Thesis Courses (33 credits)

HGEN 680	(9)	M.Sc. Thesis Research 1
HGEN 681	(12)	M.Sc. Thesis Research 2
HGEN 682	(12)	M.Sc. Thesis Research 3

Required Courses (6 credits)

HGEN 662	(3)	Laboratory Research Techniques
HGEN 692	(3)	Human Genetics

Complementary Courses (6 credits)

6 credits chosen from the departmental offerings below or from 500-, 600-, or 700-level courses offered in the Faculties of Medicine or Science:

Genetics es8.904 Tm(v)Tj1 84 Tm(Geneticm 500-, 600-, or 7hj1 0 0 1 70.52 576.443 Tm(Genetic2)Tj/F0 8.3 Tf1 0 0 1

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

Note: The Graduate Advisory Committee may stipulate additional coursework at the 500, 600, or 700 level depending on the background of the candidate.

11.9.7 Master of Science (M.Sc.); Human Genetics (Thesis) — Bioethics (45 credits)**Thesis Courses (30 credits)**

30 credits selected as follows:

HGEN 681	(12)	M.Sc. Thesis Research 2
HGEN 682	(12)	M.Sc. Thesis Research 3
HGEN 683	(6)	M.Sc. Thesis Research 4

Required Courses (12 credits)

12 credits from:

BIOE 680	(3)	Bioethical Theory
BIOE 681	(3)	Bioethics Practicum
HGEN 662	(3)	Laboratory Research Techniques
HGEN 692	(3)	Human Genetics

Complementary Courses (3 credits)

3 credits from the following:

BIOE 682	(3)	Medical Basis of Bioethics
CMPL 642	(3)	Law and Health Care
PHIL 543	(3)	Seminar: Medical Ethics
RELG 571	(3)	Religion and Medicine

11.9.8 Master of Science (M.Sc.); Genetic Counselling (Non-Thesis) (48 credits)

Revision, August 2012. Start of revision.

Required Courses (48 credits)

HGEN 600D1	(3)	Genetic Counselling Practicum
HGEN 600D2	(3)	Genetic Counselling Practicum
HGEN 601	(3)	Genetic Counselling Principles
HGEN 610D1	(3)	Genetic Counselling: Independent Studies
HGEN 610D2	(3)	Genetic Counselling: Independent Studies
HGEN 617	(3)	Principles of Medical Genetics
HGEN 620	(3)	Introductory Field Work Rotations

11.9.10 Doctor of Philosophy (Ph.D.); Human Genetics — Bioinformatics

Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Required Courses (6 credits)

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
HGEN 692	(3)	Human Genetics
HGEN 701	(0)	Ph.D. Comprehensive Examination

Complementary Courses (6 credits)

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The M.Sc. and Ph.D. programs in Medical Physics are accredited by the Commission on Accreditation of Medical Physics Education Programs, Inc., sponsored by the American Association of Physicists in Medicine (AAPM), the American College of Medical Physics (ACMP), the American College of Radiology (ACR), and the Canadian College of Physicists in Medicine (CCPM).

section 11.10.5: Master of Science (M.Sc.); Medical Radiation Physics (Thesis) (60 credits)

This two-year program provides a comprehensive introduction to the academic, research, and practical aspects of physics applied to radiation medicine. Students may go on to careers in clinical service as medical physicists in research-oriented hospital settings after clinical residency training; may consider development careers in industry in radiation therapy, diagnostic radiology, or nuclear medicine or nuclear energy; in governmental organizations as radiation safety experts, etc.; or pursue academic careers in university, industry, or government organizations. Our graduate programs are accredited by CAMPEP (Commission for Accreditation of Medical Physics Education Programs). Medical physicists must go through CAMPEP training (M.Sc. or Ph.D., followed by a residency training) to be eligible to sit certification exams. Certification is becoming a mandatory requirement for eligibility to practise in a clinical environment. The McGill M.Sc. program is research oriented, which has the additional advantage that the roads toward a Ph.D., followed by academic, industry, or clinical careers, are wide open. The practical and laboratory sections of the program are conducted in various McGill teaching hospitals.

The program comprises:

1. didactic courses in radiation physics, radiation dosimetry, the physics of nuclear medicine and diagnostic radiology, medical imaging, medical electronics and computing, radiation biology, and radiation hazards and protection;
2. seminars in radiation oncology, diagnostic radiology, and miscellaneous aspects of medical physics, e.g., lasers;
3. laboratory courses in radiation dosimetry and medical imaging;
4. an individual research thesis.

11.10.3 Medical Physics Admission Requirements and Application Procedures

Revision,

11.11 Medicine, Experimental

11.11.1 Location

Division of Experimental Medicine
Department of Medicine
Lady Meredith House, Room 101
1110 Pine Avenue West
Montreal, QC H3A 1A3
Canada

Telephone: 514-398-3466

Fax: 514-398-3425

Email: experimental.medicine@mcgill.ca

Website: www.medicine.mcgill.ca/expmed

11.11.2 About Experimental Medicine

Experimental Medicine is a Division of the Department of Medicine charged with the task of providing graduate education in the Department, and enabling professors located in the research institutes of the McGill teaching hospitals and certain other centres to supervise graduate students. The Division offers

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See [section 6.3: Application Procedures \(for All Admissions Starting Summer 2013\)](#) for detailed application procedures.

11.11.3.2.1 Additional Requirements

The items and clarifications below are additional requirements set by this department:

M.Sc. and Ph.D. in Experimental Medicine

- Personal Statement
- Curriculum Vitae
- Acceptance by a research director
- Letter from the candidate's research director outlining the M.Sc. or Ph.D. project
- Additional documents (in the cases of the M.Sc. (Bioethics Option), the M.Sc. (Environment Option), and the M.Sc. (Family Medicine option))

11.11.3.3 Dates for Guaranteed Consideration

Canadian	International	Special/Exchange/Visiting
Fall: June 30	Fall: April 30	Fall: Same as Canadian/International
Winter: Oct. 15	Winter: Aug. 31	Winter: Same as Canadian/International
Summer: N/A	Summer: N/A	Summer: N/A

Revision, October 2012. End of revision.

11.11.4 Medicine, Experimental Faculty

Chair, Department of Medicine

D. Eidelman

Director, Division of Experimental Medicine

H. Bennett

Emeritus Professors

T.M.S. Chang; B.Sc., M.D.,C.M., Ph.D.(McG.), F.R.C.P.(C)

B.E.P. Murphy; B.A., M.D.(Tor.), M.Sc., Ph.D.(McG.), F.A.C.P.(C)

Professors

M. Alaoui-Jamali; D.V.M.(Rabat, Morocco), Ph.D.(René-Descartes, Paris)

C. Autexier; B.Sc.(C'odia), Ph.D.(McG.)

A. Bateman; B.Sc., Ph.D.(Lond.)

G. Batist; B.Sc.(Col.), M.D.,C.M.(McG.), F.R.C.P.(C)

N. Beauchemin; B.A., B.Sc., M.Sc., Ph.D.(Montr.)

H. Bennett; B.A.(York, UK), Ph.D.(Brun.)

R. Blostein; M.Sc., Ph.D.(McG.)

A.E. Clarke; M.D.(Nfld.), M.S.(Stan.), F.R.C.P.(C)

M. Cosio; B.Sc.(Oviedo), M.D.(Madrid)

A. Cybulsky; M.D.(Tor.), F.R.C.P.(C)

D. Eidelman; M.D.,C.M.(McG.), F.R.C.P.(C)

A. Fuks; B.Sc., M.D.,C.M.(McG.)

J. Genest Jr.; M.D.,C.M.(McG.), F.R.C.P.(C)

A. Giaid; D.V.M.(Baghdad), M.D., Ph.D.(Lond.)

V. Giguere; B.Sc., Ph.D.(Laval)

M. Goldberg; B.Sc., M.Sc., Ph.D.(McG.)

Professors

D. Goltzman; B.Sc., M.D.,C.M.(McG.), F.R.C.P.(C)

S.A. Grover; B.A.(Roch.), M.D.,C.M.(McG.), M.P.A.(Harv.), F.R.C.P.(C)

Q.A. Hamid; M.D.(Mosul, Iraq.), Ph.D.(Lond.)

G. Hendy; B.Sc.(Sheff.), Ph.D.(Lond.)

J. Hiscott; B.Sc., M.Sc.(W. Ont.), Ph.D.(NYU)

L.J. Hoffer; B.Sc., M.D.,C.M.(McG.), Ph.D.(MIT)

S. Hussain; M.D.(Baghdad), Ph.D.(McG.)

A.C. Karaplis; B.Sc., M.D., Ph.D.(McG.)

L. Kleiman; B.Sc.(Ill.), Ph.D.(Johns Hop.)

R. Kremer; M.D., Ph.D.(Paris)

S. Lehnert; B.Sc.(Nottingham), M.Sc., Ph.D.(Lond.)

M. Levy; B.Sc., M.D.,C.M.(McG.), F.R.C.P.(C)

M.S. Ludwig; M.D.(Manit.), F.R.C.P.(C)

S. Magder; M.D.(Tor.), F.R.C.P.(C)

D. Malo; D.V.M., M.Sc.(Montr.), Ph.D.(McG.)

O.A. Mamer; B.Sc., Ph.D.(Windsor)

E. Marliss; M.D.(Alta.), F.R.C.P.(C)

J. Martin; B.Sc., M.B., B.Ch., M.D.(Cork), F.R.C.P.(C)

J. Milic-Emili; M.D.(Milan), F.R.S.C.

W.H. Miller; A.B.(Princ.), Ph.D.(Rock.), M.D.(C'nell)

W.J. Muller; B.Sc., Ph.D.(McG.)

A. Nepveu; B.Sc., M.Sc.(Montr.), Ph.D.(Sher.)

T. Nilsson; B.Sc., Ph.D.(Sweden)

L. Panasci; B.Sc., M.D.(G'town)

K. Pantopoulos; B.Sc., Ph.D.(Aristotelian, Greece)

V. Papadopoulos; D.Pharm.(Athens), Ph.D.(Paris)

M. Park; B.Sc., Ph.D.(Glas.)

A.C. Peterson; B.Sc.(Vic., BC), Ph.D.(Br. Col.)

B.J. Petrof; M.D.(Laval)

M.N. Pollak; M.D.,C.M.(McG.), F.R.C.P.(C)

P. Ponka; M.D., Ph.D.(Prague)

B. Posner; M.D.(Manit.), F.R.C.P.(C)

W.S. Powell; B.A.(Sask.), Ph.D.(Dal.)

S. Prakash; M.Sc., M.Tech., M.Phil.(India), Ph.D.(McG.)

S. Rabbani; M.B.B.S.(King Edward Med. Coll., Lahore)

D. Radzioch; M.Sc., Ph.D.(Jagiellonian, Cracow)

M. Rasminsky; B.A.(Tor.), M.D.(Harv.), Ph.D.(Lond.)

S. Richard; B.Sc., Ph.D.(McG.)

E. Schiffrin; M.D.(Argentina), Ph.D.(McG.)

E. Schurr; Diplom., Ph.D.(Al. Ludwigs U., Freiburg)

E. Skamene; M.D.(Charles U., Czech.), Ph.D.(Czech. Acad. of Sci.), F.R.C.P.(C), F.A.C.P.

A.D. Sniderman; M.D.(Tor.)

Professors

C. Srikant; M.Sc., Ph.D.(Madr.)
M.M. Stevenson; B.A.(Hood), M.Sc., Ph.D.(Catholic U. of Amer.)
D.M.P. Thomson; M.D.(W. Ont.), Ph.D.(Lond.), F.R.C.P.(C)
M. Trifiro; B.Sc., M.D.,C.M.(McG.)
C. Tsoukas; B.Sc.(McG.), M.Sc.(Hawaii), M.D.(Athens), F.R.C.P.(C)
M. Wainberg; B.Sc.(McG.), Ph.D.(Col.)
J. White; B.Sc., M.Sc.(Car.), Ph.D.(Harv.)
S. Wing; B.Sc., M.Sc.(McG.)
X.-J. Yang; B.Sc.(Zhejiang), Ph.D.(Shanghai)
M. Zannis-Hadjopoulos; B.Sc., M.Sc., Ph.D.(McG.)
H. Zingg; M.D.(Basel), Ph.D.(McG.)

Associate Professors

S. Ali; B.Sc.(C'dia), Ph.D.(McG.)
D. Baran; M.D.,C.M.(McG.), F.R.C.P.(C)
M. Behr; B.Sc.(Tor.), M.D.(Qu.), M.Sc.(McG.)
N. Bernard; B.Sc.(McG.), Ph.D.(Duke)
V. Blank; B.Sc., M.Sc.(Konstanz, Germany), Ph.D.(Inst. Pasteur)
M. Blostein; M.D.,C.M.(McG.)
L. Chalifour; B.Sc., Ph.D.(Manit.), M.A.(Harv.)
S.R. Cohen; B.Sc., M.Sc., Ph.D.(McG.)
D. Courmoyer; M.D.(Sher.), F.R.C.P.(C)
M. Culty; B.Sc., M.Sc.(Lyon), Ph.D.(Grenoble)
G. Di Battista; B.Sc.(C'dia), M.Sc., Ph.D.(Montr.)
F. Doualla-Bell; B.Sc., M.S., Ph.D.(Paris XI)
J.C. Engert; B.A.(Colby), Ph.D.(Boston)
E. Fixman; B.Sc.(Col.), Ph.D.(Johns Hop.)
B. Gagnon; M.D.(Laval), M.Sc.(McG.), F.R.C.P.(C)
R. Gagnon; B.Sc.(Montr.), M.D.(Laval), D.Phil.(Oxf.)
A. Gatignol; M.Sc., Ph.D.(Paul Sabatier)
S.B. Gottfried; M.D.(Penn.)
J. Henderson; B.Sc., Ph.D.(McG.)
B. Jean-Claude; B.Sc., M.Sc.(Moncton), Ph.D.(McG.)
P. Laneuville; B.Sc.(McM.), M.D.(Ott.), F.R.C.P.(C)
S. Laporte; B.Sc., M.Sc., Ph.D.(Sher.)
L. Larose; B.Sc., Ph.D.(Montr.)
M. Laughrea; B.Sc.(Laval), M.Sc., M.Phil., Ph.D.(Yale)
A.-M. Lauzon; B.Sc., M.Sc., Ph.D.(McG.)
J.-J. Lebrun; B.Sc., M.Sc., Ph.D.(Rennes, France)

Associate Professors

M. Lipman; M.D.,C.M.(McG.), F.R.C.P.(C)
 J.-L. Liu; B.Sc., M.Sc.(Beijing), Ph.D.(McG.)
 J.A. Morais; M.D.(Montr.), F.R.C.P.(C)
 A. Mouland; B.A., B.Sc., Ph.D.(McG.)
 M. Newkirk; B.Sc., M.Sc.(Qu.), Ph.D.(Tor.)
 S. Qureshi; B.Sc., M.D.(Alta.), F.R.C.P.(C)
 J. Rauch; B.Sc., Ph.D.(McG.)
 J.-P. Routy; B.Sc., M.D., Ph.D.(France)
 G. Spurrll; B.Sc.(Med.), M.D.(Manit.)
 T. Takano; M.D., Ph.D.(Tokyo)
 P. Tonin; B.Sc., M.Sc., Ph.D.(Tor.)
 B. Turcotte; B.Sc., Ph.D.(Laval)
 B.J. Ward; M.D.,C.M.(McG.), M.Sc.(Oxf.), F.R.C.P.(C)

Assistant Professors

R. Aloyz; B.A., M.Sc., Ph.D.(Argentina)
 A. Baass; B.Sc.(McG.), M.D., M.Sc.(Montr.), F.R.C.P.(C)
 C. Baglolle; B.Sc., M.Sc.(PEI), Ph.D.(Calg.)
 M. Chevrette; B.Sc., M.Sc., Ph.D.(Laval)
 I. Colmegna; M.Sc.(Argentina)
 S. Daskalopoulou; M.D.(Athens)
 M. Divangahi; B.Sc.(McM.), Ph.D.(McG.)
 B. Gilfix; B.Sc.(Manit.), Ph.D.(W. Ont.), M.D.,C.M.(McG.), F.R.C.P.(C)
 C. Haston; B.Sc.(W. Ont.), M.Sc.(Tor.), Ph.D.(Texas)
 N. Johnson; B.Sc.(C' dia), M.D.(Ott.), Ph.D.(Br. Col.), F.R.C.P.(C)
 M. Kokoeva; B.Sc., Ph.D.(Russia)
 L. Koski; B.Sc.(Tor.), Ph.D.(McG.)
 A. Kristof; B.Sc., M.D.,C.M.(McG.), F.R.C.P.(C)
 S. Lehoux; B.Sc.(Bishop's), Ph.D.(Sher.)
 C. Liang; B.Sc., Ph.D.(Nankai)
 B. Mazer; B.Sc.(Col.), M.D.,C.M.(McG.), F.R.C.P.(C)
 M. Murshed; M.Sc.(Brussels), Ph.D.(Cologne)
 E. Nashi; B.Sc., M.D.(Alta.), M.Sc.(McG.), Ph.D.(Northshore Medical Ctr.), F.R.C.P.(C)
 D. Nguyen; M.D.,C.M.(McG.), F.R.C.P.(C)
 M. Paliouras; B.Sc.(Tor.), M.Sc.(Flor.), Ph.D.(McG.)
 R. Rajan; B.Sc., M.D.(Manit.), M.Sc.(McM.)
 C. Rocheleau; B.A.(Assumption Coll.), Ph.D.(Mass.)
 S. Rousseau; B.Sc., M.Sc., Ph.D.(Laval)
 M. Saleh; B.Sc., M.Sc.(Beirut), Ph.D.(McG.)
 M. Sebag; B.Sc., Ph.D.(McG.), M.D.(Tor.), F.R.C.P.(C)
 C. Seguin; B.Sc.(McG.), M.D.(Montr.), F.R.C.P.(C)
 P. Siegel; B.Sc., Ph.D.(McM.)

Assistant Professors

R. Sladek; B.Sc., M.D.(Tor.), F.R.C.P.(C)

E. Torban; B.Sc., M.Sc.(Russia), Ph.D.(McG.)

Associate Members, McGill

B. Abdulkarim, A. Andermann, G. Bartlett, M. Basik, E. Bereza, J.D. Bobyn, D. Boivin, M. Bouchard, J. Bourbeau, P. Brodt, K. Brown, D.H. Burns, S. Chevalier, R.-C. Chian, H. Clarke, T. Coderre, T. Duchaine, D. Dufort, C. Ells, I.M. El Naqa, R. Farookhi, L. Ferri, K. Glass, C. Goodyer, P. Goodyer, W. Gotlieb, M. Götte, R. Grad, I. Gupta, J. Haggerty, M. Hunt, N. Jabado, M. Kaartinen, N. Kabani, J. Kimmelman, A. Koromilas, L. Lands, J. Lapointe, S.K. Law, C. Mandato, A. Macaulay, K. Mann, L. McCaffrey, C. McCusker, M. Meaney, T. Muanza, M. Nagano, J. Nalbantoglu, M. Ndao, F. Ni, C. O'Flaherty, A. Pause, H. Perrault, C. Piccirillo, P. Pluye, C. Polychronakos, J. Rak, C. Rodriguez, E. Rosenberg, A. Ryan, S. Sabri, G. Sant'Anna, R. Schirmmacher, R. Slim, N. Sonenberg, M. Sullivan, S.L. Tan, G. Tannenbaum, I. Topisirovic, M. Tremblay, J. Ursini-Siegel, M. Ware, M. Witcher, C. Wu, J.-H. Wu, M. Yaffe, G. Zogopoulos, J. Zwaagstra

Associate Members, Université de Montréal

J. Archambault, R. Butterworth, M. Cayouette, F. Charron, E. Cohen, J.-F. Côté, V. Dave, J. Davignon, C. Deal, A. Deng, C.F. Deschepper, C. Desrosiers, J.M. Di Noia, J. Drouin, J. Estall, H. Gu, J. Gutkowska, P. Hamet, Z. Hanna, P. Jolicœur, A. Kania, M. Kmita, C. Lazure, E. Lecuyer, S. Mader, T. Moroy, M. Oeffinger, K. Podypanina, R. Rabasa-Lhoret, E. Racine, M. Raymond, T. Reudelhuber, M. Sairam, N. Seidah, R.-P. Sekaly, W.-K. Suh, J. Tremblay, M. Trudel, W.Y. Tsang, J. Vacher, A. Veillette

Associate Member, Pharmaceutical Companies

B. Gibbs

11.11.5 Master of Science (M.Sc.); Experimental Medicine (Thesis) (45 credits)**Thesis Courses (36 credits)**

24-36 credits selected from the following:

EXMD 690	(3)	Master's Thesis Research 1
EXMD 691	(6)	Master's Thesis Research 2
EXMD 692	(9)	Master's Thesis Research 3
EXMD 693	(12)	Master's Thesis Research 4
EXMD 694	(12)	Master's Thesis Research 5

Complementary Courses (21 credits)

9-21 credits of courses at the 500, 600, or 700 level chosen in consultation with the Supervisor. A minimum of 9 course credits is required for students entering the program with a bachelor's or M.D. degree.

11.11.6 Master of Science (M.Sc.); Experimental Medicine (Thesis) — Bioethics (45 credits)**Thesis Courses (24 credits)**

BIOE 690	(3)	M.Sc. Thesis Literature Survey
BIOE 691	(3)	M.Sc. Thesis Research Proposal
BIOE 692	(6)	M.Sc. Thesis Research Progress Report
BIOE 693	(12)	M.Sc. Thesis

Required Courses (6 credits)

BIOE 680	(3)	Bioethical Theory
BIOE 681	(3)	Bioethics Practicum

EPIB 507	(3)	Biostatistics for Health Professionals
EPIB 600	(3)	Clinical Epidemiology
FMED 500	(1)	Introduction to Research
FMED 600	(1)	Mixed Studies Reviews

Complementary Courses (12 credits)

(6-12 credits)

One of the following courses:*

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

Local Location Tj1 simen 3.52 555 Tm0hh 1

One to three courses at the 500, 600, or 700 level chosen in consultation with the student's academic supervisor.

11.11.11 Graduate Diploma in Clinical Research (30 credits)

The core element of the diploma is the Practicum in Clinical Research. It is a six-step program with active “clerkship” or “intern/resident type” participation in each component that is essential to the successful development and evaluation of a clinical trial.

Required Courses (6 credits)

EXMD 617	(1)	Workshop in Clinical Trials 1
EXMD 618	(1)	Workshop in Clinical Trials 2
EXMD 619	(1)	Workshop: Clinical Trials 3
EXMD 620	(1)	Clinical Trials and Research 1
EXMD 625	(1)	Clinical Trials and Research 2
EXMD 626	(1)	Clinical Trials and Research 3

Complementary Courses (6 credits)

Two courses chosen from: Experimental Medicine (EXMD), Pharmacology and Therapeutics (PHAR), Epidemiology and Biostatistics (EPIB). With approval, courses from other Allied Health Sciences departments may be considered.

Required Practicum (18 credits)

EXMD 627	(18)	Practicum in Clinical Research
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11.12 Medicine, Family (Option)

Location

11.12.2 About Family Medicine

The Department of Family Medicine at McGill University has been in existence since the late 1970s. Through the efforts of dedicated and committed faculty members, our department has gained provincial, national, and international renown for its programs. We have graduated over 1,000 family physicians who are working in urban and rural settings around the world. Health Care Reform in Canada has placed the discipline of Family Medicine at the centre of health care delivery. Family physicians have the responsibility to ensure that every individual receives continuous and comprehensive care. The Department of Family Medicine is an academic department composed of health care professionals dedicated to teaching, research, service, and the advancement of the discipline of Family Medicine, locally, nationally, and internationally.

The McGill Department of Family Medicine has the mandate to:

- Provide progressive undergraduate and postgraduate education
- Develop CME programs to address changes in the health care system
- Conduct health services research to assess the impact of reform on population health

11.12.3 Medicine, Family (Option) Admission Requirements and Application Procedures

11.12.3.1 Admission Requirements

Revision, October 2012. Start of revision.

The Family Medicine Option program is open to family physicians practising in Quebec interested in conducting research in family medicine. Exceptionally, we may consider candidates with a different background, such as allied health professionals, and undergraduate students across disciplines wanting to undertake research relevant to family medicine. In this case, you may be considered for admission on an individual basis and should contact the [Program Coordinator](#) to discuss eligibility.

What do we look for?

High academic achievement: A cumulative grade point average (CGPA) of 3.4 is required out of a possible maximum CGPA of 4.0 or a GPA of 3.6 is required in the last two years of full-time studies.

Proof of competency in oral and written English: TOEFL: International students who have not received their instruction in English or whose mother tongue is not English must pass the Test of English as a Foreign Language (TOEFL) with a minimum score of 567 (paper-based test) or 86, with each component score not less than 20 (Internet-based test). The TOEFL institution code for McGill University is 0935. Alternatively, students may submit International English Language Testing System (IELTS) scores with a minimum overall band score of 6.5. Original score reports must be submitted (photocopies will not be accepted). For further information, please refer to the [TOEFL](#) website.

For overseas graduates, an attempt is made to situate the applicant's academic grades among the standards of their universities. Grades are, however, converted to their McGill equivalent. Conversion charts, as well as required admission documentation for each country, are provided by Graduate and Postdoctoral Studies ([GPS](#)) and prospective students should refer to these in order to determine if they are admissible to our program.

11.12.3.2 Application Procedures

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

See [section 6.3: Application Procedures \(for All Admissions Starting Summer 2013\)](#) for detailed application procedures.

Supervisor: You must have met and confirmed a supervisor before the application process can commence. Please contact the [Program Coordinator](#) by **March 1st** to ensure that you have a supervisor. Prior to processing any admission, we require each file to contain a completed [Confirmation of Supervisor Form](#), signed by the proposed supervisor and student. Once the supervisor has been confirmed, the student will need to provide a 1–2 page Project Description of the proposed research.

After the Department of Family Medicine has informed the student that they have passed the first level of approval and that they have been successfully matched up with a supervisor, they are then required to apply officially with the Division of Experimental Medicine and Graduate and Postdoctoral Studies.

Application checklist: This [CHECKLIST](#) should be submitted at the time of application.

Curriculum Vitae: Please provide a resumé, which should include a statement of research interests as well as a listing of previous research experience and publications, if applicable.

Letters of Reference: Two (2) letters of reference, as well as an [Applicant Evaluation Form](#) completed by each referee must accompany any application to our program. These letters must be current (not more than six months old) and must be uploaded directly to McGill by the referee. Applicants are encouraged to request references from academic or other professional employers who can evaluate their potential for graduate studies and research, and who can attest to the applicant's abilities and aptitudes. Please note that these should not be the proposed supervisor. *Any applicant having undertaken previous graduate studies (whether at McGill or elsewhere) should make sure that one of the letters of reference is from their graduate supervisor.*

Personal Statement: Applicants must submit a personal statement in which they describe their background, research interests, and reasons for wishing to undertake the desired program. The statement should be no more than two (2) pages long.

11.12.3.2.1 Additional Requirements

The i6931l'di 46052 78.322 Tm(Thj1 1a1 Requirementend program.)Tj1 0 0 1 1c02 ements

- [Application Checklist](#)
- [Confirmation of Supervisor Form](#), signed by the proposed supervisor and student.
- Curriculum Vitae
- Personal Statement – no more than two (2) pages long
- Research Proposal

11.12.3.3 Dates for Guaranteed Consideration

Canadian	International	Special/Exchange/Visiting
Fall: March 15	Fall: March 15	Fall: N/A
Winter: N/A	Winter: N/A	Winter: N/A
Summer: N/A	Summer: N/A	Summer: N/A

All supporting documents must be received by March 15th. Admissions are for September only. Tj1 0 03 only

3775 University Street
Montreal, QC H3A 2B4
Canada

Telephone: 514-398-3061

Fax: 514-398-7052

Email: grad.microimm@mcgill.ca

Website: www.mcgill.ca/microimm

11.13.2 About Microbiology and Immunology

The Department offers graduate programs leading to the degrees of M.Sc. and Ph.D. Each program is tailored to fit the needs and backgrounds of individual students. The graduate program is designed to offer students state-of-the-art training, concentrating on four key areas of research: cellular and molecular immunology, microbial physiology and genetics, molecular biology of viruses, and medical microbiology. Basic research discoveries in microbiology may lead to improved drug design and vaccine development to treat and prevent diseases. The Department has many notable facilities and resources, including a cell sorter, ultra centrifuges, confocal microscope, real-time PCR facilities, cryostat for immunocytochemistry, and facilities for radio-isotope studies and infectious diseases. We foster close ties with McGill's teaching hospitals and research centres to promote multidisciplinary research.

section 11.13.5: Master of Science (M.Sc.); Microbiology and Immunology (Thesis) (45 credits)

The primary goal of this program is to provide students with unique opportunities to learn experimental designs and fundamental research techniques, and objectively synthesize information from scientific literature. These tools enable the students to focus on major research topics offered by the Department: molecular microbiology, mycology, microbial physiology, virology, genetics, immunology, drug design, and aspects of host-parasite relationships. Each M.Sc. student chooses their preferred major research area and research supervisor. Following an interview, the student is presented with a research topic and offered a studentship (amounts vary). Each student then must register for our graduate courses (two seminars, two reading and conference courses, and three current topics). If pertinent to the student's research program, the research adviser may advise the student to take additional courses. Most of our students, after one year, are proficient researchers, and some first author of a research publication. About 70% of the M.Sc. students elect to enter into our Ph.D. program. The remaining students advance their microbiology background by opting to enter into medicine, epidemiology, biotechnology, or pharmaceutical disciplines.

section 11.13.6: Doctor of Philosophy (Ph.D.); Microbiology and Immunology

The primary goal of the Ph.D. program is to create a self-propelled researcher, proficient in experimental designs and advanced methodologies applicable to the varied and rapidly changing disciplines in microbiology and immunology. Close research supervision and bi-weekly laboratory sessions impart the requisite research discipline and objective assessment of acquired or published research data. A Ph.D. student, if promoted from our M.Sc. program, without submitting the thesis, is required to register for one graduate seminar and one reading and conference course, but the bulk of his/her time is devoted to research. Other requirements include a yearly presentation of the accumulated research data to the Ph.D. supervisory committee, successfully clearing the Ph.D. comprehensive examination, two years after registration into the Ph.D. program, and finally submission of a thesis. The research theme must be original, and the acquired data and hypothesis must be defended orally by the student. Each student receives a stipend for the entire duration and a minimum six-semester residency is required for the completion of the program.

11.13.3 Microbiology and Immunology Admission Requirements and Application Procedures

11.13.3.1 Admission Requirements

Revision, October 2012. Start of revision.

Master's

Candidates are required to hold a B.Sc. degree in microbiology and immunology, biology, biochemistry, or another related discipline; those with the M.D., D.D.S., or D.V.M. degrees are also eligible to apply. The minimum grade point average for acceptance into the program is 3.2 (out of 4.0). 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 documented proof of competency in oral and written English. Before acceptance, appropriate exam results must be submitted directly from the TOEFL (Test of English as a Foreign Language) or IELTS (International English Language Testing Systems) Office. An institutional version of the TOEFL is not acceptable. Applications will not be considered if a TOEFL or IELTS test result is not available.

The Test of English as a Foreign Language (TOEFL):

- Paper-Based Test (PBT): a minimum score of 575
- Internet-Based Test (iBT): a minimum overall score of 95
- The International English Language Testing System (IELTS): a minimum overall band score of 7.0

The TOEFL Institution Code for McGill University is 0935.

Ph.D.

Students who have satisfactorily completed an M.Sc. degree in microbiology and immunology, a biological science, or biochemistry, or highly qualified students enrolled in the departmental M.Sc. program, may be accepted into the Ph.D. program provided they meet its standards.

11.13.3.2 Application Procedures

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

See [section 6.3: Application Procedures \(for All Admissions Starting Summer 2013\)](#) for detailed application procedures.

All applicants are encouraged to approach academic staff members during or before the application process since no applicants are accepted without a supervisor.

11.13.3.2.1 Additional Requirements

The items and clarifications below are additional requirements set by this department:

- Letter from a prospective supervisor

11.13.3.3 Dates for Guaranteed Consideration

All applications and documents must be submitted by the Dates for Guaranteed Consideration.

Canadian	International	Special/Exchange/Visiting
Fall: June 1	Fall: March 15	Fall: Same as Canadian/International
Winter: Sept. 15	Winter: Sept. 15	Winter: Sept. 15
Summer: Jan. 15	Summer: Jan. 15	Summer: Jan. 15

Revision, October 2012. End of revision.

11.13.4 Microbiology and Immunology Faculty

Chair

J. Madrenas

Emeritus Professor

R.A. MacLeod

Professors

A. Berghuis; M.Sc.(The Netherl.), Ph.D.(Br. Col.)

J.W. Coulton; B.Sc.(Tor.), M.Sc.(Calg.), Ph.D.(W. Ont.)

J. Madrenas; M.D.(Barcelona), M.Sc., Ph.D.(Alta.)

G.J. Matlashewski; B.Sc.(C'dia), Ph.D.(Ohio)

R.A. Murgita; B.Sc.(Maine), M.S.(Vermont), Ph.D.(McG.)

M. Olivier; B.Sc.(Montr.), Ph.D.(McG.)

M.A. Wainberg; B.Sc.(McG.), Ph.D.(Col.)

Associate Professors

D.J. Briedis; B.A., M.D.(Johns Hop.)

B. Cousineau; B.Sc., M.Sc., Ph.D.(Montr.)

S. Fournier; Ph.D.(Montr.)

M. Gotte; Ph.D.(Max Planck)

H. Le Moual; Ph.D.(Montr.)

G. T. Marczynski; B.Sc., Ph.D.(Ill.)

C. Piccirillo; B.Sc., Ph.D.(McG.)

D. Sheppard; M.D.(Tor.)

Associate Professors

S. Vidal; Ph.D.(Geneva)

Assistant Professors

J. Fritz; Ph.D.(Vienna)

S. Gruenheid; B.Sc.(Br. Col.), Ph.D.(McG.)

C. Krawczyk; Ph.D.(Tor.)

Associate Members*Human Genetics:* P. Gros*Institute of Parasitology:* F. Dziarsinski, A. Jardim, M. Ndao, P. Ribeiro, P. Rohrbach, J. Zhang*Medicine:* M. Behr, I. Colmegna, A. Finzi, S. Hussain, A. Kristof, C. Liang, V. Loo, A. Manges, M.A. Miller, J. Nadeau, M. Newkirk, K. Pantopoulos, J.E. Rauch, M. Reed, M. Saleh, M. Tremblay, C. Tsoukas, B. Turcotte, B.J. Ward*Microbiology and Immunology:* L. Kleiman*Neuroimmunology:* A. Bar-Or*Neurology and Neurosurgery:* J. Antel*Oncology:* A. Gatignol, A.E. Koromilas, A. Mouland, S. Richard*Ophthalmology:* M. Burnier*Surgery:* N.V. Christou**Adjunct Professors**

J. Archambault

A. Descoteaux

T.D. Jones

G. Kukolj

P. Lau

B. Lee

S-L. Liu

A. Makrigiannis

A.M. Matte

C. Rioux

W.-K. Suh

D. Ziberstein

11.13.5 Master of Science (M.Sc.); Microbiology and Immunology (Thesis) (45 credits)**Thesis Courses (24 credits)**

MIMM 697	(8)	Master's Research 1
MIMM 698	(8)	Master's Research 2
MIMM 699	(8)	Master's Research 3

Required Courses (15 credits)

MIMM 611	(3)	Graduate Seminars 1
MIMM 612	(3)	Graduate Seminars 2

MIMM 613	(3)	Current Topics 1
MIMM 614	(3)	Current Topics 2
MIMM 615	(3)	Current Topics 3

Complementary Courses (6 credits)

6 credits, two of the following courses:

MIMM 616	(3)	Reading and Conference 1
MIMM 617	(3)	Reading and Conference 2
MIMM 618	(3)	Reading and Conference 3
MIMM 619	(3)	Reading and Conference 4

Other courses may be required to strengthen the student's background.

11.13.6 Doctor of Philosophy (Ph.D.); Microbiology and Immunology**Thesis**

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Required Courses (18 credits)

MIMM 611	(3)	Graduate Seminars 1
MIMM 612	(3)	Graduate Seminars 2
MIMM 613	(3)	Current Topics 1
MIMM 614	(3)	Current Topics 2
MIMM 615	(3)	Current Topics 3
MIMM 701	(0)	Comprehensive Examination-Ph.D. Candidate
MIMM 713	(3)	Graduate Seminars 3

Complementary Courses (12 credits)

(Minimum of 12 credits)

Three courses from List A and a minimum of three consecutive courses from List B.

List A:

MIMM 616	(3)	Reading and Conference 1
MIMM 617	(3)	Reading and Conference 2
MIMM 618	(3)	Reading and Conference 3
MIMM 619	(3)	Reading and Conference 4

List B:

MIMM 721	(1)	Ph.D. Research Progress Report 1
MIMM 722	(1)	Ph.D. Research Progress Report 2
MIMM 723	(1)	Ph.D. Research Progress Report 3
MIMM 724	(1)	Ph.D. Research Progress Report 4

section 11.14.6: Doctor of Philosophy (Ph.D.); Neuroscience

The IPN offers a highly competitive Ph.D. degree program that prepares students for successful scientific careers in the field of neuroscience. Over half of the students registered in the neuroscience graduate program at McGill University are in the doctoral stream. Applicants must hold a graduate-level degree in a field related to neuroscience or have an M.D. degree, preferably with postgraduate training. Applicants will also be considered for admission if enrolled in the M.D.-Ph.D. program through the Faculty of Medicine at McGill University. Students currently registered in the Master's program in neuroscience may be permitted to transfer to the Ph.D. program without submitting a master's thesis. Applicants are expected to have attained a high scholastic standing equal to, or greater than, the minimum cumulative grade point average of 3.3 (out of 4.0 at McGill University) in all levels of study. In exceptional circumstances, students MAY enter the Ph.D. program directly from their undergraduate degree if a CGPA of 3.7 is attained and if the student already presents extensive research experience.

11.14.3 Neuroscience (Integrated Program in) Admission Requirements and Application Procedures

11.14.3.1 Admission Requirements

Revision, October 2012. Start of revision.

General

The applicant must be a university graduate and hold a bachelor's degree in a field related to the subject selected for graduate work.

The applicant must present evidence of high academic achievement. A standing equivalent to a cumulative grade point average (CGPA) of 3.0 out of a possible 4.0 is required by Graduate and Postdoctoral Studies; however, the IPN prefers applicants to show a higher academic standing, and requires a minimum CGPA of 3.3.

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 results of the TOEFL exam with their application and have a minimum score of 600 on the paper-based test (86 on the Internet-based test with each component score not less than 20).

M.Sc. Degr

11.14.4 Neuroscience (Integrated Program in) Faculty

Director

J. Nalbantoglu

Associate Director

D. Ragsdale

Administrator

J. Makkerh

Emeritus Professors

B. Collier; Ph.D., Dept. of Pharmacology

M. Diksic; Ph.D., Dept. of Neurology and Neurosurgery

C. Thompson; D.Sc., F.C.C.P.M., Dept. of Neurology and Neurosurgery

Professors

A. Aguayo; M.D.(Cordoba Natn.), F.R.C.P.(C), Dept. of Neurology and Neurosurgery

G. Almazan; B.Sc.(N'eastern), Ph.D.(McG.), Dept. of Pharmacology and Therapeutics

E. Andermann; M.D.,C.M., M.Sc., Ph.D.(McG.), F.C.C.M.G., Dept. of Neurology and Neurosurgery

F. Andermann; B.A.(Paris), B.Sc.(McG.), M.D.(Montr.), F.R.C.P.(C), Dept. of Neurology and Neurosurgery

J. Antel; M.D., B.Sc.(Manit.), F.R.C.P.(C), Dept. of Neurology and Neurosurgery

D. Arnold; B.Sc., M.D.(C'nell), F.R.C.P.(C) (*J*)

Professors

A. Evans; M.Sc.(Sur.), Ph.D.(Leeds), Dept. of Neurology and Neurosurgery
C. Flores; Ph.D.(C' dia), Dept. of Psychiatry
E. Frombonne; M.D.(Paris V), M.Sc.(Paris), Dept. of Psychiatry
S.G. Gauthier; B.A., M.D.(Montr.), F.R.C.P.(C), Dept. of Neurology and Neurosurgery
B. Giros; Ph.D.(Paris), Dept. of Psychiatry
J. Gotman; M.Eng.(Dart.), Ph.D.(McG.), Dept. of Neurology and Neurosurgery
A. Gratton; Ph.D.(C' dia), Dept. of Psychiatry
J. Grodzinsky; Ph.D.(Brandeis), Dept. of Linguistics
D. Guitton; Dipl. IVK(Univ. Libre de Brux.), B.Eng., M.Eng., Ph.D.(Eng.), Ph.D.(Physiol.)(McG.), Dept. of Neurology and Neurosurgery
D. Haegert; M.D.(Br. Col.), F.R.C.P.(C), Dept. of Pathology
E. Hamel; B.Sc.(Sher.), Ph.D.(Montr.), Dept. of Neurology and Neurosurgery
K. Hastings; B.Sc., Ph.D.(McG.), Dept. of Neurology and Neurosurgery
R. Hess; Ph.D.(Melb.), D.Sc.(Aston, UK), Dept. of Ophthalmology
P.C. Holland; B.A.(Lanc.), Ph.D.(Newcastle, UK), Dept. of Neurology and Neurosurgery
B. Jones; B.A., M.A., Ph.D.(Delaware), Dept. of Neurology and Neurosurgery
M. Jones-Gotman; B.A.(Calif.), M.A., Ph.D.(McG.), Dept. of Neurology and Neurosurgery
T. Kennedy; B.Sc.(McM.), Ph.D.(Col.), Dept. of Neurology and Neurosurgery
F. Kingdom; Ph.D.(Reading), Dept. of Ophthalmology
P. Lachapelle; Ph.D.(Montr.), Dept. of Ophthalmology
N. Lamarche; Ph.D.(Montr.), Dept. of Anatomy and Cell Biology
A. LeBlanc; M.Sc.(Moncton), Ph.D.(Dal.), Dept. of Neurology and Neurosurgery
M.F. Levin; Ph.D.(P.T.)(McG.), School of Physical and Occupational Therapy
D. Maysinger; M.Sc., Ph.D.(Calif.-LA), Dept. of Pharmacology and Therapeutics
P. McPherson; M.Sc.(Manit.), Ph.D.(Iowa) (*William Dawson Scholar*), Dept. of Neurology and Neurosurgery
M.J. Meaney; B.A.(Loyola), M.A., Ph.D.(C' dia), Dept. of Psychiatry
B. Milner; B.A., Sc.D.(Cant.), Ph.D.(McG.), Dept. of Neurology and Neurosurgery
T.E. Milner; B.Sc., M.Sc., Ph.D.(Alta.), Dept. of Kinesiology and Physical Education
J. Mogil; Ph.D.(Calif.-LA), Dept. of Psychology
K. Mullen; Ph.D.(Camb.), Dept. of Ophthalmology
A. Olivier; M.D.(Montr.), Ph.D.(Laval), F.R.C.S.(C), Dept. of Neurology and Neurosurgery
D.J. Ostry; B.A.Sc., M.A.Sc., Ph.D.(Tor

Professors

R.J. Riopelle; M.D.(Ott.), F.R.C.P.(C), Dept. of Neurology and Neurosurgery
A. Sadikot; M.D.,C.M.(McG.), Ph.D.(Laval), F.R.C.S.(C), Dept. of Neurology and Neurosurgery
H.U. Saragovi; Ph.D.(Miami), Dept. of Pharmacology and Therapeutics
H. Schipper; M.D., Ph.D.(McG.), F.R.C.P.(C), Dept. of Neurology and Neurosurgery
P. Seguela; Doct. 3e Cycle(Bord.), Ph.D.(Montr.), Dept of Neurology and Neurosurgery
M. Shevell; B.Sc., M.D.(Vanderbilt), Dept. of Neurology and Neurosurgery
E. Shoubridge; M.Sc., Ph.D.(Br. Col.), Dept. of Neurology and Neurosurgery
W. Sossin; B.S.(MIT), Ph.D.(Stan.), Dept. of Neurology and Neurosurgery
L. Srivastava; Ph.D.(New Delhi), Dept. of Psychiatry
S. Stifani; Ph.D.(Rome), Ph.D.(Alta.), Dept. of Neurology and Neurosurgery
M. Sullivan; B.A.(McG.), M.A., Ph.D.(C'dia), Dept. of Psychology
G. Tannenbaum; M.Sc., Ph.D.(McG.), Dept. of Neurology and Neurosurgery
G. Turecki; M.D.(Brazil), Ph.D.(McG.), Dept. of Psychiatry
C.-D. Walker; Ph.D.(Geneva), Dept. of Psychiatry
C. Wolfson; Ph.D.(McG.), Dept. of Epidemiology and Biostatistics

Associate Professors

I. Gold; Ph.D.(Princ.), Dept. of Psychiatry

V. Gracco; Ph.D.(Wisc.), School of Communication Sciences and Disorders

R. Joobar; M.D.(Tunisia), Ph.D.(McG.), Dept. of Psychiatry

A. Kania; Ph.D.(Baylor), Depts. of Biology, Anatomy and Cell Biology, and Experimental Medicine

S. King; B.A.(McG.), M.Ed., Ed.S.(James Madison Univ.), Ph.D.(Virginia Tech), Dept. of Psychiatry

A. Lamontagne; Ph.D.(Laval), School of Physical and Occupational Therapy

M. Leyton; M.A., Ph.D.(C' dia), Dept. of Psychiatry

G. Luheshi; Ph.D.(Newcastle, UK), Dept. of Psychiatry

H.M. McBride; Ph.D.(McG.), Dept. of Neurology and Neurosurgery

A. McKinney; Ph.D.(Ulster), Dept. of Pharmacology and Therapeutics

K. Murai; Ph.D.(Calif.), Dept. of Neurology and Neurosurgery

K. Nader; B.Sc., Ph.D.(Tor.), Dept. of Psychology

J. Nalbantoglu; B.Sc., Ph.D.(McG.), Dept. of Neurology and Neurosurgery

H. Paudel; Ph.D.(Okla.), M.Sc.(Nepal), Dept. of Neurology and Neurosurgery

A. Peterson; B.Sc.(Vic., BC), Ph.D.(Br. Col.), Dept. of Neurology and Neurosurgery

J.C. Pruessner; Ph.D.(Trier), Depts. of Psychiatry, Psychology, Neurology, and Neurosurgery

D. Ragsdale; B.S.(Ill.), Ph.D.(Calif.), Dept. of Neurology and Neurosurgery

N. Rajah; Ph.D.(Tor.), Dept. of Psychiatry

Y. Rao; B.Sc.(China), Ph.D.(Tor.), Dept. of Neurology and Neurosurgery

A. Raz; M.Sc., Ph.D.(Hebrew), Dept. of Psychiatry

J. Rochford; Ph.D.(C' dia), Dept. of Psychiatry

B. Rosenblatt; B.Sc., M.D.,C.M.(McG.), F.R.C.P.(C), Dept. of Neurology and Neurosurgery

R. Schirmacher; Ph.D.(Mainz), Dept. of Neurology and Neurosurgery

A.

Assistant Professors

F. Jollant; M.D., M.Sc., Ph.D.(Montpellier), Dept. of Psychiatry

D. Juncker; Dipl., Ph.D.(Neuchâtel), Dept. of Biomedical Engineering

D. Klein; B.A., Ph.D.(Witw./S. Af.), Dept. of Neurology and Neurosurgery

E. Kobayashi; M.D., Ph.D.(Campinas State), Dept. of Neurology and Neurosurgery

L. Koski; B.Sc.(Tor.), Ph.D.(McG.), Dept. of Neurology and Neurosurgery

N. Ladbon-Bernasconi; M.D.(Lausanne), Ph.D.(McG.), Dept. of Neurology and Neurosurgery

A. Lamontagne; Ph.D.(Laval), School of Physical and Occupational Therapy

G. Leonard; Ph.D.(McG.), Dept. of Neurology and Neurosurgery

W. Ma; M.D.(Tongji), M.Sc., Ph.D.(McG.), Dept. of 651r

11.14.5 Master of Science (M.Sc.); Neuroscience (Thesis) (45 credits)

Thesis Courses

An

Students must take one of the following courses:

NEUR 610	(5)	Central Nervous System
NEUR 631	(3)	Principles of Neuroscience 2

Two courses at the 500, 600, or 700 level, approved by the graduate program adviser.

11.15 Occupational Health

11.15.1 Location

Department of Epidemiology, Biostatistics and Occupational Health
Purvis Hall

11.15.3.3 Dates for Guaranteed Consideration

Canadian	International	Special/Exchange/Visiting
Fall: Jan. 15	Fall: Jan. 15	Fall: Apr. 30
Winter: N/A	Winter: N/A	Winter: Sept. 15
Summer: N/A	Summer: N/A	Summer: N/A



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

Revision, October 2012. End of revision.

11.15.4 Occupational Health Faculty**Chair**

R. Fuhrer

Emeritus Professors

M.R. Becklake; M.B.B.Ch., M.D.(Witw.), F.R.C.P.

A. Lippman; B.A.(C'nell), Ph.D.(McG.)

J.C. McDonald; M.D., B.S.(Lond.), M.Sc.(Harv.), F.R.C.P.(C)

I.B. Pless; B.A., M.D.(W. Ont.)

S.H. Shapiro; B.S.(Bucknell), M.S., Ph.D.(Stan.)

G. Thériault; M.D.(Laval), M.I.H., Dr.P.H.(Harv.)

S. Wood-Dauphinee; B.Sc.(Phys.Ther.), Dip.Ed., M.Sc.(A.), Ph.D.(McG.)

Professors Post-Retirement

A. Lippman; B.A.(C'nell), Ph.D.(McG.)

I.B. Pless; B.A., M.D.(W. Ont.)

S.H. Shapiro; B.S.(Bucknell), M.S., Ph.D.(Stan.)

G. Thériault; M.D.(Laval), M.I.H., Dr.P.H.(Harv.)

S. Wood-Dauphinee; B.Sc.(Phys.Ther.), Dip.Ed., M.Sc.(A.), Ph.D.(McG.)

Professors

M. Abrahamowicz; Ph.D.(Cracow) (*James McGill Professor*)

J.F. Boivin; M.D.(Laval), S.M., Sc.D.(Harv.)

J. Brophy; B.Eng.(McG.), M.Eng., M.D.(McM.), Ph.D.(McG.) (*joint appt. with Medicine*)

E.L.F. Franco; M.P.H., Dr.P.H.(Chapel Hill) (*joint appt. with Oncology*) (*James McGill Professor*)

R. Fuhrer; B.A.(CUNY (Brooklyn College)), M.Sc., Ph.D.(Calif.-San Francisco)

T.W. Gyorkos; B.Sc.(McG.), M.Sc.(Bishop's), Ph.D.(McG.)

J.A. Hanley; B.Sc., M.Sc.(NUI), Ph.D.(Wat.) (*on leave Winter 2012 and Winter 2013*)

J. Heymann; B.A.(Yale), M.P.H., M.D., Ph.D.(Harv.) (*joint appt. with Political Science*) (*Canada Research Chair*)

C. Infante-Rivard; M.D.(Montr.), M.P.H.(Calif.-LA), Ph.D.(McG.), F.R.C.P.(C) (*James McGill Professor*)

L. Joseph; M.Sc., Ph.D.(McG.)

M.S. Kramer; B.A.(Chic.), M.D.(Yale) (*joint appt. with Pediatrics*) (*James McGill Professor*) (*on leave Jan. 2012 to June 2013*)

J. McCusker; M.D.,C.M.(McG.), M.P.H., Ph.D.(Col.)

R. Menzies; M.D.,C.M., M.Sc.(McG.) (*joint appt. with Medicine*)

Professors

O.S. Miettinen; M.D.(Helsinki), M.P.H., M.S., Ph.D.(Minn.)

G. Paradis; M.D.(Montr.), M.Sc.(McG.)

R.W. Platt; M.Sc.(Man.), Ph.D.(Wash.) (*joint appt. with Pediatrics*)

S. Suissa; M.Sc.(McG.), Ph.D.(Flor.) (*joint appt. with Medicine*) (*James McGill Professor*)

R. Tamblyn; M.Sc.(McM.), Ph.D.(McG.) (*joint appt. with Medicine*) (*James McGill Professor*)

C. Wolfson; B.Sc., M.Sc., Ph.D.(McG.) (*joint appt. with Medicine*)

Associate Professors

O. Basso; Ph.D.(Milan) (*joint appt. with Obstetrics & Gynecology*)

D. Buckeridge; M.D.(Qu.), M.Sc.(Tor.), Ph.D.(Stan.) (*Canada Research Chair*)

A. Ciampi; M.Sc., Ph.D.(7g 70.52 605fRn0 0 1 325.169 e1 70.52 558.36 Tm(A.4Tj0.9804N. Dendukuri.), Ph.DIn/FIn I. 186.771 574.073TmA.4Tj0.9804McG.) (Tj/E

Associate Members

Ob/Gyn: H. Abenhaim, R. Gagnon

Pathology: B. Case

Pediatrics: G. Dougherty, B. Foster, C. Quach-Thanh

Physical & Occupational Therapy: S. Ahmed

Psychiatry: E. Latimer, A. Malla, N. Schmitz, B. Thombs

Lecturers

J.P. Gauvin, W. Wood

Adjunct Professors

Asociaci

11.15.6 Master of Science, Applied (M.Sc.A.); Occupational Health (Distance) (Non-Thesis) (45 credits)

This program is not accepting applicants for 2012-2013.

Research Project (15 credits)

OCCH 699	(15)	Project Occupational Health and Safety
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Required Courses (30 credits)

Note: Students must pass the Master's Integrative Examination (OCCH 600) before writing their Project.

Each course has a final (proctored) examination at the end of the term.

OCCH 600	(0)	Master's Integrative Exam
OCCH 602	(3)	Occupational Health Practice
OCCH 603	(3)	Work and Environment Epidemiology 1
OCCH 604	(3)	Monitoring Occupational Environment
OCCH 608	(3)	Biological Hazards
OCCH 612	(3)	Principles of Toxicology
OCCH 615	(3)	Occupational Safety Practice
OCCH 616	(3)	Occupational Hygiene
OCCH 617	(3)	Occupational Diseases
OCCH 624	(3)	Social and Behavioural Aspects - Occupational Health
OCCH 625	(3)	Work and Environment Epidemiology 2
OCCH 626	(3)	Basics: Physical Health Hazards
OCCH 627	(3)	Work Physiology and Ergonomics
OCCH 630	(3)	Occupational Diseases for OHNS
OCCH 635	(3)	Environmental Risks to Health

On-campus practicum may be held at the discretion of each professor. These sessions are held in Montreal on the McGill University campus. Their aim is to offer students additional specific learning activities. Participation in the practicum is an essential component of the program.

11.15.7 Doctor of Philosophy (Ph.D.); Occupational Health**Thesis**

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Required Courses (2 credits)

OCCH 700	(0)	Ph.D. Comprehensive Examination
OCCH 706	(2)	Ph.D. Seminar on Occupational Health and Hygiene

Students are encouraged to take up to 12 credits in areas pertinent to their specialty or in areas necessary to complete their knowledge of occupational health.

11.16 Otolaryngology – Head and Neck Surgery

11.16.1 Location

Department of Otolaryngology – Head and Neck Surgery
Jewish General Hospital
3755 Chemin de la Côte-Sainte-Catherine, Suite E-903
Montreal, QC H3T 1E2
Canada

Telephone: 514-340-8222 ext. 3179

Canadian	International	Special/Exchange/Visiting
Winter: Sept. 15	Winter: Sept. 15	Winter: Sept. 15
Summer: Jan. 15	Summer: Jan. 15	Summer: Jan. 15

Revision, October 2012. End of revision.

11.16.4 Otolaryngology – Head and Neck Surgery Faculty

Chair

S. Frenkiel

Graduate Program Director and Director of Research

B. Segal

Director of Residency Training Program

J. Manoukian

Director of Head and Neck Oncology Program

M.J. Black

Director of Undergraduate Education

L. Nguyen

Director of Fellowship Training

J. Rappaport

Emeritus Professor

J.D. Baxter; M.D.,C.M., M.Sc.(McG.), F.R.C.S.(C)

Professors

S. Frenkiel; B.Sc., M.D.,C.M.(McG.), F.R.C.S.(C)

A. Katsarkas; M.D.(Thess.), M.Sc.(Otol.)(McG.), F.R.C.S.(C)

M.D. Schloss; M.D.(Br. Col.), F.R.C.S.(C)

T.L. Tewfik; M.D.(Alex.), F.R.C.S.(C)

Associate Professors

M.J. Black; M.D.,C.M.(McG.), F.R.C.S.(C)

S. Daniel; M.D.,C.M., M.Sc.(Otol.)(McG.), F.R.C.S.(C)

M. Desrosiers; M.D.(Montr.), F.R.C.S.C.

N. Fanous; M.B., B.CH.(Cairo), F.R.C.S.(C)

M. Hier; M.D.,C.M.(McG.), F.R.C.S.(C)

K. Kost; M.D.,C.M.(McG.), F.R.C.S.(C)

J. Manoukian; M.B., Ch.B.(Alex.), F.R.C.S.(C)

W.H. Novick; M.D.(Qu.), F.R.C.S.(C)

J. Rappaport; M.D.(Dal.), F.R.C.S.(C)

B. Segal; B.Sc., B.Eng., M.Eng., Ph.D.(McG.)

R.S. Shapiro; M.D.,C.M.(McG.), F.R.C.S.(C)

Associate Professors

A.G. Zeitouni; M.D.(Sher.), M.Sc.(Otol.)(McG.), F.R.C.S.(C)

Assistant Professors

F. Chagnon; M.D.,C.M.(McG.), F.R.C.S.(C)

I. Fried; M.D.(Dal.), F.R.C.S.(C)

Y. Lacroix; M.D.(Laval), F.R.C.S.(C)

R. Lafleur; M.D.(Ott.), F.R.C.S.(C)

A. Mlynarek; M.D.,C.M., M.Sc.(Otol.)(McG.), F.R.C.S.(C)

L. Nguyen; M.D.,C.M.(McG.), F.R.C.S.(C)

R. Payne; M.D.,C.M., M.Sc.(Otol.)(McG.), F.R.C.S.(C)

M. Samaha; M.D.(Qu.), M.Sc.(Otol.)(McG.), F.R.C.S.(C)

G. Sejean; M.D.(Beirut), F.R.C.S.(C)

R. Sweet; M.D.,C.M.(McG.)

L. Tarantino; M.D.(Naples), F.R.C.S.(C)

M. Tewfik; M.D.,C.M., M.Sc.(Otol.)(McG.), F.R.C.S.(C)

Associate Members

K. E. Cullen; Ph.D.(McG.)

W.R.J. Funnell; B.Eng., M.Eng., Ph.D.(McG.)

H.L. Ger95.48 Tm(wfik; M.D.,C.M., M.Sc.(Otol.)(McG.), F.R.C.S.(C)

OTOL 612	(3)	Physiology, Histopathology and Clinical Otolaryngology 2
OTOL 613	(3)	Advanced Scientific Principles - Otolaryngology 2

Complementary Course

Revision, August 2012. Start of revision.

11.17.3 Pathology Admission Requirements and Application Procedures

Revision, October 2012. Start of revision.

11.17.3.1 Admission Requirements

Applicants must have a B.Sc. or an equivalent degree with an extensive background in the physical and biological sciences. An academic record equivalent to or better than a CGPA of 3.2 out of 4.0 at McGill is required for at least the two final full-time years of undergraduate training, with a minimum CGPA of 3.0 overall.

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 the GRE and TOEFL examinations in order to be properly evaluated as to their suitability.

Students are normally accepted into the M.Sc. program, and those candidates showing exceptional ability may be permitted to transfer into the Ph.D. program after one year of training.

Applicants who already possess an additional degree (M.Sc., M.D.) and have some research experience may be allowed to register in the Ph.D. program directly.

For further information, applicants may contact the Teaching Office, Department of Pathology.

11.17.3.2 Application Procedures

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

See [section 6.3: Application Procedures \(for All Admissions Starting Summer 2013\)](#) for detailed application procedures.

All applications will be evaluated by the Graduate Students Committee. Candidates found suitable must then be accepted by a research director, and adequate funding must be obtained for both personal support and research expenses.

11.17.3.3 Dates for Guaranteed Consideration

Canadian	International	Special/Exchange/Visiting
Fall: June 30	Fall: Apr. 30	Fall: Same as Canadian/International
Winter: Nov. 15	Winter: Sept. 30	Winter: Same as Canadian/International
Summer: March 15	Summer: Feb. 28	Summer: Same as Canadian/International

Revision, October 2012. End of revision.

11.17.4 Pathology Faculty

Chair

D. Haegert

Director of Graduate Program

E. Zorychta

Professors

M.N. Burnier Jr.; M.D., M.Sc., Ph.D.(Brazil)

A.M.V. Duncan; B.Sc.(Qu.), Ph.D.(Edin.)

A. Ferenczy; B.A., B.Sc., M.D.(Montr.)

R. Fraser; B.Sc., M.D.,C.M.(McG.), M.Sc.(Glas.), F.R.C.P.(C)

D. Haegert; M.D.(Br. Col.), F.R.C.P.(C)

Q.A. Hamid; M.D.(Mosul), Ph.D.(Lond.) (*James McGill Professor*) (*joint appt. with Medicine*)

R.P. Michel; B.Sc., M.D.,C.M.(McG.), F.R.C.P.(C)

J.B. Richardson; B.Sc., M.D.,C.M., Ph.D.(McG.), F.R.C.P.(C)

A. Spatz; M.Sc., M.D.(Paris)

Associate Professors

L. Alpert; M.D., Ph.D.(Tufts)

J. Arseneau; M.D.(Laval), F.R.C.P.(C)

M. Auger; M.D.,C.M.(McG.), F.R.C.P.(C)

C. Bernard; M.D.(Sher.), F.R.C.P.(C)

M.L. Brisson; B.A.(Paris), B.Sc., M.D.(Montr.)

B. Case; B.Sc., M.D.,C.M., M.Sc.(McG.), Dipl. Occ. Hyg., F.R.C.P.(C)

M.F. Chen; M.B., B.S.(Monash), F.R.C.P.(C)

T. Haliotis; M.D.(Greece), Ph.D.(Qu.), F.R.C.P.(C)

E. Lamoureux; B.Sc., M.D.(Montr.), F.R.C.P.(C)

R. Onerheim; M.D.(Alta.), F.R.C.P.(C)

Assistant Professors

S. Sandhu; M.B., B.S.(India)

H. Srolovitz; B.Sc.(Pitt.), M.D.(Basel)

J. St. Cyr; M.D.,C.M.(McG.), F.R.C.P.(C)

11.17.5 Master of Science (M.Sc.); Pathology (Thesis) (45 credits)

All students must take PATH 300 plus a course in statistics if they have not completed these requirements before admission.

Candidates with insufficient background in one of the biomedical sciences will be required to take specific courses to remedy the deficiency. These and additional courses that are relevant to the student's area of research will be chosen in consultation with the research director and Graduate Students Committee.

Thesis Courses (30 credits)

PATH 690	(9)	M.Sc. Thesis Research Project 1
PATH 691	(9)	M.Sc. Thesis Research Project 2
PATH 692	(12)	M.Sc. Thesis Research Project 3

Required Courses (6 credits)

PATH 620	(3)	Research Seminar 1
PATH 622	(3)	Research Seminar 2

Complementary Courses (9 credits)

3 credits, one of the following courses:

PATH 613	(3)	Research Topics in Pathology 1
PATH 614	(3)	Research Topics in Pathology 2

6 credits, two 500-, 600-, or 700-level courses offered by the Department; subject to approval of the research director and Graduate Students Committee, up to 3 credits of 500-, 600-, or 700-level credits may be taken in another department.

11.17.6 Doctor of Philosophy (Ph.D.); Pathology

Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to know

section 11.18.8: Doctor of Philosophy (Ph.D.); Pharmacology — Chemical Biology

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.

11.18.3 Pharmacology and Therapeutics Admission Requirements and Application Procedures

Revision, October 2012. Start of revision.

11.18.3.1 Admission Requirements

Candidates are required to hold a B.Sc. degree in a discipline relevant to the proposed field of study; those with the M.D., D.D.S., or D.V.M. degrees are also eligible to apply. A background in the health sciences is recommended, but programs in biology, chemistry, mathematics, and physical sciences may be acceptable.

Admission is based on a student's academic record, letters of assessment, and, whenever possible, interviews with staff members. Students are required to take the Graduate Record Examination Aptitude Test (GRE) and the Test of English as a Foreign Language (TOEFL) or the equivalent, except as follows, in accordance with McGill policy, only those whose mother tongue is English, who graduated from a recognized Canadian institution (anglophone or francophone), or who completed an undergraduate or graduate degree at a recognized foreign institution where English is the language of instruction are exempt from providing proof of competency in English.

Inquiries relating to all aspects of graduate study should be directed to the Graduate Coordinator, Department of Pharmacology and Therapeutics, as early as possible in each academic year.

Admissions Requirements – Chemical Biology Option

As for the regular graduate programs of the participating departments, acceptance into the Chemical Biology option consists of two steps:

1. Preliminary approval by the Department's Graduate Committee based on the student's transcript, references, and other documents submitted with the application. The criteria for assessment at this level are the same as those for the regular graduate programs of the participating departments.
2. Acceptance by an individual research director. For students wishing to participate in the Chemical Biology option, the director must propose a research project for the student that provides training in the methods and philosophy of chemical biology. Project proposals are assessed by the Chemical Biology Program Committee.

11.18.3.2 Application Procedures

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

See [section 6.3: Application Procedures \(for All Admissions Starting Summer 2013\)](#) for detailed application procedures.

11.18.3.2.1 Additional Requirements

The items and clarifications below are additional requirements set by this department:

- Curriculum Vitae
- Research Proposal
- GRE
- Acceptance by a Chemical Biology research director (Chemical Biology option only)

11.18.3.3 Dates for Guaranteed Consideration

Canadian	International	Special/Exchange/Visiting
Fall: March 15	Fall: March 15	Fall: March 15
Winter: Oct. 15	Winter: Sept. 15	Winter: Same as Canadian/International
Summer: N/A	Summer: N/A	Summer: N/A

Please refer to our website (www.medicine.mcgill.ca/pharma) for complete deadlines.

Revision, October 2012. End of revision.

11.18.4 Pharmacology and Therapeutics Faculty**Chair**

G. Multhaup

Graduate Program Director

D. Bowie

Emeritus Professor

R. Capek; M.D., Ph.D.(Prague)

Professors

G. Almazan; Ph.D.(McG.)

P.B.S. Clarke; M.A.(Camb.), Ph.D.(Lond.)

A.C. Cuello; M.D.(Buenos Aires), M.A., D.Sc.(Oxf.), F.R.S.C.

B.F. Hales; Ph.D.(McG.)

D. Maysinger; Ph.D.(USC)

P.J. McLeod; M.D.(Manit.), F.R.C.P.(C)

G. Multhaup; Ph.D.(Univ. of Cologne)

A. Ribeiro-da-Silva; M.D., Ph.D.(Oporto)

B. Robaire; Ph.D.(McG.)

H. Saragovi; Ph.D.(Miami)

M. Szyf; Ph.D.(Hebrew)

J. Trasler; M.D.,C.M., Ph.D.(McG.)

H.H. Zingg; M.D., Ph.D.(McG.)

Associate Professors

D. Bernard; Ph.D.(Johns Hop.)

D. Bowie; B.Sc., Ph.D.(Lond.)

T. Hébert; Ph.D.(Tor.)

A. McKinney; Ph.D.(Ulster)

S. Nattel; M.D.,C.M.(McG.)

A.L. Padjen; M.D., Ph.D.(Zagreb)

E. Zorychta; Ph.D.(McG.)

Assistant Professor

J. Tanny; Ph.D.(Harv.)

Associate Members

M. Alaoui-Jamali; Ph.D.(Sorbonne)

G. Batist; M.D.,C.M.(McG.)

M. Culty; Ph.D.(Fr.)

G. Di Battista; B.Sc., Ph.D.(Montr.)

L. Fellows; M.D., C.M.(McG.) Ph.D.(Oxf.)

P. Fiset; M.D.(Laval), F.R.C.P.S.(C)

S. Gauthier; M.D.(Montr.)

T. Geary; Ph.D.(Mich.)

B. Jean-Claude; Ph.D.(McG.)

S. Kimmins; Ph.D.(Dal.)

Associate Members

S. Laporte; Ph.D.(Sher.)
 C. O'Flaherty; Ph.D.(Buenos Aires)
 V. Pappadopoulos; Ph.D.(Univ. Pierre & Marie Curie)
 R. Prichard; Ph.D.(NSW)
 R. Quirion; Ph.D.(Sher.)
 S. Rousseau; Ph.D.(Laval)
 Y. Shir; M.D.(Israel), Ph.D.(Johns Hop.)
 L. Stone; Ph.D.(Minn.)
 M. Ware; MBBS(West Indies)
 T. P. Wong; Ph.D.(McG.)

Adjunct Professors

B. Allen, M. Bruno, S. Chemtob, Y. De Koninck, L. Garofalo, J.M.A. Laird, J. Mancini, K. Meerovitch, T. Sanderson

11.18.5 Master of Science (M.Sc.); Pharmacology (Thesis) (45 credits)**Thesis Courses (24 credits)**

PHAR 696	(3)	Thesis Preparation
PHAR 698	(9)	Thesis Preparation 2
PHAR 699	(12)	Thesis Preparation 3

Required Courses (9 credits)

PHAR 601	(6)	Comprehensive
PHAR 712	(3)	Statistics for Pharmacologists

Complementary Courses (12 credits)

6 credits, from the following courses:

PHAR 562	(3)	General Pharmacology 1
PHAR 563	(3)	General Pharmacology 2

or, for students who have taken PHAR 562 and PHAR 563 as part of their undergraduate degree, they will register for the following course:

PHAR 697	(6)	Thesis Preparation 1
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6 credits, two 700-level PHAR courses.

11.18.6 Master of Science (M.Sc.); Pharmacology (Thesis) — Chemical Biology (47 credits)**Thesis Courses (24 credits)**

PHAR 696	(3)	Thesis Preparation
PHAR 698	(9)	Thesis Preparation 2
PHAR 699	(12)	Thesis Preparation 3

Required Courses (9 credits)

PHAR 601	(6)	Comprehensive
PHAR 712	(3)	Statistics for Pharmacologists

Complementary Courses (14 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

6 credits, from the following courses:

PHAR 562	(3)	General Pharmacology 1
PHAR 563	(3)	General Pharmacology 2

or, for students who have taken PHAR 562 and PHAR 563 as part of their undergraduate degree, they can be replaced with two of the following courses:

BIOC 603	(3)	Genomics and Gene Expression
BIOC 604	(3)	Macromolecular Structure
CHEM 504	(3)	Drug Design and Development 2
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 504	(3)	Drug Discovery and Development 2
PHAR 707	(3)	Topics in Pharmacology 6

3 credits, one of the following courses:

PHAR 700	(3)	Seminars in Pharmacology
PHAR 702	(3)	Topics in Pharmacology 1
PHAR 703	(3)	Topics in Pharmacology 2
PHAR 704	(3)	Topics in Pharmacology 3
PHAR 705	(3)	Topics in Pharmacology 4
PHAR 706	(3)	Topics in Pharmacology 5
PHAR 707	(3)	Topics in Pharmacology 6

3 credits, one of the following courses:

CHEM 502	(3)	Advanced Bio-Organic Chemistry
PHAR 503	(3)	Drug Discovery and Development 1

PHAR 702	(3)	Topics in Pharmacology 1
PHAR 703	(3)	Topics in Pharmacology 2
PHAR 704	(3)	Topics in Pharmacology 3
PHAR 705	(3)	Topics in Pharmacology 4
PHAR 706	(3)	Topics in Pharmacology 5
PHAR 707	(3)	Topics in Pharmacology 6

one of the following courses:

CHEM 502	(3)	Advanced Bio-Organic Chemistry
PHAR 503	(3)	Drug Discovery and Development 1

11.19 Physiology

11.19.1 Location

Department of Physiology
 McIntyre Medical Sciences Building
 3655 Promenade Sir-William-Osler
 Montreal, QC H3G 1Y6
 Canada

Telephone: 514-398-4343

Fax: 514-398-7452

Website: www.medicine.mcgill.ca/physio

11.19.2 About Physiology

The Physiology Department offers training leading to M.Sc. and Ph.D. degrees. The scope of the ongoing research, and close connections with the McGill teaching hospitals, offer excellent opportunities for collaborations with hospital-based scientists. Research in the Department covers a broad range of topics from systems neuroscience to molecular and cellular biology. Interests include studies of nuclear and membrane receptors, transporters, channels, and signal transduction pathways, to the broader integration of physiological systems (cardiovascular, respiratory, renal, endocrine, immune, and central nervous systems) using an array of molecular and cellular approaches as well as quantitative techniques in data collection, analysis, and mathematical modelling by computational means. All graduate students in Physiology receive financial support. Any faculty member who agrees to supervise a student who does not hold a fellowship is obliged to provide financial support.

section 11.19.5: Master of Science (M.Sc.); Physiology (Thesis) (49 credits)

The M.Sc. program is intended for students from an academic background wishing to pursue careers in academia, industry, or in medicine. The multidisciplinary nature of the Department exposes students to a vast array of research interests and experimental approaches. Thesis work is available in a broad range of disciplines from molecular and cellular to systems physiology covering multiple organ systems. Students wishing to continue to the doctoral program have the option of transferring to the Ph.D., and waiving the M.Sc. thesis submission.

section 11.19.6: Master of Science (M.Sc.); Physiology (Thesis) — Bioinformatics (49 credits)

The intention of the Bioinformatics Option is to train M.Sc. 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 of bioinformatics data, the integration of biological databases, and the use of algorithms and statistics. Students successfully complete

section 11.19.8: Doctor of Philosophy (Ph.D.); Physiology — Bioinformatics

The intention of the Bioinformatics Option is to train Ph.D. students to become researchers in this interdisciplinary field. This includes the development of strategies for e

Assistant Professors

Maurice Chacron; Ph.D.(Ott.)

A. Chadra

Russell Jones; Ph.D.(Tor.)

R. Sharif-Naeini

A. Nyzhmyk

Associate Members

Anaesthesia: Steven Backman, Fernando Cervero

Biochemistry: Imed Gallouzi

Biomedical Engineering: Robert Kearney, Satya Prakash

Electrical and Computer Engineering: Sam Musallam

Kinesiology and Physical Education: Dilson Rassier

Medicine: Albert Aguauo, Volker Blank, Mark Blostein, Andrey Cybulsky, Abraham Fuks, Claude Gagnon, Raymond Gagnon, Harry L. Goldsmith, Geoffrey Hendy, Louise Larose, Anne-Marie Lauzon, James Martin, Shree Mulay, Mariana Newkirk, Barry Posner, Shafaat Rabbani, Mary Stevenson, Simon Wing, Hans Zingg

Nephrology: Serge Lemay, Tomoko Takano

Neurology: David Ragsdale

Neurology and Neurosurgery: Jack Antel, Massimo Avoli, Charles Bourque, Sal Carbonetto, Daniel Guitton, Christopher Pack, Melissa Vollrath

Ophthalmology: Curtis Baker

Otolaryngology: Bernard Segal

Pediatrics: Charles Rohlicek

Pharmacology: Terence Hebert

Psychiatry: Nicolas Cermakian, Bernardo Dubrovsky, Christina Gianoulakis

Adjunct Professors

Roy Caplan, Pierre Drapeau, John Milton, Malmur Sairam

11.19.5 Master of Science (M.Sc.); Physiology (Thesis) (49 credits)**Thesis Courses (30 credits)**

PHGY 621	(12)	Thesis 1
PHGY 622	(15)	Thesis 2
PHGY 623	(3)	M.Sc. Seminar

Required Courses (13 credits)

PHGY 601	(1)	M.Sc. Proposal Seminar
PHGY 602	(3)	Literature Search and Research Proposal
PHGY 607	(3)	Laboratory Research 1
PHGY 608	(3)	Laboratory Research 2
PHGY 620	(3)	Progress in Research

Elective Courses (6 credits)

Students must select 6 approved credits in Physiology or Science at the 500 level or above.

11.19.6 Master of Science (M.Sc.); Physiology (Thesis) — Bioinformatics (49 credits)

Thesis Courses (30 credits)

PHGY 621	(12)	Thesis 1
PHGY 622	(15)	Thesis 2
PHGY 623	(3)	M.Sc. Seminar

Required Courses (16 credits)

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
PHGY 601	(1)	M.Sc. Proposal Seminar
PHGY 602	(3)	Literature Search and Research Proposal
PHGY 603	(3)	Systems Biology and Biophysics
PHGY 607	(3)	Laboratory Research 1
PHGY 608	(3)	Laboratory Research 2

Complementary Courses (3 credits)

3 credits to be 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

11.19.7 Doctor of Philosophy (Ph.D.); Physiology

Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous

Students are required to take an additional three courses of Physiology or Science at the 500 level or above, in consultation with the GSAAC and the candidate's supervisor.

11.19.8 Doctor of Philosophy (Ph.D.); Physiology — Bioinformatics

Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Required Courses (15 credits)

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
PHGY 603	(3)	Systems Biology and Biophysics
PHGY 701	(0)	Ph.D. Comprehensive Examination
PHGY 702	(1)	Ph.D. Proposal
PHGY 703	(1)	Ph.D. Thesis Proposal Seminar
PHGY 704	(1)	Ph.D. Thesis Proposal Seminar
PHGY 720	(1)	Ph.D. Seminar Course 1
PHGY 721	(1)	Ph.D. Seminar Course 2
PHGY 722	(1)	Ph.D. Seminar Course 3
PHGY 723	(1)	Ph.D. Seminar Course 4
PHGY 724	(1)	Ph.D. Seminar Course 5
PHGY 725	(1)	Ph.D. Seminar Course 6

Complementary Course (3 credits)

One course to be 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

11.20 Psychiatry

11.20.1 Location

Department of Psychiatry
1033 Pine Avenue West
Montreal, QC H3A 1A1
Canada

Telephone: 514-398-4176

Fax: 514-398-4370

Email: graduate.psychiatry@mcgill.ca

Website: www.mcgill.ca/psychiatry

11.20.2 About Psychiatry

McGill University's Department of Psychiatry is one of the most prestigious in the world. In the 1950s and 60s, Heinz Lehmann conducted the first North American clinical trials for antipsychotic and antidepressant medications. Theodore Sourkes identified the core neurobiological features of Parkinson's disease, and Eric Wittkower and Jack Fried brought together scholars from Anthropology and Psychiatry to create Transcultural Psychiatric Studies. Since then, faculty members and graduate students continue outstanding research in addictions; Alzheimer's and childhood disorders; eating, personality, and mood disorders; stress; trauma; and psychosis. The work is conducted in people and animal models, and also benefits from expertise ranging from neuroimaging and epigenetics to mental health services and public policy. Our work remains at the cutting edge of research on health, disease, and recovery.

Ph.D. (*Ad Hoc*)

The Department of Psychiatry also offers the possibility of directly entering a Ph.D. program on an *ad hoc* basis, or, with the permission of the supervisor and approval of the Graduate Program Director, exceptional students may transition from the M.Sc. to the *ad hoc* Ph.D. program.

section 11.20.5: Master of Science (M.Sc.); Psychiatry (Thesis) (45 credits)

The graduate program in Psychiatry is designed to provide advanced research training in the basic, applied, and social sciences relevant to issues in psychiatry. Applicants are admitted from a wide range of backgrounds, including undergraduate degrees in relevant areas (e.g., psychology, neuroscience, sociology, medical anthropology, nursing, and medicine), and those who are pursuing their psychiatry residency at McGill. Most, though not all students, continue to a Ph.D. program. The graduate program does not provide clinical training.

11.20.3 Psychiatry Admission Requirements and Application Procedures

Revision, October 2012. Start of revision.

11.20.3.1 Admission Requirements

- A B.Sc., B.A., B.N., or M.D. degree.
- A strong background in science and/or social science, as demonstrated by academic achievement equivalent to a GPA of 3.3 (on a 4-point scale) or 3.5 in the last two years.
- A written agreement from the proposed research supervisor, and student's statement of purpose for seeking an M.Sc.
- An outline of the proposed thesis research, to be written by the prospective student in collaboration with an appropriate research supervisor.
- Two letters of reference.
- Certified proficiency in written English or French.
- TOEFL or IELTS certificate of proficiency in English for non-Canadian applicants whose mother tongue and language of education is not English, with a minimum score of 550 on the written TOEFL test, or 86 on the Internet-based test, with each component score not less than 20, or 6.5 on the IELTS test.

11.20.3.2 Application Procedures

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

See [section 6.3: Application Procedures \(for All Admissions Starting Summer 2013\)](#) for detailed application procedures.

11.20.3.2.1 Additional Requirements

The items and clarifications below are additional requirements set by this department:

- Personal Statement – describing the specific reasons for seeking a Master of Science degree in Psychiatry
- Letters of Reference – with Applicant Evaluation checklist forms (see Department [website](#))
- Research Proposal – to be written by the prospective student in collaboration with an appropriate research supervisor
- Written Confirmation of Supervision form (see Department [website](#))

11.20.4 Psychiatry Faculty**Chair**

M. Israël

Vice ChairsD. Charney – *Education*G. Turecki – *Research***Chair of Graduate Program**

M. Leyton

Emeritus Professors

M.K. Birmingham; B.A.(Bennington), M.Sc., Ph.D.(McG.)

C. de Montigny; B.A., M.D.,C.D., Ph.D.(Montr.)

M. Dongier; Dip.Psych.(McG.), M.D.,C.D.(Provence-Aix-Marseilles)

G. Pinard; B.A.(Loyola), Dip. Etud. Sup., M.D.,C.M.(Montr.)

T.L. Sourkes; M.Sc.(McG.), Ph.D.(C'nell)

Professors

F. Abbott; B.Sc.(Trent), M.Sc., Ph.D.(McG.)

L. Annable; B.Sc.(Liv.), Dipl. in Stat.(Edin.)

A. Bechara; Ph.D.(Tor.)

C. Benkelfat; M.D.(Rabat) (*James McGill Professor*)

P. Boksa; B.Sc., Ph.D.(Montr.)

S. El Mestikawy; Ph.D.(U. Pierre Marie Curie)

E. Fombonne; M.D.(Paris)

N. Frasure-Smith; B.A., Ph.D.(Johns Hop.)

S. Gauthier; B.A., M.D.(Montr.)

B. Giros; M.Sc., Ph.D.(U. Pierre Marie Curie)

A. Gratton; Ph.D.(C'dia)

L.T. Hechtman; B.Sc., M.D.,C.M.(McG.)

L.J. Kirmayer; B.Sc., M.D.,C.M., Dipl.Psych.(McG.) (*James McGill Professor*)M. Leyton; Ph.D.(C'dia) (*William Dawson Scholar*)

A. Malla; B.S., M.B.(Panjab)

M.J. Meaney; B.A.(Loyola), M.A., Ph.D.(C'dia) (*James McGill Professor*)

V.N.P. Nair; M.B., B.S.(Kerala), D.P.M.(Mys.)

R. Palmour; B.A., Ph.D.(Texas)

J. Paris; M.D.,C.M.(McG.)

J.C. Perry; M.D.(Duke)

R.O. Pihl; B.A.(Lawrence), Ph.D.(Ariz.) (*Psychology*)

J. Poirier; Ph.D.(Montr.)

R. Quirion; B.Sc., M.Sc., Ph.D.(Sher.)

C. Rousseau; M.Sc.(McG.), M.D.,C.M.(Sher.)

Associate Professors

N. Schmitz; Dipl., Ph.D.(Univ. Dortmund)

D. Sookman; B.A.(McG.), M.A.(Guelph), Ph.D.(C'dia)

L.K. Srivastava; B.Sc., M.Sc.(Alld.), Ph.D.(New Delhi)

B. Thombs; B.A.(N'western), M.A.(Ariz.), Ph.D.(NYU)

S. Williams; Ph.D.(Montr.)

P. Zelkv

Adjunct Professors

P. Blier
 L. Booij
 W. Brender
 M. Cargo
 A. Duffy
 V. Kovess
 J-C. Lasry

11.20.5 Master of Science (M.Sc.); Psychiatry (Thesis) (45 credits)

The M.Sc. in Psychiatry is administered by the Graduate Training Committee. Each student selects a Supervisory Committee composed of the research supervisor plus two to four other faculty who are knowledgeable about the student's research area and who can advise both on appropriate coursework and on the thesis research project. The student will meet with this Supervisory Committee at least once during each year of matriculation for the purpose of evaluating academic and research progress of the student. The Supervisory Committee will also act as a resource body for the student, both with respect to academic and administrative matters.

Thesis Courses (36 credits)

PSYT 691	(12)	Thesis Research 1
PSYT 692	(12)	Thesis Research 2
PSYT 693	(12)	Thesis Research 3

Complementary Courses (9 credits)

9 credits of graduate-level courses approved by the student's Supervisory Committee.

Courses are selected on the basis of the area of research interest and the background of the student, and must include a course in statistical analysis if not presented upon admission.

11.21 Surgery, Experimental (Division of Surgical Research)**11.21.1 Location**

Surgery, Experimental (Division of Surgical Research)
 Montreal General Hospital, Room C9-169
 1650 Cedar Avenue
 Montreal, QC H3G 1A4
 Canada

Telephone: 514-934-1934 ext. 42837
 Fax: 514-934-8289
 Email: gradstudies.surgery@mcgill.ca
 Website: www.surgery-research.mcgill.ca

11.21.2 About Experimental Surgery

The Department of Experimental Surgery offers graduate programs leading to M.Sc. and Ph.D. degrees. The Experimental Surgery department is responsible for the administration of the graduate programs and allows excellent opportunities for training under the supervision of professors located in the research institutes of the different McGill teaching hospitals. The scope of the research and close connections with other centres and departments of McGill provide ample opportunities for collaboration. The research in the Department covers a broad range of topics from repair and regeneration to cancer cell biology and sexual dysfunction. Research interests include studies of wound healing, scarring and skin tissue engineering, receptors and signal transduction pathways, cartilage repair and osteoarthritis, islet cell differentiation and islet transplantation, tissue engineering of cardiac muscle, immunopathogenesis of liver xenograft rejection, osteoinduction and biomechanics, sepsis and multi-organ failure, biology of cancer, sexual dysfunction and prostate cancer, and surgical health outcomes.

A list of research directors and a description of their research topics, as well as application forms may be obtained from our website ([www](#)

- Research Proposal
- Letter of Intent and Memorandum of Agreement from the prospective Thesis Supervisor

11.21.3.3 Dates for Guaranteed Consideration

Canadian	International	Special/Exchange/Visiting
Fall: June 1	Fall: Apr. 20	Fall: Same as Canadian/International
Winter: Sept. 15	Winter: Sept. 15	Winter: Sept. 15
Summer: N/A	Summer: N/A	Summer: N/A

Revision, October 2012. End of revision.

11.21.4 Surgery, Experimental (Division of Surgical Research) Faculty

Director

L. Rosenberg

Associate Director

A. Philip

Administrative & Student Affairs Coordinator

Damla Tahirbegi

514-934-1934 ext. 42837

Professors

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

P. Brodt; B.Sc.(Bar-Ilan), M.Sc.(Ott.), Ph.D.(McG.)

R.C.-J. Chiu; M.B.(Taiwan), Ph.D.(McG.)

N.V. Christou; B.Sc., M.Sc., Ph.D., M.D.,C.M.(McG.)

M.M. Elhilali; M.B., B.Ch., D.S., DU, M.Ch.(Cairo), Ph.D.(McG.)

G.M. Fried; B.Sc., M.D.,C.M.(McG.)

F. Glorieux; M.D.(Louvain), M.Sc.(Montr.), Ph.D.(McG.)

P.H. Gordon; M.D.(Sask.)

J.E. Henderson; Ph.D.(McG.)

J.M. Laberge; M.D.(Laval)

D.S. Mulder; M.D.(Sask.), M.Sc.(McG.)

L. Rosenberg; M.Sc., M.D., Ph.D.(McG.)

P.J. Roughley; B.Sc., Ph.D.(Nott.)

R. St. Arnaud; Ph.D.(Laval)

M. Tanzer; M.D.,C.M.(McG.), F.R.C.S.(C)

C.I. Tchervenkov; B.Sc., M.D.,C.M.(McG.), F.R.C.S.(C)

Associate Professors

J. Antoniou; M.D.,C.M., Ph.D.(McG.), F.R.C.S.(C)

J. Barkun; M.D., M.Sc.(McG.)

O. Blaschuk; B.Sc.(Winn.), M.Sc.(Manit.), Ph.D.(Tor.)

S. Chevalier; B.Sc., M.Sc., Ph.D.(Montr.)

Associate Professors

S. Emil; M.D.,C.M.(McG.), F.R.C.S.(C)
L. Feldman; M.D.,C.M., M.Sc.(McG.)
D. Fleischer; B.Sc., M.D.,C.M.(McG.)
R.C. Hamdy; M.Sc, M.D.(Egypt), F.R.C.S.(C)
E. Harvey; B.Sc.(Ont.) M.D.,C.M., M.Sc.(McG.)
K.J. Lachapelle; M.Sc., M.D.,C.M.(McG.)
L. Lessard; B.Sc., M.D.(Laval), F.R.C.S.(C)
S. Meterissian; M.D.,C.M., M.Sc.(McG.)
P. Metrakos; B.Sc., M.D.(McG.), F.R.C.S.(C)
J.S. Mort; B.Sc.(McG.), Ph.D.(McM.)
A. Philip; M.Sc., Ph.D.(McG.)
P. Puligandla; M.D., M.Sc.(W. Ont.), F.R.C.S.(C)
J. Sampalis; M.Sc., Ph.D.(McG.)
D. Shum-Tim; M.Sc., M.D.,C.M.(McG.)
T. Steffen; M.D.(Switz.), Ph.D.(McG.)
T. Taketo-Hosotani; B.Sc., M.Sc., Ph.D.(Kyoto)
J.I. Tchervenkov; M.D.,C.M.(McG.), F.R.C.S.(C)
R. Turcotte; M.D.(Montr.)
D. Zukor; B.Sc., M.D.,C.M.(McG.)

Assistant Professors

J.E. Barralet; B.Eng., Ph.D.(Lond.)
M. Basik; M.D.,C.M.(McG.)
S. Bergman; M.Sc., M.D.,C.M.(McG.), F.R.C.S.(C)
J. Chen; B.Sc.(Chin. Acad. Sci.), Ph.D.(Guelph)
M. Che 1.2ue.1.2ue.i1 0 0 1 70.52 322.564c4eM.D., M.Sc., Ph.D.(K.R.C.Nl; liopoul.Sc., M.D.), F

11.21.5 Master of Science (M.Sc.); Experimental Surgery (Thesis) (Surgical Research) (48 credits)

Thesis Courses (33 credits)

EXSU 690	(4)	M.Sc. Research 1
EXSU 691	(4)	M.Sc. Research 2
EXSU 692	(4)	M.Sc. Research 3
EXSU 693	(21)	M.Sc. Thesis

Required Courses (12 credits)

EXSU 601	(6)	Knowledge Management
EXSU 605	(3)	Biomedical Research Innovation
EXSU 606	(3)	Statistics for Surgical Research

Complementary Courses (3 credits)

3 credits, one graduate-level course in the student's specialty, selected in consultation with the Research Supervisory Committee.

Depending on their individual background, students may be asked by their Research Supervisory Committee to take additional courses.

11.21.6 Doctor of Philosophy (Ph.D.); Experimental Surgery (Surgical Research)

Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Required Courses (12 credits)

EXSU 601	(6)	Knowledge Management
EXSU 605	(3)	Biomedical Research Innovation
EXSU 606	(3)	Statistics for Surgical Research
EXSU 700	(0)	Comprehensive Examination

Complementary Course (3 credits)

One graduate-level course in the student's specialty, selected in consultation with the Research Supervisory Committee.

11.21.7 Graduate Diploma in Surgical Health Care Research (30 credits)

Project (9 credits)

EXSU 637	(9)	Research Project
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Required Courses (9 credits)

EXSU 601	(6)	Knowledge Management
EXSU 606	(3)	Statistics for Surgical Research

Complementary Courses (12 credits)

At least 3 credits from the following courses:

EPIB 631*	(2)	Pharmacoepidemiology 2
EPIB 633*	(2)	Pharmacoepidemiology 1
EPIB 656	(3)	Health Care Technology Assessment
EPIB 679	(3)	Special Topics 10
EXMD 631	(3)	Topics in Economic Evaluation

Note: EPIB 631 and EPIB 633 must be taken in tandem for a total of four credits.

At least 9 credits from the following courses:

EPIB 601	(4)	Fundamentals of Epidemiology
EPIB 607	(4)	Inferential Statistics
EPIB 610	(3)	Advanced Methods: Causal Inference
EPIB 631*	(2)	Pharmacoepidemiology 2
EPIB 633*	(2)	Pharmacoepidemiology 1
EPIB 643	(1)	Substantive Epidemiology 3
EPIB 655	(3)	Epidemiology in Public Health
EPIB 668	(2)	Special Topics 1
EXMD 631	(3)	Topics in Economic Evaluation
POTH 630	(3)	Measurement: Rehabilitation 2

Note: EPIB 631 and 633 must be taken in tandem for a total of four credits.