Faculty of Medicine (Graduate)

Programs, Courses and University Regulations

2015-2016

This publication provides guidance to prospects, applicants, students, faculty and staff.

1. McGill University reserves the right to mak

Publication Information

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Canada

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1 Dean's Welcome

To Graduate Students and Postdoctoral Fellows

I am extremely pleased to welcome you to McGill University. Graduate and Postdoctoral Studies (GPS) collaborates with the Faculties and other administrative and academic units to provide strategic leadership and vision for graduate teaching, supervision, and research across over 400 graduate programs. GPS also oversees quality assurance in admissions and registration, the disbursement of graduate fellowships, support for postdoctoral fellows, and facilitates graduate degree completion, including the examination of theses. GPS has partnered with Enrolment Services to manage the admissions, registration and fees of graduate students and postdoctoral fellows and to offer streamlined services in a one-stop location at Service Point.

McGill is a student-centred research institution that places singular importance upon the quality of graduate education and postdoctoral training. As Dean of Graduate and Postdoctoral Studies, I work closely with the Faculties, central administration, graduate students, professors, researchers, and postdoctoral fellows to provide a supportive, stimulating, and enriching academic environment for all graduate students and postdoctoral fellows.

McGill is one of Canada's most intensive research universities, ranked 21st by QS World University Rankings 2014. We recognize that these successes come not only from our outstanding faculty members, but also from the quality of our graduate students and postdoctoral fellows. The community into which we are very happy to welcome you.

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

Josephine Nalbandian, Ph.D.
Dean, Graduate and Postdoctoral Studies

Graduate and P

As a rule, no more t l cowork (excluding thesis, project, stage, or internship) of a McGill master courses from anoth mple, courses tak before admission to the McGill gree, or courses tak thro during the McGill de

Normally, if courses cGill prior to admission to the McGill master degree were not used to compl credited toward the M nd the one-third rule as described ab These would be entered as exemptions admission.

If the courses comp rior to admission were used to complete a graduate, exemptions may be granted exempted course(s) r graduate course(s) at McGill. No double counting is allowed, unless, exceptionally th the Master's degree p an overall credit requirement greater than 45 credits. In other words, instances w credit may be grant edit amount to the minimum of 45 credits for a McGill master's degree. The on above continues to a

Research and Thesis

All candidates for a nt a thesis based on their research. The total number of credits allotted to th program must not b thesis and names of examiners must be forwarded on a Nomination of Examin form, available at ww elines/initial-submission, in accordance with the dates on www.mcgill.ca/importa of the department c that the thesis is submitted to Graduate and Postdoctoral Studies. The necessarily requirin in the particular ®eld of study, or a great deal of original scholarship, mus work in the ®eld and lity to carry out research and organize results, all of which must be prese thesis will not norma he disciplines, shorter ones are preferred. Guidelines and deadlines are www.mcgill.ca/gps/th

Language Requireme

Many master's degree p age requirements, and candidates who intend to proceed to language requirements k examinations in at least one language while working f g

5.2 Doctoral Degrees

Residence Requirements – Doctora

Refers to the numbers of terms (or years eir program. Students a uate until they ha A thesis ET 42.52 4599.31 21 1 0 174 9.1 Tf 48.075 718.8 q 361 47

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.

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

Thesis – Doctoral

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

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

Thesis Oral Examination – Doctoral

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

7 Fellowships, Awards, and Assistantships

Please refer to the eCalendar, University Regulations and Resources > Graduate > : Fellowships, Awards, and Assistantships for information and contact information regarding fellowships, awards, and assistantships in Graduate and Postdoctoral Studies.

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. Units hosting Postdocs should have explicitly stated policies and procedures for the supervision 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 practices 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 two 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 and qualified in the discipline in which training is being pro

iv. Postdocs with full responsibility for teaching a course should be compensated above their fellowship at the standard rate paid to lecturers by their department. This applies to all postdocs, except those for whom teaching is part of their a

General Conditions

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

9 Graduate Studies Guidelines and Policies

Refer to the eCalendar under University Regulations and Resources > Graduate > : Guidelines and Policies for information on the following:

- Guidelines and Regulations for Academic Units on Graduate Student Advising and Supervision
- Policy on Graduate Student Research Progress Tracking
- Ph.D. Comprehensive Policy
- Graduate Studies Reread Policy
- Failure Policy
- Guideline on Hours of Work

10 Information on Research Policies and Guidelines, Patents, Postdocs, Associates, Trainees

Refer to the eCalendar under University Regulations and Resources > Graduate > : Research Policy and Guidelines, Patents, Postdocs, Associates, Trainees for information on the following:

- Policy on Research Ethics
- Regulations on Research Policy
- Policy on Research Integrity
- Guidelines for Research Involving Human Subjects
- Guidelines for Research with Animal Subjects
- Policy on Intellectual Property
- Regulations Governing Conflicts of Interest
- Safety in Field Work
- Office of Sponsored Research
- Postdocs
- Research Associates

11 Academic Programs

The programs and courses in the following sections have been approved for the 2015±2016 session as listed. The Faculty/School reserves the right to introduce changes as may be deemed necessary or desirable by the Faculty throughout the year.

11.1 Anatomy and Cell Biology

11.1.1 Location

Department of Anatomy and Cell Biology
Strathcona Anatomy and Dentistry Building
3640 University Street, Room M/28
Montreal QC H3A 0C7
Canada

Telephone: 514-398-6350
Fax: 514-398-5047
Website: www.mcgill.ca/anatomy

11.1.2 About Anatomy and Cell Biology

The Department offers graduate programs leading to **M.Sc.** and **Ph.D.** degrees. 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 such as:

- cell and molecular biology;
- cellular immunology and hematology;
- reproductive biology;
- calcified tissue biology;
-

section 11.1.6Doctor of Philosophy (Ph.D.); Cell Biology

Graduate research activities leading to the presentation of the Ph.D. thesis involve original experimental work in one of the areas being actively investigated by the Department©s research supervisors. Our graduate program offers training in a personal, unique, and multidisciplinary environment in the top Canadian university with worldwide recognition. The thesis-based Ph.D. training is intended for students with a B.Sc., B.A., or M.Sc. degree in life sciences from a university of recognized reputation. Candidates with an M.D., D.D.S., or D.V.M. degree are also welcome. The students are trained in how to address biological problems with an integrative understanding of cell biology by conducting hypothesis-driven projects. The training provides all the tools required for a competitive career in academic settings as well as in industry or other ®elds.

11.1.3 Anatomy and Cell Biology Admission Requirements and Application Procedures

11.1.3.1 Admission Requirements

Admission is based on the candidate's academic record and letters of recommendation. A minimum cumulative grade point average (CGPA) of 3.0 out of 4.0 is required. Once a student has submitted all the required documents, the application 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 full member or an associate member of the Department of Anatomy and Cell Biology (Adjunct members may serve only as co-supervisors while the primary supervisor must be a full or associate member of the Department). Recommendation for admission will be made once the applicant has secured a supervisor and adequate ®nancial 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 (Cell Biology)

1. A B.Sc. degree in life sciences or an M.D., D.D.S., or D.V.M. degrees from a university of recognized reputation
2. Evidence of a high academic achievement with a minimum cumulative grade point average (CGPA) of 3.0 out of 4.0 as indicated in the general guidelines set up by GPS at McGill

Ph.D. Program (Cell Biology)

1. An M.Sc. degree in life sciences or an M.D., D.D.S., or D.V.M. degrees from a university of recognized reputation
2.

Canadian/McGill Students (any citizenship; includes fast-track and back-tracking)	International	Special/Exchange/Visiting
Winter: Nov. 15	Winter: Sept. 1	Winter: Same as Canadian/International
Summer: N/A	Summer: N/A	Summer: N/A

Admission to graduate studies is competitive; accordingly late and/or incomplete applications are considered only as time and space permit.

11.1.4 Anatomy and Cell Biology Faculty

Assistant Professor

Geoffroy P. Nol; 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	(3)	Histology
ANAT 663D2	(4.5)	Histology
ANAT 690D1	(3)	Cell and Developmental Biology
ANAT 690D2	(3)	Cell and Developmental Biology

Human Systems Biology Stream

6 credits required:

ANAT 690D1	(3)	Cell and Developmental Biology
ANAT 690D2	(3)	Cell and Developmental Biology

3 credits selected from:

BMDE 502	(3)	BME Modelling and Identi®cation
BMDE 519	(3)	Biomedical Signals and Systems
BTEC 501	(3)	Bioinformatics
COMP 564	(3)	Computational Gene Regulation
COMP 680	(4)	Mining Biological Sequences
EXMD 602	(3)	Techniques in Molecular Genetics
MIMM 613	(3)	Current Topics 1
MIMM 614	(3)	Current Topics 2
MIMM 615	(3)	Current Topics 3

Upon consultation with the supervisor, students may select a 3-credit course outside of this list from Biomedical Science courses at the 500-600 le

11.1.6 Doctor of Philosophy (Ph.D.); Cell 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 ®eld 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 that the research advances knowledge in the ®eld. Finally, the thesis must be written in compliance with norms for academic and scholarly discussion and for publication in the public domain.

Required Courses

ANAT 690D1	(3)	Cell and Developmental Biology
ANAT 690D2	(3)	Cell and Developmental Biology
ANAT 695	(3)	Seminars in Cell Biology 1
ANAT 696	(3)	Seminars in Cell Biology 2
ANAT 697	(3)	Seminars in Cell Biology 3
ANAT 701	(0)	Ph.D. Comprehensive Examination

11.2 Biochemistry

11.2.1 Location

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

Christine Labergue: Student Affairs Administrator/Graduate Program Coordinator
Telephone: 514-398-2423
Fax: 514-398-7384
Email: admissions.biochemistry@mcgill.ca
Website: www.mcgill.ca/biochemistry (Chemical Biology: www.mcgill.ca/biochemistry/graduate-studies-2/chemicalbiology; Bioinformatics: www.mcgill.ca/biochemistry/graduate-studies-2/bioinformatics)

11.2.2 About Biochemistry

The Department of Biochemistry offers M.Sc. and Ph.D. programs, which emphasize laboratory research. Our research interests include:

- molecular and cell biology;
- the regulation of gene and protein expression;
- signal transduction;
- protein structure and function;
- membrane biology;
- cell death and differentiation;
- embryonic development;
- neurobiology;
- bioinformatics;
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Visiting scientists and senior doctoral students present their research findings to the Department at a seminar series throughout the academic year. All graduate students are required to attend these seminars and additional special lectures, and are encouraged to attend scientific conferences and symposia.

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

The M.Sc. in Biochemistry introduces students to laboratory-based research at an advanced level. The M.Sc. program offers core courses in advanced biochemistry topics, but focuses on laboratory research. The program provides sophisticated training in the technical as well as theoretical aspects of biochemistry at one of the leading Biochemistry departments in Canada. The M.Sc. program is an excellent preparation for skilled positions in the biomedical sciences, in industry or the public sector, or for superior research in a Ph.D. program.

section 11.2.6 Master of Science (M.Sc.); Biochemistry (Thesis) – Chemical Biology (47 credits)

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 that unite the research being performed in this group is the attempt to learn where 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 biogenetic markers of metabolism; self-assembly mechanisms of the HIV-1 virion capsid; liposome microarray systems to address membrane protein dynamics and recognition; studies on oxygen/reactive oxygen species translocation across the aqueous/lipid membrane interface; RNAi/antisense technologies; dynamic combinatorial chemistry; protein dynamics and function; mechanistic aspects in cellular adhesion and transport in membrane and zeolite channels; and cutting-edge microscopes aimed 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 professors. 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 M.Sc. option provides a foundation in the concepts and approaches of Chemical Biology.

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

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

Financial support for students in the program is available from a variety of sources, including competitively awh78.0hemistogoroCgh o0 0 1 408.891h5.723(h78.0

11.2.3.2.1 Additional Requirements

The items and clari®cations below are additional requirements set by this department:

- CurriculumVitae
- Personal Statement
- Agreement of a faculty member to act as Thesis Supervisor and to provide adequate ®nancial support
-

Professors

Gordon C. Shore; B.Sc.(Guelph), Ph.D.(McG.)

Joseph Shuster; B.Sc.(McG.), Ph.D.(Calif.), M.D.(Alta.)

John R. Silvius; B.Sc., Ph.D.(Alta.)

Nahum Sonenberg; M.Sc., Ph.D.(Weizmann Inst.), FR.S.C., FR.S. (James McGill Professor)

David Y. Thomas; B.Sc.(Brist.), M.Sc., Ph.D.(Univ. College, Lond.), FR.S.C. (Canada Research Chair in Molecular Genetics)

Michel L. Tremblay; B.Sc., M.Sc.(Sher.), Ph.D.(McM.), FR.S.C. (Jeanne and Jean-Louis Levesque Chair in Cancer Research)

Associate Professors

Maxime Bouchard; B.Sc., Ph.D.(Laval) (Canada Research Chair in Developmental Genetics)

Jos e Dostie; B.Sc.(Sher.), Ph.D.(McG.) (CIHR New Investigator Award; Chercheur-boursi r e du FRSQ)

Thomas Duchaine; B.Sc., Ph.D.(Mont.) (Chercheur-boursier du FRSQ)

Bhushan Nagar; B.Sc., Ph.D.(Tor.) (Canada Research Chair in the Structural Biology of Signal Transduction)

Julie St-Pierre; B.Sc., M.Sc.(Laval), Ph.D.(Camb.)

Jose G. Teodoro; B.Sc.(W.Ont.), Ph.D.(McG.) (CIHR New Investigator Award; Chercheur-boursier du FRSQ)

Jason C. Young; B.Sc.(Tor.), Ph.D.(McM.) (Canada Research Chair in Molecular Chaperones)

Assistant Professors

Uri David Akavia; B.Sc., M.Sc., Ph.D.(T.Aviv)

Sidong Huang; B.A.(Boston), Ph.D.(Calif.)

Martin Schmeing; B.Sc.(McG.), Ph.D.(Yale)

Associate Members

Gary Brouhard (Dept. of Biology)

Edward A. Fon (Neurology and Neurosurgery)

Jacques Genest (Dept. of Medicine)

Michael Hallett (McGill Centre for Bioinformatics)

Adjunct Professors

Mirek Cygler (Sask.)

Jacques Drouin (IRCM)

Anny Fortin (Dafra Pharma Res. and Dev. Bvba)

Matthias G tte (Alta.)

Enrico Purisima (NRC/BR)

Ren Roy (PharmaQAM)

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

Thesis Courses (36 credits)

BIOC 697	(9)	Thesis Research 1
BIOC 698	(12)	Thesis Research 2
BIOC 699	(15)	Thesis Research 3

Required Course (3 credits)

BIOC 696	(3)	Seminars in Biochemistry

Complementary Courses* (6 credits)

At least 3 credits must be chosen 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)	Protein 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

BIOC 696	(3)	Seminars in Biochemistry

Complementary Courses* (11 credits)

Tw

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.

11.2.7 Master of Science (M.Sc.); Biochemistry (Thesis) — Bioinformatics (45 credits)

Thesis Courses (30 credits)

BIOC 694	(3)	Thesis Research 4
BIOC 698	(12)	Thesis Research 2
BIOC 699	(15)	Thesis Research 3

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)	Protein 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 contri 1 0 0 1 154 d923 d923 d923 d923 d923 rwc

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 NO

* 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
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
BIOC 600	(3)	Advanced Strategies in Genetics and Genomics
BIOC 603	(3)	Genomics and Gene Expression
BIOC 604	(3)	Macromolecular Structure
BIOC 605	(3)	Protein 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 total of at least 9 complementary course credits from the following list:

CHEM 504	(3)	Drug Design and Development 2
CHEM 522	(3)	Stereochemistry
CHEM 582	(3)	Supramolecular Chemistry
CHEM 591	(3)	Bioinorganic Chemistry
CHEM 621	(5)	Reaction Mechanisms in Organic Chemistry
CHEM 629	(5)	Organic Synthesis
CHEM 655	(4)	Advanced NMR Spectroscopy
EXMD 510	(3)	Bioanalytical Separation Methods
EXMD 602	(3)	Techniques in Molecular Genetics
PHAR 504	(3)	Drug Discovery and Development 2
PHAR 562	(3)	Neuropharmacology
PHAR 563	(3)	Endocrine Pharmacology
PHAR 707	(3)	Topics in Pharmacology 6

*** 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.

11.2.10 Doctor of Philosophy (Ph.D.); Biochemistry — 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 that research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly excellence.

11.3.3.3 Application Deadlines

Deadlines coincide with those of the chosen base discipline. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at www.mcgill.ca/gps/contact/graduate-program.

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

11.3.4 Biomedical Ethics Unit Faculty

Director, Centre for Applied Ethics

E. Bereza; B.A., M.D., C.M.(McG.), C.C.F.P.(C)

Associate Professors

C. Ells; R.R.T.(VGH), B.A.(St. Mary's), M.A., Ph.D.(Penn.)

J.R. Fishman; B.A.(Calif., Berk.), Ph.D.(Calif., SF)

J. Kimmelman; B.S.(Duke), Ph.D.(Yale)

N.B. King; B.A.(Penn.), M.A., Ph.D.(Harv.)

Associate Members

F. Carnevale (Ingram School of Nursing)

J. Chambers-Evans (Bioethics)

M. Hunt (School of Physical & Occupational Therapy)

Y. Joly (Human Genetics)

B.M. Knoppers (Centre of Genomics and Policy)

M.E. Macdonald (MQHRG)

T. Maniatis (Bioethics)

M.H. Zawati (Human Genetics)

11.4 Biological and Biomedical Engineering

11.4.1 Location

Duff Medical Building
3775 University Street, Room 316
Montreal QC H3A 2B4
Canada

Website: www.mcgill.ca/bbme

11.4.2 About Biological and Biomedical Engineering

Programs in biological and biomedical engineering will be offered jointly by the Faculty of Engineering and the Faculty of Medicine as of January 2016.

Please contact the department directly for further information.

11.5 Biomedical Engineering

Note: As of January 2016, the M.Eng. and Ph.D. in Biomedical Engineering will be renamed to the M.Eng. and Ph.D. in Section 11.4 Biological and Biomedical Engineering. These programs will be offered jointly by the Faculty of Medicine and the Faculty of Engineering.

11.5.1 Location

Department of Biomedical Engineering
Duff Medical Building
3775 University Street, Room 316
Montreal QC H3A 2B4
Canada

Telephone: 514-398-6736
Fax: 514-398-7461
Website: www.mcgill.ca/bme

11.5.2 About Biomedical Engineering

The Department offers graduate training programs leading to master's (M.Eng.) and Ph.D. degrees in Biomedical Engineering.

We provide instruction and opportunities for interdisciplinary research in the application of engineering, mathematics, and the physical sciences to problems in medicine and the life sciences. Courses are offered for graduate students in the life sciences, engineering, and the physical sciences.

Excellent laboratory facilities for basic and applied research are available in the Department and in the laboratories of associated hospitals located elsewhere on campus. The Department operates a network of high-performance workstations and well-equipped mechanical and electronics workshops.

Basic research in the Department concentrates on the application of quantitative engineering analysis methods to basic biomedical research problems. Currently active areas of research include:

- neuromuscular and postural control;
- muscle mechanics;
- the vestibular system;
- oculomotor control;
- the auditory system;
- joint prosthetics;
- biomaterials;
- artificial cells and organs;
- cell and tissue engineering;
- drug delivery;
- microencapsulation;
- microbiome and probiotics;
- functional food and neutraceuticals;
- medical imaging;

1. Preliminary
2. Comprehensive Exam Preparation
3. Thesis Proposal and Comprehensive Exam
4. Thesis Progress
5. Thesis Pre-submission

Details of each meeting can be found at www.mcgill.ca/bme/students/policies-forms.

section 11.5.5 Master of Engineering (M.Eng.); Biomedical Engineering (Thesis) (45 credits)

As the first Biomedical Engineering (BME) department in Canada, BME's 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 the three Faculties of Medicine, Science, and Engineering. BME offers only thesis-based graduate degrees (M.Eng.) spanning broad themes in neuromuscular and postural control, muscle mechanics, the vestibular system, oculomotor control, the auditory system, joint prosthetics, biomaterials, artificial cells and tissues, cell and tissue engineering, drug delivery, microencapsulation, microbiome and probiotics, functional food and neutraceuticals, medical imaging, microfluidics, nanomedicine and nanotechnology and bioinformatics in genomics and proteomics. 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 with a strong emphasis on mathematics, physics, chemistry, and basic physiology or cell biology. Our BME graduates have secured positions in academia, biomedical and other industries, and government or regulatory sectors, either before or within a few months of graduation.

section 11.5.6 Doctor of Philosophy (Ph.D.); Biomedical Engineering

As 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 the three Faculties of Medicine, Science, and Engineering. BME offers only thesis-based graduate degrees (Ph.D.) spanning broad themes in neuromuscular and postural control, muscle mechanics, the vestibular system, oculomotor control, the auditory system, joint prosthetics, biomaterials, artificial cells and tissues, cell and tissue engineering, drug delivery, microencapsulation, microbiome and probiotics, functional food and neutraceuticals, medical imaging, microfluidics, nanomedicine and nanotechnology and bioinformatics in genomics and proteomics. 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. Our BME graduates have secured positions in academia, biomedical and other industries, and government or regulatory sectors, either before or within a few months of graduation.

11.5.3 Biomedical Engineering Admission Requirements and Application Procedures

11.5.3.1 Admission Requirements

See: Admission Requirements (Minimum Requirements to be Considered for Admission). In addition, please see the Department website: www.mcgill.ca/bme.

11.5.3.2 Application Procedures

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

See: Application Procedures for detailed application procedures.

Please address enquiries directly to the Department.

11.5.3.3 Application Deadlines

The application deadlines listed here are set by Biomedical Engineering and may be subject to change at any time. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at: www.mcgill.ca/gps/contact/graduate-program.

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

Admission to graduate studies is competitive; accordingly, late and/or incomplete applications are considered only as time and space permit.

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

Associate Members

A. Shmuel (Neurology and Neurosurgery)

Y.B. Xia (Bioengineering)

Adjunct Professors

P.G. Charette (Sher)

I. El Naqa (Mich.)

C. Grova (Cédia)

J.-M. Lina (ETS)

J.L. Nadeau (CalifTech.)

G.B. Pike (Calg.)

A. Reader (King©s, Lond.)

T. Veres (NRC)

11.5.5 Master of Engineering (M.Eng.); Biomedical Engineering (Thesis) (45 credits)

Thesis Courses (24 credits)

BMDE 695	(12)	Thesis Submission

12 credits selected from the following courses:

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 medical sciences, engineering, or computer science selected from the following:

BIOT 505	(3)	Selected Topics in Biotechnology
BMDE 501	(3)	Selected Topics in Biomedical Engineering
BMDE 502	(3)	BME Modelling and Identi®cation
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 600D1	(1.5)	Seminars in Biomedical Engineering
BMDE 600D2	(1.5)	Seminars in Biomedical Engineering
BMDE 650	(3)	Advanced Medical Imaging
BMDE 651	(3)	Orthopaedic Engineering
BMDE 652	(3)	Bioinformatics: Proteomics
COMP 526	(3)	Probabilistic Reasoning and AI
COMP 546	(4)	Computational Perception

COMP 558	(3)	Fundamentals of Computer Vision Advanced Topics	W

11.6.2 About Communication Sciences and Disorders

The School pro

section 11.6.6 Master of Science, Applied (M.Sc.A.); Communication Sciences & Disorders (Non-Thesis) – Speech-Language Pathology (81 credits)

and promotes diversity within our student body. Our goal is to recruit and train skillful therapists and problem solvers who can rely on strong foundation in theory to address challenging clinical issues. Our M.Sc.A. graduates typically pursue a professional career in schools, hospitals, rehabilitation centres, or in private practice. A subset of our graduates will enter a doctoral program (immediately or after a period of clinical experience) to pursue a research career.

Research Degrees – M.Sc. and Ph.D.

section 11.6.5 Master of Science (M.Sc.); Communication Sciences and Disorders (Thesis) (45 credits)

Selected candidates may be accepted for the M.Sc. 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.

This program is designed for students who wish to combine research training with their clinical (M.Sc.A.) program or students from related fields who wish to gain research experience in communication sciences to prepare for doctoral studies. Students are required to take two semesters (6 credits) of statistics and complete a thesis. Admission to the M.Sc. research program requires identification of an SCSD professor(s) with the expertise to mentor the student through the thesis process. Graduates of our M.Sc. research program have diverse career paths, working in clinical settings (if they also have a clinical degree) or settings that combine clinical and research activities or continuing their research training at the doctoral level.

section 11.6.7 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 11.6.8 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.

11.6.3 Communication Sciences and Disorders Admission Requirements and Applications Procedures

11.6.3.1 Admission Requirements

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 related 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; if admitted, must first complete a Qualifying year of course work 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 95 on the Internet-based test (iBT) (587 on the paper-based test (PBT)) 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.

11.6.3.2 Application Procedures

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

See : Application Procedures for detailed application procedures.

Please see the School of Communication Sciences and Disorders website for required application materials.

M.Sc. (Thesis) and Ph.D. programs

All applications received by the application deadlines are automatically considered for 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.

11.6.3.2.1 Additional Requirements

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

M.Sc. (Applied)

- Prerequisite Form
- Curriculum Vitae
- Reference letters – one professional and one academic

M.Sc. (Thesis) and Ph.D.

- Personal Statement
- Curriculum Vitae
- Writing Sample
- Acceptance by a research supervisor

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).

11.6.3.3 Application Deadlines

The application deadlines listed here are set by the School of Communication Sciences and Disorders and may be revised at any time. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please contact the list at www.mcgill.ca/gps/contact/graduate-program.

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

Admission to graduate studies is competitive; accordingly, late and/or incomplete applications are considered only as time and space permit.

11.6.4 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 R. Baum; B.A.(Cornell), M.S.(Vermont), M.A., Ph.D.(Brown)

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

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

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

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

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

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

Associate Professors

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

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

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

Assistant Professors

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

Nicole Yee-Key Li; B.Sc., M.Phil.(HK), Ph.D.(Pitt.)

Assistant Professors (Part-Time)

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

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

Faculty Lecturers

Kelly Root; B.A.(Ott.), M.Sc.(Dal.)

Sophie Vaillancourt; B.Sc., M.A.(Montr.), M.B.A.(McG.)

Faculty Lecturers (Part-Time)

Anna Baudier; B.Sc.(Montr.), M.Sc.A.(McG.)

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

Liliane Brunetti; B.Sc.(Cédia), M.Cl.Sc.(Ont.)

Jesse Burns; B.A.(Cédia), M.Sc.(McG.)

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

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

Kendall Kolne; B.Sc., M.Sc.(McM.)

Suzanne Lalonde; B.A.(Montr.), M.Sc.A.(McG.)

Maia Masuda; B.Mus., M.Sc.A.(McG.)

Tanya Matthews; B.A.(N. Carolina), M.A.(Hampton)

Gina Mills; B.Sc.(Acad.), M.Sc.(Dal.)

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

LaurenTittley; B.Sc.(McG.), M.Sc.A.(Tor.)

AnneVogt; B.A.(Tel Aviv), M.Sc.A.(McG.)

Associate Members

Eva Kehayia (Physical and Occupational Therapy)

Associate Members

Yuriko Oshima-Takane (Psychology)

Adjunct Members

Howard Chertkow (Jewish Gen.)

David McFarland (Montr.)

Lucie Menard (UQAM)

11.6.5 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

11.6.6 Master of Science, Applied (M.Sc.A.); Communication Sciences & Disorders (Non-Thesis) — Speech-Language Pathology (81 credits)

The professional degree program involves two academic years of full-time study and related practical work, followed by a Summer internship.

Required Courses (75 credits)

SCSD 609	(3)	Neuromotor Disorders
SCSD 616	(3)	Audiology
SCSD 617	(3)	Anatomy and Physiology: Speech and Hearing
SCSD 618	(3)	Research and Measurement Methodologies 1
SCSD 619	(3)	Phonological Development
SCSD 624	(3)	Language Processes
SCSD 631	(3)	Speech Science
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	(4)	Introductory Clinical Practicum
SCSD 669	(3)	ASD and Neurodevelopmental Disorders
SCSD 679	(12)	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 Craniofacial Disorders

Complementary Courses (6 credits)

Two of the following:

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

NOTE: Interprofessional Education Activities (IPEAs)

These required non-credit activities address the competencies for interprofessional practice across the health professions such as professional roles,

EDPE 684	(3)	Applied Multivariate Statistics
EPIB 621	(4)	Data Analysis in Health Sciences
EPIB 622	(3)	Scienti®c Communication
PSYC 650	(3)	Advanced Statistics 1
PSYC 651	(3)	Advanced Statistics 2

Any other course requirements speci®ed for the student's individual program of study

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

Students must satisfy all program requirements for the Ph.D. in their home department. The Ph.D. thesis must be on a topic relating to language acquisition, approved by the LAP committee.

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 ®eld 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 ®eld. Finally, the thesis must be written in compliance with norms for academic and scholarly discussion and for publication in the public domain.

Required Courses (14 credits)

EDSL 711	(2)	Language Acquisition Issues 3
LING 710	(2)	Language Acquisition Issues 2
PSYC 709	(2)	Language Acquisition Issues 1
SCSD 652	(3)	Advanced Research Seminar 1
SCSD 653	(3)	Advanced Research Seminar 2
SCSD 701	(0)	Doctoral Comprehensive
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 satis®ed 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
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

11.7 Epidemiology and Biostatistics

11.7.1 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-odc

11.7.2 About Epidemiology and Biostatistics

The Department offers **master's and doctoral programs in both Epidemiology and Biostatistics**, as well as a **Master's of Science in Public Health**. The methods learned in these fields are used not only in the study of diseases, but in health services research, program planning and evaluation, and policy development. Our faculty members are at the forefront of their research domains and include epidemiologists, biostatisticians, clinician scientists, medical informatics specialists, health economists, medical sociologists, and health geographers.

Research in the Department spans all clinical specialties:

- biostatistics;
- clinical and public health informatics;
- environmental and occupational health;
- health care delivery and organization;
- infectious diseases;
- pharmacoepidemiology;
- population and public health;
- social epidemiology;
- and many cross-disciplinary activities.

Faculty members may have funding available for students through their research grants. We provide rich research environments at the university-affiliated hospitals, public health agencies, and university research centres. Graduates pursue careers in academia, clinical settings, government agencies, and industry

11.7.3 Epidemiology, Biostatistics and Occupational Health Faculty

Chair

G. Paradis

Emeritus Professors

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

A. Lippman; B.A.(Cornell), Ph.D.(McG.)

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

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

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 Coll.)), 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.(N.U.I.), Ph.D.(Wat.)

C. Infante-Rivard; M.D.(Montr.), M.P.H.(Calif.-LA), Ph.D.(McG.), F.R.C.P.(C) (James McGill Professor) (on leave July to Dec. 2015)

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

J. Kaufman; B.A.(Johns Hop.), Ph.D.(Mich.) (Canada Research Chair) (on leave Jan. to June 2016)

M.S. Kramer; B.A.(Chic.), M.D.(Yale) (joint appt. with Pediatrics) (James McGill Professor)

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)

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

M. Pai; M.B.B.S.(Stanley Med. Coll.), M.D.(Christian Medical Coll.), Ph.D.(Calif., Berk.) (Canada Research Chair)

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.(Lond.) (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

A. Adrien; M.D., M.Sc.(McG.)

R. Allard; B.A.(Montr.), M.D.,C.M., M.Sc.(McG.)

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

A. Benedetti; B.Sc., M.Sc., Ph.D.(McG.) (joint appt. with Medicine)

D. Buckeridge; M.D.(Qu.), M.Sc.(Tr.), Ph.D.(Stan.) (CIHR Applied Public Health Chair) (on leave May to Oct. 2016)

A. Ciampi; M.Sc., Ph.D.(Qu.), Ph.D.(Rome)

J. Cox; B.Sc., B.A., M.D.(Dal.), M.Sc.(McG), C.C.F.P., F.R.C.P.(C)

Associate Professors

N. Dendukuri; M.Sc.(Indian IT), Ph.D.(McG.) (PT) (joint appt. with Medicine)

C. Greenwood; B.Sc.(McG.), M.Sc.(Wat.), Ph.D.(Tor.) (joint appt. with Oncology)

S. Harper; B.A.(Westminster Coll.), M.S.P.H.(S. Carolina), Ph.D.(Mich.)

P. H roux; B.Sc.(Laval), M.Sc., Ph.D.(I.N.R.S.)

A. Labbe; M.Sc.(Mont), Ph.D.(Wat.) (joint appt. with Psychiatry)

E.E.M. Moodie; B.A.(Winn.), M.Phil.(Camb), Ph.D.(Wash.) (William Dawson Scholar)

C. Quach-Thanh; M.D.(Mont), M.Sc.(McG.) (joint appt. with Pediatrics)

A. Quesnel-Vallee; B.A., M.Sc.(Montr), M.A., Ph.D.(Duke) (joint appt. with Sociology) (Canada Research Chair)

M. Rossignol; B.Sc., M.D.(Sher), M.Sc.(McG.)

E. Strumpf; B.A.(Smith), Ph.D.(Harv.) (joint appt. with Economics)

T. Tannenbaum; B.A.(Brown), M.D.(Calg.), M.P.H.(Mass.), I.M.H.L.(McG.)

P. Tousignant; B.A., M.D.(Laval), M.Sc.(McG.), F.R.C.P.(C) (PT)

Assistant Professors

J. Baumgartner; B.A.(Wisc.), M.Sc.(Harv.), Ph.D.(Wisc.) (joint appt. with Institute of Health and Social Policy)

P. Chaudhuri; B.Sc.(Presidency), M.Stat.(Indian Statistical Institute), M.S., Ph.D.(Yale)

J. Chevrier; B.Sc., M.Sc.(Laval), Ph.D.(Calif., Berk.) (Canada Research Chair)

K. Dehghani; B.Sc.(SUNY), M.Sc.(N'western), M.D.(T), M.Sc.P.H.(Harv.), C.C.F.P.(C), F.R.C.P.(C)

D. Kaiser; B.Sc., M.D.,C.M., M.Sc.(McG.)

S. Martin; M.D.(Tor.), M.Sc.(McG.) (PT)

A. Nandi; B.S.(College of New Jersey), M.P.H.(Col.), Ph.D.(Johns Hop.) (joint appt. with Institute for Health and Social Policy)

L. Patry; B.Sc., M.D.(Laval), F.R.C.P.(C) (PT)

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

G. Tan; D.Phil.(Oxf.) (PT)

S.Yang; B.A.(Ajou), M.Sc.(McG.), Ph.D.(Mich.)

Associate Members

Biomedical Ethics Unit: J. Kimmelman, N. King

Dentistry: P. Allison, J. Feine

Dietetics and Human Nutrition: N. Basu, K. Gray-Donald

Family Medicine: A. Andermann, J. Haggerty, M.J.R. Lajoie, E. Robinson

Geography: N. Ross

Medicine: J.A®lalo, A. Barkun, M. Behr, S. Bernatsky, J. Bourbeau, P. Brassard, K. Dasgupta, M. Eisenberg, P. Ernst, K. Filion, M. Goldberg, C. Greenaway, S. Kahn, M. Klein, A. Marelli, N. Mayo, S. Morin, N. Pant Pai, J. Pickering, L. Pilote, E. Rahme, B. Richards, K. Schulzman, M. Switch, I. Shrier, V. Tagalakis, G.Thanassoulis

Neurology and Neurosurgery: C, Renoux

Ob/Gyn: H. Abenhaim, R. Gagnon, A. Naimi

Pathology: B. Case

Pediatrics: M. Ben Shoshan, E. Constantin, G. Dougherty, F. Fontela, B. Foster, P.T-S. Lee, M. Zappitelli

Physical and Occupational Therapy: S.Ahmed

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

Sociology: S. Clark

Surgery: D. Deckelbaum

Lecturers

J.P. Courteau, M. Kafka, C. Mom Mogto, C. Paquette, N. Titri, W. Wood

Adjunct Professors

Asociaci n Civil Selva Amaz nica Peru: M. Casapia

Boehringer Ingelheim GmbH: D. Bartels

Caro Research: J. Caro

Contex: J.P. Gauvin

Direction r gionale de la sant publique: M. Baillargeon, G. Denis, A. Kossowski, R. Lessard, R. Mass , Sal Primieri, S. Perron, M. Roy

Harvard Univ.: J. Brownstein

Health Canada: S. Weichenthal

H pital Ste. Justine: M. Henderson

Independent: I. Arnold, J. Lemke, M. Schweigert, L. Scott

INSPQ: E. Lo, P. Robillard, D. Roy, S. Stock

Montreal Chest Hospital Center: P. Rohan

Mount Sinai: M. Baltzan

Sanexen: P. Simon

Shire Inc: A. Koutsavlis

Univ. of Calgary: A Clarke

Univ. Medisch Centrum: P. Bruijning-Verhagen

Univ. de Montral : J. Siemiatycki

Univ. de Sherbrooke: C. Rochefort

11.7.4 Epidemiology

The Department offers master©s and doctoral programs in both Epidemiology and Biostatistics, as well as a Master©s of Science in LTf 1 0 0 1 1ny/F2 8.1 Tf

section 11.7.4.2 Master of Science (M.Sc.); Epidemiology (Thesis) (48 credits)

pharmaco-epidemiological, policy, and methodological health-related research. Graduates of the program often go on to do doctoral work become research associates in public, private, and academic settings. McGill graduates are known for methodological and quantitative rigour, and quantitative analytic independence. While their core training is in methods, rather than specific substantive areas, students learn about substantive areas in the context of their research and through elective courses.

section 11.7.4.3 Master of Science (M.Sc.); Public Health (Non-Thesis) (60 credits)

The mission of the Master's of Public Health is to train outstanding public health professionals and future leaders by offering a rigorous academic program in methods, research, and practice. This program may be of interest for students from the natural and quantitati

11.7.4.1 Epidemiology Admission Requirements and Application Procedures

11.7.4.1.1 Admission Requirements

The graduate programs in Epidemiology (M.Sc. and Ph.D.) and Public Health (M.Sc.) require substantial quantitative skills. The Admission Committees for these programs require documented proof of quantitative proficiency including good grades in college-level differential and integral calculus.

The GRE is required of candidates who are health professional graduates from universities outside North America.

Master's in Epidemiology

Applicants to the M.Sc. in Epidemiology programs must hold a bachelor's degree in a related area.

Master's of Public Health

Applicants to the Master's of Public Health programs must hold a bachelor's degree. Experience in this field is an asset.

Ph.D.

Applicants to Ph.D. programs must hold a master's degree in Epidemiology or its equi

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

11.7.4.3 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

Practicum/Project (12 credits)

PPHS 630	(12)	MScPH Practicum/Project

Required Courses (27 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 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
PPHS 602	(3)	Foundations of Population Health
PPHS 612	(3)	Principles of Public Health Practice
PPHS 629D1	(.5)	MScPH Forum 1
PPHS 629D2	(.5)	MScPH Forum 1
PPHS 631D1	(.5)	MScPH Forum 2
PPHS 631D2	(.5)	MScPH Forum 2

Complementary Courses (12 credits)

12 credits of coursework at the 500 level or higher, with a minimum of 2 credits chosen from each of the following fields:

Environmental Health Sciences

GEOG 503	(3)	Advanced Topics in Health Geography
OCCH 602	(3)	Occupational Health Practice
PPHS 529	(3)	Global Environmental Health and Burden of Disease

Or other courses, at the 500 level or higher, selected with the Program Academic Adviser.

Health Services Research Policy and Management

PPHS 525	()	
PPHS 527	(3)	Economics for Health Services Research and Policy
PPHS 528	(3)	Economic Evaluation of Health Programs

Or other courses, at the 500 level or higher, selected with the Program Academic Adviser.

Population and Public Health Interventions (social and behavioural science)

PPHS 525	()	
PPHS 624	(3)	Public Health Ethics and Policy
SOCI 515	(3)	Medicine and Society
SOCI 588	(3)	Biosociology/Biodemography

Or other courses, at the 500 level or higher, selected with the Program Academic Adviser.

Field Epidemiology or Epidemiology in Practice

OCCH 604	(3)	Monitoring Occupational Environment
PPHS 615	(3)	Introduction to Infectious Disease Epidemiology

Or other courses, at the 500 level or higher, selected with the Program Academic Adviser.

Electives (9 credits)

9 credits of coursework, at the 500 level or higher.

Students may choose to focus on more advanced methods in epidemiology, biostatistics, geography, etc. or substantive areas such as environmental or occupational health, or to select a v

12 credits of coursework at the 500 level or higher, with a minimum of 2 credits chosen from each of the following fields:

Environmental health sciences;

Health services research policy and management;

Population and public health interventions (social and behavioural science);

Epidemiology in practice or field epidemiology

Courses must be approved by the program's academic adviser

3 credits of coursework, at the 500 level or higher, from the list of courses approved for the Population Dynamics Option that have not been taken to satisfy other program requirements:

ECON 622	(3)	Public Finance
ECON 634	(3)	Economic Development 3
ECON 641	(3)	Labour Economics
ECON 734	(3)	Economic Development 4
ECON 741	(3)	Advanced Labour Economics
ECON 742	(3)	Empirical Microeconomics
ECON 744	(3)	Health Economics
EPIB 525	(3)	Health Care Systems in Comparative Perspective
EPIB 648	(3)	Methods in Social Epidemiology
EPIB 681	(3)	Global Health: Epidemiological Research
PPHS 527	(3)	Economics for Health Services Research and Policy
PPHS 528	(3)	Economic Evaluation of Health Programs
PPHS 529	(3)	Global Environmental Health and Burden of Disease
PPHS 615	(3)	Introduction to Infectious Disease Epidemiology
SOCI 512	(3)	Ethnicity & Public Policy
SOCI 513	(3)	Social Aspects HIV/AIDS in Africa
		Migration and Immigrant Groups

EPIB 623	(3)	Research Design in Health Sciences
EPIB 701	(0)	Ph.D. Comprehensive Examination
EPIB 702	(0)	Ph.D. Proposal

Complementary Courses (12 credits)

12 credits of coursework, at the 500 level or higher, with a minimum of 3 credits in ethics (medical/public health/research), 3 credits in biostatistics, 3 credits in a substantive topic (normally related to the thesis topic), and 3 credits in epidemiology. Courses must be chosen in consultation with the student's supervisor and/or the degree program's director or adviser

11.7.4.6 Doctor of Philosophy (Ph.D.); Epidemiology — Population Dynamics

Students admitted to the Ph.D. in Epidemiology; Polulation Dynamics must complete a program with the equivalent of the M.Sc. in Epidemiology at McGill will be required to take a minimum of 33 credits of Ph.D. courses.

In addition to the Ph.D. requirements, students admitted to the Ph.D. in Epidemiology; Population Dynamics program without the equivalent of an M.Sc. in Epidemiology at McGill will, in their first year, have to complete required coursework equivalent to the Master's Epidemiology program, as determined by the Department.

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 that the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly discussion and for publication in the public domain.

Required Courses (21 credits)

EPIB 604	(3)	Epidemiologic Analysis
EPIB 608	(3)	Advanced Epidemiology
EPIB 609	(3)	Seminar on Advanced Methods in Epidemiology
EPIB 610	(3)	Advanced Methods: Causal Inference
EPIB 623	(3)	Research Design in Health Sciences
EPIB 701	(0)	Ph.D. Comprehensive Examination
EPIB 702	(0)	Ph.D. Proposal
SOCI 545	(3)	Sociology of Population
SOCI 626	(3)	Demographic Methods

Complementary Courses (12 credits)

12 credits of coursework, at the 500 level or higher, with a minimum of 3 credits in ethics (medical/public health/research), 3 credits in biostatistics, 3 credits in epidemiology

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Language Requirement

The minimum TOEFL score required, when applicable, is 100 on the Internet-based test. The minimum score for IELTS is 6.5.

11.7.5.1.2 Application Procedures

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

See: Application Procedures for detailed application procedures.

Completed applications, with all supporting documents, must be uploaded directly to the McGill graduate admissions system by the application deadlines.

Please see our website at www.mcgill.ca/epi-biostat-occh/grad/biostatistics/applying for information on required application documents.

11.7.5.1.3 Application Deadlines

The application deadlines listed here are set by the Department of Epidemiology, Biostatistics, and Occupational Health and may be revised at any time. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at www.mcgill.ca/gps/contact/graduate-program.

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

Admission to graduate studies is competitive; late and/or incomplete applications will not be considered.

11.7.5.2 Master of Science (M.Sc.); Biostatistics (Thesis) (48 credits)

Training in statistical theory and methods, applied data analysis, scientific collaboration, communication, and report writing by coursework and thesis.

Thesis Courses (24 credits)

BIOS 690	(24)	M.Sc. Thesis

Required Courses (24 credits)

Students exempted from any of the courses listed below must replace them with complementary course credits, at the 500 level or higher, chosen in consultation with the student's academic adviser or supervisor

BIOS 601	(4)	Epidemiology: Introduction and statistical models
BIOS 602	(4)	Epidemiology: Regression Models
MATH 523	(4)	Generalized Linear Models
MATH 533	(4)	Honours Regression and Analysis of Variance
MATH 556	(4)	Mathematical Statistics 1
MATH 557	(4)	Mathematical Statistics 2

11.7.5.3 Master of Science (M.Sc.); Biostatistics (Non-Thesis) (48 credits)

Training in statistical theory and methods, applied data analysis, scientific collaboration, communication, and report writing by coursework and project.

Research Project (6 credits)

BIOS 630	(6)	Research Project/Practicum in Biostatistics

Required Courses (24 credits)

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

BIOS 601	(4)	Epidemiology: Introduction and statistical models
BIOS 602	(4)	Epidemiology: Regression Models
MATH 523	(4)	Generalized Linear Models
MATH 533	(4)	Honours Regression and Analysis of Variance

MATH 556	(4)	Mathematical Statistics 1
MATH 557	(4)	Mathematical Statistics 2

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

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

Students will study theoretical and applied statistics and related ®elds; the program will train them to become independent scientists able to de apply statistical methods in medicine and biology and make original contributions to the theoretical and scienti®c foundations of statistics in these disciplines. Graduates will be prepared to develop new statistical methods as needed and apply and extend 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 relate ®elds, 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 ®eld 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 that the research advances knowledge in the ®eld. Finally, the thesis must be written in compliance with norms for academic and scholarly discussion and for publication in the public domain.

Required Courses

BIOS 700	(0)	Ph.D. Comprehensive Examination Part A
BIOS 701	(0)	Ph.D. Comprehensive Examination Part B
BIOS 702	(0)	Ph.D. Proposal

Complementary Courses (28 credits)

0-28 credits from the following list: (if a student has not already successfully completed them or their equivalent)

BIOS 601	(4)	Epidemiology: Introduction and statistical models
BIOS 602	(4)	Epidemiology: Regression Models
BIOS 624	(4)	Data Analysis & Report Writing
MATH 523	(4)	Generalized Linear Models
MATH 533	(4)	Honours Regression and Analysis of Variance
MATH 556	(4)	Mathematical Statistics 1
MATH 557	(4)	Mathematical Statistics 2

12 credits (chosen and approved in consultation with the student©s academic adviser), at the 500 level or higher, in statistics/biostatistics.

6 credits (chosen and approved in consultation with the student©s academic adviser), at the 500 level or higher, in related ®elds (e.g., epidemiology, social sciences, biomedical sciences).

11.8 Experimental Medicine

Please see section 11.12 Medicine, Experimental for more information.

11.9 Family Medicine

Please see section 11.13 Medicine, Family for more information.

11.10 Human Genetics

11.10.1 Location

Department of Human Genetics
Stewart Biological Sciences Building
1205 Dr Penfield Avenue, N5/13
Montreal QC H3A 1B1
Canada

Telephone: 514-398-4198
Fax: 514-398-2430
Email: grad.hg@mcgill.ca
Website: www.mcgill.ca/humangenetics

Administration

Kandace Springer – Administrative Assistant

Email: kandace.springer@mcgill.ca

Ross Mackay – Graduate Program Coordinator

Email: ross.mackay@mcgill.ca

Laura Bennett (On Leave) – Assistant Graduate Program Coordinator

section 11.10.5 Master of Science (M.Sc.); Human Genetics (Thesis) (45 credits)

- 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
- 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. The Department conducts research on all sites of the McGill University Health Centre (MUHC), the Montreal Neurological Institute and Hospital, the McGill Life Sciences Complex, the McGill University-Genome Quebec Innovation Centre, the Biomedical Ethics Unit, and the Centre for Genomics and Policy.

section 11.10.6 Master of Science (M.Sc.); Human Genetics (Thesis) Ð Bioinformatics (45 credits)

Students successfully completing the Bioinformatics option at the M.Sc. level will be fluent in the concepts, language, approaches, and limitations of the field. Bioinformatics research lies at the intersection of biological/medical sciences and mathematics/computer science/engineering.

section 11.10.1.0 Doctor of Philosophy (Ph.D.); Human Genetics Ð Bioinformatics

Students successfully completing the Bioinformatics option at the PhD will be fluent in the concepts, language, approaches, and limitations of the field and have the capability of developing an independent Bioinformatics research program. 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 maintenance of biological databases, and the use of algorithms and statistics.

Enrolment in the Bioinformatics option can only be approved after a student has been admitted into the Department. There is an agreement for the option that must be signed by the student, supervisor, and Department, and enrolment in the option is subject to space availability and other constraints that the Department cannot assess at the time of admission. For more information, please contact the Graduate Program Coordinator.

11.10.3 Human Genetics Admission Requirements and Application Procedures

11.10.3.1 Admission Requirements

M.Sc. in Genetic Counselling

Prerequisites:

- Bachelor©s or medical degree ± minimum cumulative grade point average (CGPA) of 3.0 out of 4.0, or 3.2 out of 4.0 in the last two full-time academic years;
- Recent (within the past five years) university-level courses in basic sciences (molecular/cell biology, biochemistry, advanced genetics (preferably human), and statistics) and a minimum of two in psychology;
- Some experience (either paid or volunteer) working with adults in a counselling or advisory capacity, ideally in a crisis setting.

M.Sc. and Ph.D. in Human Genetics

Prerequisites:

- B.Sc. ± minimum CGPA 3.0 out of 4.0, or 3.2 out of 4.0 in the last two full-time academic years;
- A minimum of 6 credits in cellular and molecular biology or biochemistry, 3 credits in mathematics or statistics, and 3 credits in genetics.

Admission is based on acceptance by a research director who has agreed to pro

Applications for thesis programs submitted after these deadlines may be considered, if a suitable supervisor can be secured, but these applications will not be considered for departmental funding or entrance awards.

* The **M.Sc. Genetic Counselling program** accepts applications for the Fall term only

Associate Professors

J. Majewski; B.Sc., M.Sc.(Stan.), Ph.D.(W.)

P. Moffatt; Ph.D.(Mont.) (Pharmacology)

R. Nadon; B.A., M.A., Ph.D.(Ott.)

T. Pastinen; M.D., Ph.D.(Helsinki)

I. Ragoussis; Ph.D.(Tübingen)

L. Russell; B.A., M.D.(Ind.) (Pediatrics)

A. Ryan; Ph.D.(Qu.)

R. Slim; M.Sc.(Lebanese), M.Sc., Ph.D.(Paris VII)

Assistant Professors

L. Beitel; Ph.D.(McG.) (Biochemistry)

D. Buhas; M.D.(Craiova) (Montreal Children's Hospital)

L. Cartier; B.Sc., M.Sc.(McG.)

G. Chong; Ph.D.(Kansas)

C. Crist; B.Sc.(Br.Col.), M.Sc., Ph.D.(Tokyo)

I. De Bie; M.D.(Laval), Ph.D.(McG.) (Montreal Children's Hospital)

J. Fitzpatrick; M.S.(Mich.) (Pediatrics and Medicine)

M. Fujiwara; M.Sc.(Alta.) (Quantitative Genetics)

S. Gravel; Ph.D.(Physics)(Cornell) (Numerical methods)

E. Grundberg; Ph.D.(Uppsala) (Internal medicine)

C. Kleinman; Ph.D.(Mont.) (Bioinformatics

Lecturers

S. Zaor (Medicine)

Adjunct Professors

K. Anderson (Children©s Hospital of Eastern Ontario)

T. Chiu (Children©s Hospital of Eastern Ontario)

M. Cloutier (Children©s Hospital of Eastern Ontario)

E. Creede (Children©s Hospital of Eastern Ontario)

C. Goldsmith (Children©s Hospital of Eastern Ontario)

B. Gottleib (Medicine)

V.A. Hastings (Children©s Hospital of Eastern Ontario)

C. Honeywell (Children©s Hospital of Eastern Ontario)

A. Montpetit (Genome Quebec)

S. Morrison (Children©s Hospital of Eastern Ontario)

J. Ott (Genome Quebec)

Adjunct Member

D. Vinh; M.D. (Dept. of Medical Microbiology; Medicine)

Associate Members

Biochemistry: P. Gros, D.Thomas

Bioethics: J. Kimmelman

Cardiology: J. Genest

Cancer Genetics: G. Zogopoulos

Dentistry: L. Diatchenko

Endocrinology: C. Polychonakos, B. Richards

Epidemiology, Biostatistics and Occupational Health: G. Greenwood

Law: R. Gold

Medicine: D. Cournoyer, J. Engert, B. Gil®x, C. Haston, G.Hendy, Y. Karaplis, R. Koenekoop, A. Peterson, J. Rauch, M.Tri®ro

Nephrology: I. Gupta

Neurology: G. Rouleau

Obs.-Gyn.: R. Gagnon, A. Naumova

Pathology: A. Spatz

Pediatrics: G. Bernard, P. Goodyer, N. Jabado, L. Majewska, J. Mitchell

Psyc))))))

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 of

11.10.7 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 643	(3)	Seminar: Medical Ethics
RELG 571	(3)	Ethics, Medicine and Religion

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

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 1
HGEN 621	(6)	Intro Field Work Rotations 2
HGEN 630D1	(6)	Advanced Field Work Rotations
HGEN 630D2	(6)	Advanced Field Work Rotations
HGEN 640	(3)	Second Year Practicum 1
HGEN 641	(3)	Second Year Practicum 2
PATH 653	(3)	Reading and Conference

11.10.9 Doctor of Philosophy (Ph.D.); Human Genetics

Candidates entering Ph.D. 1 must complete at least three years of full-time resident study (six terms). The minimal and expected duration of the Ph.D. program is four to ®ve years. A student who has obtained a master's degree at McGill in a related ®eld, or at an approved institution elsewhere, and is proceeding in the same subject area toward a Ph.D. degree may, upon the recommendation of the Graduate Training Committee, enter at the Ph.D. 2 level.

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 discussion and for publication in the public domain.

Required Courses (3 credits)

HGEN 692	(3)	Human Genetics
HGEN 701	(0)	Ph.D. Comprehensive Examination

Complementary Courses (15 credits)

(15 credits or 6 credits depending on admission status as described above)

Courses are to be chosen from the list below and/or from among 500-, 600-, or 700-level courses offered in the Faculties of Medicine and Science.

HGEN 660	(3)	Genetics and Bioethics
HGEN 661	(3)	Population Genetics
HGEN 663	(3)	Beyond the Human Genome
HGEN 690	(3)	Inherited Cancer Syndromes
HGEN 691	(3)	Host Responses to Pathogens
HGEN 693	(3)	Using Bioinformatics Resources
HGEN 694	(3)	Microarray Statistical Analysis
HGEN 695	(3)	Psychiatric Genetics
HGEN 696	(3)	Advanced Readings in Genetics 1
HGEN 697	(3)	Advanced Readings in Genetics 2
HGEN 698	(3)	Advanced Readings in Genetics 3
HGEN 699	(3)	Advanced Readings in Genetics 4

Students are restricted to taking the following courses:

HGEN 670	(3)	Advances in Human Genetics 1

section 11.11.5

11.11.5 Master of Science (M.Sc.); Medical Radiation Physics (Thesis) (60 credits)

Thesis Courses (32 credits)

MDPH 625	(32)	M.Sc. Thesis Research

Required Courses (28 credits)

MDPH 601	(3)	Radiation Physics
MDPH 602	(3)	Applied Dosimetry
MDPH 603	(2)	Laboratory Practicum 1
MDPH 607	(3)	Introduction to Medical Imaging
MDPH 608	(2)	Laboratory - Diagnostic Radiology and Nuclear Medicine
MDPH 609	(2)	Radiation Biology
MDPH 611	(2)	Medical Electronics
MDPH 612	(2)	Computers in Medical Imaging
MDPH 613	(2)	Health Physics
MDPH 614	(3)	Physics of Diagnostic Radiology
MDPH 615	(3)	Physics of Nuclear Medicine
MDPH 616	(1)	Selected Topics in Medical Physics

11.12 Medicine, Experimental

11.12.1 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: expmed.mcgill.ca

11.12.2 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 other centres to supervise graduate students. The Division offers various programs, each of which has different training objectives (see below). The international recognition of the high-quality training accorded our graduates is

Professors

S. Ali; B.Sc.(Cédia), Ph.D.(McG.)

C. Autexier; B.Sc.(Cédia), 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)

M. Behr; B.Sc.(Tor.), M.D.(Qu.), M.Sc.(McG.)

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

J. Bergeron; B.Sc.(McG.), Ph.D.(Oxf.)

J. Bourbeau; M.D.(Laval), M.Sc.(McG.), F.R.C.P.(C)

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

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

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

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

A. Gatignol; M.Sc., Ph.D.(Paul Sabatier)

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

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

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

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

Professors

A.C. Peterson; B.Sc.(U.V., 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.(Charles Univ., Prague)

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

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

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

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

J. Rauch; B.Sc., Ph.D.(McG.)

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

J.-P. Routy; B.Sc., M.D., Ph.D.(Aix-Marseille)

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

E. Schiffrin; M.D.(Buenos Aires), Ph.D.(McG.)

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

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

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

M.M. Stevenson; B.A.(Hood), M.Sc., Ph.D.(Catholic U.Amer.)

T. Takano; M.D., Ph.D.(Tokyo)

D.M.P. Thomson; M.D.(W.Ont.), Ph.D.(Lond.), F.R.C.P.(C)

P. Tonin; B.Sc., M.Sc., Ph.D.(T.)

M. Tri®ro; 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.)

B.J. Ward; M.D.,C.M.(McG.), M.Sc.(Oxf.), F.R.C.P.(C)

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)

Associate Professors

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

N. Bernard; B.Sc.(McG.), Ph.D.(Dal.)

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.)

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

S.R. Cohen; B.Sc., M.Sc., Ph.D.(McG.)

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

M. Culty; B.Sc., M.Sc.(Lyon), Ph.D.(Grenoble)

S. Daskalopoulou; M.D.(Athens)

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.)

Associate Professors

B. Gil®x; B.Sc.(Manit.), Ph.D.(WOnt.), M.D.,C.M.(McG.), FR.C.P(C)

S.B. Gottfried; M.D.(Penn.)

C. Haston; B.Sc.(WOnt.), M.Sc.(TT

Assistant Professors

PHIL 643	(3)	Seminar: Medical Ethics
RELG 571	(3)	Ethics, Medicine and Religion

12 credits, four 3-credit BIOE or EXMD graduate courses (500, 600, or 700) to be chosen in consultation with the Supervisor

11.12.7 Master of Science (M.Sc.); Experimental Medicine (Thesis) — Environment (45 credits)

Thesis Courses (24 credits)

EXMD 690	(3)	Master's Thesis Research 1
EXMD 692	(9)	Master's Thesis Research 3
EXMD 693	(12)	Master's Thesis Research 4

Required Courses (6 credits)

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

Complementary Courses (15 credits)

3 credits from 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
		Topics in Environment 4

EXMD 701D2	(0)	Comprehensive Oral Examination

Complementary Courses (18 credits)

(12-18 credits)

A minimum of 12 course credits is required for students entering the program with a prior master's degree. Students having been a fast-track

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

11.13 Medicine, Family

11.13.1 Location

Department of Family Medicine
5858 Côte-des-Neiges Road, Suite 300
Montreal QC H3S 1Z1

Telephone: 514-399-9103
Fax: 514-398-4202
Email: graduateprograms.fammed@mcgill.ca
Website: www.mcgill.ca/familymed/research-grad/graduate-programs

11.13.2 About Family Medicine

The McGill Family Medicine department is home to an exceptional community of primary health care professionals, researchers, students, and support staff whose mission is to contribute to the health of the population and the sustainability of the health care system in Quebec, as in Canada and internationally by:

- Training residents, medical students, and other health care professionals to become committed to global GMF-type primary care, to the core accessibility, continuity, quality of care (patient-centred), and to health promotion and prevention;
- Promoting innovation in primary health care delivery and practice;
- Developing research and scholarly activity;
- Promoting curriculum innovation and education research;
- Engaging in international and global health activities.

We understand that research in Family Medicine is essential to the achievement of excellence in health care delivery, patient care, and education. Our research division is composed of Ph.D. and clinician scientists who dedicate themselves to producing and translating knowledge that advances the discipline, practice, and teaching of family medicine, and supports scholarly achievement by clinicians and residents in the department. In addition, the department has developed unique and rigorous research programs for M.Sc. and

Associate Professors

Eugene Bereza; B.A., M.D.,C.M.(McG.), C.C.F.P.F.

Roland Grad; M.D.,C.M.(McG.), M.Sc.(McM.), C.C.F.P.F.

Jeannie Haggerty; B.Sc.(S. Fraser), M.Sc., Ph.D.(McG.)

Susan Law; B.Sc.(Guelph), M.H.Sc.(Tor.), Ph.D.(Lond.)

Charo Rodriguez; M.D.(Alicante), M.H.P.(Valencia), Ph.D.(Mont.)

Ellen Rosenberg; B.A.(Smith), M.D.,C.M.(McG.), C.C.F.P.

Mark Ware; B.A.(Qu.), M.B., B.S(W.Indies), M.Sc.(Lond.)

Assistant Professors

Anne Andermann; B.Sc., M.D.,C.M.(McG.), M.Phil.(Camb.), D.Phil.(Oxf.), C.C.F.P., F.R.C.P.(C), F.F.P.H.(UK)

Alexandra De Podwin; M.D.,C.M., M.Sc.(McG.)

Bertrand Lebouche; M.D., M.A., Ph.D.(Lva

FMED 509	()	Foundations of Epidemiology in Family Medicine
FMED 600	(1)	Mixed Studies Reviews
FMED 603	(1)	Introduction to Participatory Research in Health
FMED 625	(3)	Qualitative Health Research
FMED 672	(3)	Applied Mixed Methods in Health Research

Complementary Courses (3 credits)

3 credits from the following:

FMED 503	(1)	Survey Research Methods in Primary Care
FMED 605	(1)	Canadian Healthcare Policy and Decision-Making
FMED 607	(1)	Intro to Discourse Analysis & Interpretive Health Research
FMED 608	(1)	Advanced Mixed Methods Seminar in Health Research
FMED 609	(1)	Practicum in Ethnography
FMED 611	()	Healthcare Systems and Primary Care Reform
FMED 612	()	Program Evaluation and Implementation Science
FMED 613	()	Communication, Education, and Complex Collaborations

Elective Courses (2 credits)

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

11.13.6 Master of Science (M.Sc.); Family Medicine (Thesis) — Bioethics (45 credits)

The M.Sc. in Family Medicine; Bioethics is a thesis graduate program option designed to provide graduate training to those interested in studying empirical research methods and bioethics specialization.

Required Courses (33 credits)

BIOE 680	(3)	Bioethical Theory
BIOE 681	(3)	Bioethics Practicum
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
FMED 604	(3)	Advanced Participatory Research in Health

Complementary Course (3 credits)

3 credits from the following:

FMED 505	(3)	Basic Analysis for Health Data
FMED 625	(3)	Qualitative Health Research

Elective Course (9 credits)

9 credits, at the 500 level or higher, of coursework may be chosen from inside or outside the Department in consultation with the student's academic adviser or supervisor.

11.13.7 Master of Science (M.Sc.); Family Medicine (Thesis) — Medical Education (45 credits)

The M.Sc. in Family Medicine; Medical Education option is a thesis program designed to provide research training to family physicians, and exceptionally other health professionals, and students interested in medical education research. The M.Sc. Option will have very close ties to the Family Medicine Educational Research Group (FMER), which is the corollary of the educational activities in teaching and research covered and established in McGill's Department of Family Medicine in 2005. The FMER's ultimate goal is to advance knowledge to: (1) constantly inform family medicine curricula innovations and continuing professional development to better family physicians' clinical practice; (2) significantly contribute to the development of the family medicine education field of inquiry; and; (3) rigorously develop and inform medical education policy. This research agenda of FMER is articulated through four interrelated streams: (1) family physicians' professional identity formation; (2) information use and technology in the learning episodes of practicing physicians and organizational learning; (3) program evaluation of educational innovations, and; (4) knowledge synthesis.

Thesis Courses (24 credits)

Thesis subject should be related to medical education.

FMED 697	(12)	Master's Thesis Research 1
FMED 698	(12)	Master's Thesis Research 2

Required Courses (15 credits)

EPIB 601	(4)	Fundamentals of Epidemiology
FMED 505	(3)	Basic Analysis for Health Data
FMED 600	(1)	Mixed Studies Reviews
FMED 603	(1)	Introduction to Participatory Research in Health
FMED 625	(3)	Qualitative Health Research
FMED 672	(3)	Applied Mixed Methods in Health Research

Complementary Courses (3 credits)

3 credits from the following:

EDPE 555	(3)	Introduction to Learning Sciences
EDPE 635	(3)	Theories of Learning and Instruction
EDPH 689	(3)	Teaching and Learning in Higher Education

Elective Courses (3 credits)

3 credits, at the 500 level or higher, chosen in consultation with the student's academic supervisor, specifically involving educational issues, and/or relating to the student's thesis topic within the medical education field.

11.14 Microbiology and Immunology

11.14.1 Location

Department of Microbiology and Immunology
Duff Medical Building, Room 511
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

11.14.2 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 give 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;
- 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 11.14.5 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 (amount vary). Each student 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 authors of a research publication. M.Sc. students may exit the Ph.D. program after three terms of residency. The remaining students advance their microbiology background by opting to enter into medicine, epidemiology, biotechnology, or pharmaceutical disciplines.

section 11.14.6 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 additional graduate seminar and one additional reading and conference course, 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. This research theme must be original, and the acquired data, portions of thesis 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.

11.14.3 Microbiology and Immunology Admission Requirements and Application Procedures

11.14.3.1 Admission Requirements

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 cumulative grade point average (CGPA) 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 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 test results must be submitted directly from TOEFL (Test of English as a Foreign Language) or IELTS (International English Language Testing Systems). Official institutional version of the TOEFL is not acceptable. Applications will not be considered if TOEFL or IELTS test result is not available.

- TOEFL Internet-Based Test (iBT): a minimum overall score of 86 (no less than 20 in each of the four components)
- TOEFL Paper-Based Test (PBT): a minimum score of 567
- IELTS: a minimum overall band score of 6.5

The TOEFL Institution Code for McGill University is 0935.

Ph.D.

Students who have satisfactorily completed an M.Sc. degree in microbiology and immunology, biological science, or biochemistry, or highly qualified

11.14.3.2 Application Procedures

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

See: Application Procedures for detailed application procedures.

All applicants must approach academic staf

Assistant Professors

J. Fritz; Ph.D.(Vienna)

I. King; B.Sc.(Ohio St.), M.Sc.(Pitt. St.), Ph.D.(Roch.)

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

C. Maurice; M.S., Ph.D.(Montpellier II)

M. Richer; B.Sc.(McG.), M.Sc.(Mont.), Ph.D.(Br Col.)

S. Sagan; B.Sc.(McG.), Ph.D.(Ott.)

Associate Members

Epidemiology and Infectious Diseases: M. Behr, A. Dascal, V. Loo

Immunology, Autoimmunity, Host Defense: J. Antel, A. Bar-Or, M. Burnier, P. Gros, A. Kristof, J. Rauch, M. Saleh, M. Tremblay, C. Tsoukas, S. Vidal

Immunology and Parasitology: P. Rohrbach, B. Ward, M. Ndao, J. Zhang

Microbiology: D. Cuong Vinh, M. Divangahi, C. Liang, D. Nguyen, M. Reed

Molecular Biology: N. Cermakian, S. Hussain, A. Jardim, A. Mouland, K. Pantopoulos, B. Turcotte, J. Xia

Virology: A. Gatignol, A.E. Koromilas, R. Lin, J. Todoro

Adjunct Professors

J. Archambault

C. Cheong

A. Descoteaux

A. Finzi

M. Gotte

G. Kukolj

P. Lau

S. Lesage

S.L. Liu

C. Paradis-Bleau

A. Petronela

W-K. Suh

11.14.5 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)	CurrentTopics 1
MIMM 614	(3)	CurrentTopics 2
MIMM 615	(3)	CurrentTopics 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.

11.14.6 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 ®eld 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 that the research advances knowledge in the ®eld. 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)	CurrentTopics 1
MIMM 614	(3)	CurrentTopics 2
MIMM 615	(3)	CurrentTopics 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

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

11.15 Neuroscience (Integrated Program)

11.15.1 Location

Montreal Neurological Institute, Room 141
3801 University Street
Montreal QC H3A 2B4
Canada

Telephone: 514-398-1905; 514-398-6243; or 514-398-1229
Fax: 514-398-4621
Email: ipn@mcgill.ca or ipn.admissions@mcgill.ca
Website: www.mcgill.ca/ipn

11.15.2 About the Integrated Program in Neuroscience

Montreal is home to the largest concentration of neuroscientists in North America. Neuroscience research at McGill University is internationally renowned, and its Integrated Program in Neuroscience (IPN) provides graduate training in this outstanding research environment. With approximately 340 M.Sc. and Ph.D. students and more than 190 supervisors, the IPN is the largest graduate program in the Faculty of Medicine and one of the largest neuroscience graduate programs in North America.

Neuroscience training within the IPN spans the full spectrum of research fields, from cellular and molecular neuroscience to behavioural and cognitive neuroscience. In addition to laboratory research, the IPN offers an extensive range of courses, hosts an annual Neuroscience Retreat, and maintains a semi

Associate Director

J. Rochford

Emeritus Professors

B. Collier; Ph.D. (Dept. of Pharmacology)

M. Diksic; Ph.D. (Dept. of Neurology and Neurosurgery)

K. Franklin; Ph.D. (Dept. of Psychology)

P.C. Holland; B.A.(Lanc.), Ph.D.(Newcastle, UK) (Dept. of Neurology and Neurosurgery)

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

N. White; B.A.(McG.), Ph.D.(Pitt.) (Dept. of Psychology)

Professors

A. Aguayo; M.D.(Cordoba Nat.), 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.R.C.M.G. (Dept. of Neurology and Neurosurgery)

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

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

D. Arnold; B.Sc., M.D.(Cornell), F.R.C.P.(C) (James McGill Professor) (Dept. of Neurology and Neurosurgery)

M. Avoli; M.D.(Rome), Ph.D.(McG.) (Dept. of Neurology and Neurosurgery)

S. Baillet; Ph.D.(Paris-Sud) (Dept. of Neurology and Neurosurgery)

C. Baker; Ph.D.(Calif.-San Diego) (Dept. of Ophthalmology)

P. Barker; Ph.D.(Alta.), B.Sc.(S. Fraser) (Dept. of Neurology and Neurosurgery)

A. Bar-Or; M.D.,C.M.(McG.), F.R.C.P.(C), D.A.B.N.P. (Dept. of Neurology and Neurosurgery)

S. Baum; Ph.D.(Brown) (School of Communication Sciences and Disorders)

C. Benkelfat; M.D., C.S.P.Q., D.E.R.B.H. (Dept. of Psychiatry)

G. Bennett; Ph.D.(Virg. Commonwealth) (Dept. of Anesthesia)

D. Bernard; Ph.D. (Johns Hop.) (Dept. of Pharmacology)

A. Bernasconi; M.D.(Basel) (Dept. of Neurology and Neurosurgery)

P. Boksa; Ph.D.(McG.) (Dept. of Psychiatry)

C. Bourque; B.Sc.(Ott.), Ph.D.(McG.) (Dept. of Neurology and Neurosurgery)

D. Bowie; Ph.D.(Lond.) (Dept. of Pharmacology and Therapeutics)

P. Braun; Ph.D.(Calif., Berk.) (Dept. of Biochemistry)

J.C.S. Breitner; M.D.(Pennsylvania), MPH (Johns Hop.) (Dept. of Psychiatry)

C. Bushnell; Ph.D.(Amer.) (Dept. of Anaesthesia)

S. Carbonetto; M.Sc.(Mass.), Ph.D.(N. Carolina) (Dept. of Neurology and Neurosurgery)

F. Cervero; M.D., Ph.D.(Madrid), D.Sc.(Edin.) (Dept. of Anesthesia)

H. Chertkow; M.D.(W

Professors

S. David; Ph.D.(Manit.) (Dept. of Neurology and Neurosurgery)

R. Del Maestro; Ph.D.(Uppsala) (Dept. of Neurology and Neurosurgery)

L. Diatchenko; M.D., Ph.D.(RNRMU) (Dept. of Anesthesia, Faculties of Dentistry and Medicine)

H. Durham; M.Sc.(W.Ont.), Ph.D.(Alta.) (Dept. of Neurology and Neurosurgery)

S. El Mestikawy; Ph.D.(Paris VI) (Dept. of Psychiatry)

A. Evans; M.Sc.(Sus.), Ph.D.(Leeds) (Dept. of Neurology and Neurosurgery)

L. Fellows; B.Sc.(McG.), D.Phil.(Oxf.), M.D.,C.M.(McG.) (Dept. of Neurology and Neurosurgery)

C. Flores; Ph.D.(Calif.) (Dept. of Psychiatry)

E. Fon; M.D.(Montr.), F.R.C.P.(C) (Dept. of Neurology and Neurosurgery)

E. Frombonne; M.D.(Paris V), M.Sc.(Paris) (Dept. of Psychiatry)

S.G. Gauthier; B.A., M.D.(Mont.), 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)

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

A. Gratton; Ph.D.(Calif.) (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.(Phil.)(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.T. Hepple; Ph.D.(Tor.) (Dept. of Kinesiology and Physical Education)

R. Hess; Ph.D.(Melb.), D.Sc.(Aston, UK) (Dept. of Ophthalmology)

B. Jones; B.A., M.A., Ph.D.(Delaware) (Dept. of Neurology and Neur

aris) (

Professors

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.(T) (Dept. of Psychology)

O. Overbury; Ph.D.(Cdia) (Dept. of Ophthalmology)

C. Palmer; B.Sc., M.Sc., Ph.D.(Cornell) (Dept. of Psychology)

M. Pell; B.A.(Ott.), M.Sc., Ph.D.(McG.) (School of Communication Sciences and Disorders)

M. Petrides; B.Sc., M.Sc.(Lond.), Ph.D.(Cantab.) (James McGill Professor) (Depts. of Neurology and Neurosurgery, Psychology)

G. Plourde; M.D.(Laval), M.Sc.(Ott.) (Dept. of Anesthesia)

J. Poirier; Ph.D.(Montr.) (Dept. of Psychiatry and Medicine)

A. Ptito; Ph.D.(Montr.) (Dept. of Neurology and Neurosurgery)

M. Rasminsky; B.A.(Tor

Associate Professors

M.J. Chacron; B.Sc., Ph.D.(Ottawa) (Dept. of Physiology)

Y. Chudasama; B.Sc., Ph.D.(Carleton) (Dept. of Psychology)

F. Charron; B.Sc., Ph.D.(McG.) (Institut de Recherches Clinique de Montreal, Depts. of Anatomy and Cell Biology, Biology, and Experimental Medicine)

J.-F. Cloutier; B.Sc.(Cégep), Ph.D.(McG.) (Depts. of Neurology and Neurosurgery, and Anatomy and Cell Biology)

E. Cook; B.Sc.(Ariz. St.), M.Sc.(Rice), Ph.D.(Baylor) (Dept. of Physiology)

A. Dagher; M.Eng.(McG.), M.D.(Tor.), F.R.C.P.(C) (Dept. of Neurology and Neurosurgery)

B. Debruille; M.D.(Paris XI), Ph.D.(Univ. Pierre et Marie Curie, Paris) (Dept. of Psychiatry)

C. Flores; Ph.D.(Cádia) (Dept. of Psychiatry)

A. Fournier; B.Sc., Ph.D.(McG.) (Dept. of Neurology and Neurosurgery)

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

R. Gruber; Ph.D.(Tel Aviv) (Dept. of Psychiatry)

R.D. Hoge; Ph.D.(McG.) (Dept. of Neurology and Neurosurgery)

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

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

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 U.), Ph.D.(Virginia Tech) (Dept. of Psychiatry)

B. Knauper; Dr.Phil.(Germany) (Dept. of Psychology)

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

A. McKinne

Associate Professors

K.-F. Storch; Ph.D.(Max Planck) (Dept. of Psychiatry)

A. Thiel; Ph.D.(Cologne), M.D.(Bonn) (Dept. of Neurology and Neurosurgery)

D. Van Meyel; Ph.D.(W Ont.) (Dept. of Neurology and Neurosurgery)

S. Williams; Ph.D.(Montr) (Dept. of Psychiatry)

Assistant Professors

A. Adamantidis; M.Sc., Ph.D.(Liege) (Dept. of Psychiatry)

B. Bedell; B.S.(Leigh), M.D.,C.M.(McG.), Ph.D.(Tas) (Dept. of Neurology and Neurosurgery)

F. Bedford; Ph.D.(Lond.) (Dept. of Anatomy and Cell Biology)

M. Berlim; M.D., M.Sc.(UFRGS) (Dept. of Psychiatry)

A. Bertone; M.A.(Calgary), M.A., Ph.D.(Montr) (Dept. of Educational and Counselling Psychology)

M-H. Boudrias; B.Sc.(Montr), Ph.D.(KUMC) (School of Physical and Occupational Therapy)

M. Brandon; B.A.(Conn.), Ph.D.(Boston) (Dept. of Psychiatry)

J.P. Britt; Ph.D.(Chic.) (Dept. of Psychology)

M. Brodeur; Ph.D.(McM.) (Dept. of Psychiatry)

M. Chakravarty; B.Eng.(Vat.), M.Eng., Ph.D.(McG.) (Dept. of Psychiatry)

B. Chen; Ph.D.(SUNY) (Dept. of Neurology and Neurosurgery)

E. deVillers-Sidani; M.D.(McG.)

M. Elsabbagh; B.Sc.(McG.), Ph.D.(UQAM) (Dept. of Psychiatry

Assistant Professors

D. Sinclair; B.Sc., Ph.D.(Dal.) (Dept. of Neurology and Neurosurgery)

P.J. Sjostrom; M.Sc.(Uppsala), Ph.D.(Brandeis) (Dept. of Neurology and Neurosurgery)

K. Steinhauer; M.Sc., Ph.D.(Dr. rer. nat)(Free Univ., Berlin) (School of Communication Sciences and Disorders)

T. Stroh; Dip.(J. Liebig Univ. Giessen), Ph.D.(Max Planck) (Dept. of Neurology and Neurosurgery)

V. Sziklas; Ph.D.(McG.) (Dept. of Neurology and Neurosurgery)

T. Taivassalo; B.Sc., Ph.D.(McG.) (Dept. of Kinesiology and Physical Education)

H. Takahashi; M.D., Ph.D.(Gunma) (RCM, Dept. of Experimental Medicine)

H. Tsuda; M.D.(Kobe), Ph.D.(Kyoto) (Dept of Neurology and Neurosurgery)

M. Vollrath; Ph.D.(Baylor) (Dept. of Neurology and Neurosurgery)

Upon recommendation, depending upon their particular background and needs, students may be requested to take selected courses.

Note: All M.Sc.-level students must register for a minimum of 12 credits per term during the first three terms of their master's program.

11.15.6 Doctor of Philosophy (Ph.D.); Neuroscience

Students with an M.Sc. degree continuing in this Department will receive credit exemptions for graduate coursework accomplished (including NEUR 630, and either NEUR 631 or NEUR 610). It may be recommended that they take specialty courses related to their field of study in neuroscience. Students with an M.Sc. degree from another program will be required to take NEUR 630 and NEUR 631 and/or other courses listed under the M.Sc. degree, depending upon their background and field of study.

Students with an M.D. degree proceeding directly into a Ph.D. program will be required to take NEUR 630 and NEUR 631. Recently graduated M.D.s should have the equivalent of NEUR 610, and may be granted exemption. They will also be required to take 6 credits of graduate-level courses.

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 that 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)

Note: A student may receive an exemption if the student can display equivalency for NEUR 630.

NEUR 630	(3)	Principles of Neuroscience 1
NEUR 700	(0)	Doctoral Candidacy Examination
NEUR 705	(0)	Responsible Research Conduct

Complementary Courses (11 credits)

(9 - 11 credits)

Note: A student may receive exemptions if the student can display equivalencies for NEUR 631 and NEUR 610.

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

11.16 Occupational Health

11.16.1 Location

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

Telephone: 514-398-6258
Email: graduate.eboh@mcgill.ca
Website: www.mcgill.ca/occh

11.16.2 About Occupational Health

The Department of Occupational Health offers two graduate degree programs: a **master** (M.Sc.(A.)) and **doctorate** (Ph.D.) in occupational health sciences. The master's program is available on campus or in distance education format. Special Student status may be granted to students who wish to take specific courses from our M.Sc. program. There is a maximum of 12 credits overall, with a maximum of 6 credits per semester.

Students are required to have access to a computer and the Internet as some of the course material is most readily available by accessing the web

Note: We are not accepting applications for the Occupational Health Ph.D. or the M.Sc.A. (Distance) programs until further notice.

section 11.16.5 Master of Science, Applied (M.Sc.A.); Occupational Health (Resident) (Non-Thesis) (45 credits)

A one-year program in health and hygiene appropriate for physicians, nurses, and graduates from engineering and basic sciences. Occupational health training allows candidates to evaluate work environments and attenuate work hazards using prevention and control.

section 11.16.6 Master of Science, Applied (M.Sc.A.); Occupational Health (Distance) (Non-Thesis) (45 credits)

This program is currently not accepting applicants.

A three-and-a-half-year program completed mostly on the Internet.

section 11.16.7 Doctor of Philosophy (Ph.D.); Occupational Health

This program is currently not accepting applicants.

The objective of this program is to train independent researchers in the field of environment and health.

11.16.3 Occupational Health Admission Requirements and Application Procedures

11.16.3.1 Admission Requirements

Applicants to graduate studies whose mother tongue is not English, and who have 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 by appropriate exams, e.g. TOEFL (Test of English as a Foreign Language) with a minimum score of 86 on the Internet-based test (iBT), with each component score not less than 20.

M.Sc. Applied Program (Resident) (on campus)

Candidates should have completed, with a standing equivalent to a minimum cumulative grade point average (CGPA) of 3.0 out of 4.0, one of the requisites below:

- a Bachelor of Science degree or its equivalent, in a discipline relevant to occupational health or hygiene such as chemistry, engineering, environmental sciences, or physics
- an M.D. (medicine)
- a B.Sc. in health sciences or nursing

Distance Education

Note: We are not accepting applications for the Occupational Health Distance program until further notice.

Candidates should have completed, with a standing equivalent to a minimum cumulative grade point average (CGPA) of 3.0 out of 4.0, one of the requisites below:

- a Bachelor of Science degree, or its equivalent, in a discipline relevant to occupational health or hygiene such as chemistry, engineering, environmental sciences, or physics
- an M.D. (medicine)
- a B.Sc. in health sciences or nursing

Candidates should have at least three years of experience in industrial hygiene and/or in safety

For medical doctors and nurses, priority will be given to candidates with at least three years of experience in occupational health.

Ph.D. Program

Note: We are not accepting applications for the Occupational Health Ph.D. program until further notice.

Candidates must hold an M.Sc. degree or its equivalent in occupational health sciences, or in a related discipline, such as: community health, environmental health, epidemiology, chemistry, engineering, physics, or health sciences (medicine, nursing, etc.).

11.16.3.2 Application Procedures

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

See: Application Procedures for detailed application procedures.

Resident (on campus)

Applications are considered for Fall term only. Applications for Winter/Summer term admission will not be considered, with the exception of admission as Special Students in the Winter term.

Distance Education

Students are required to have access to a computer and the Internet as the course materials are available through the web.

Ph.D. Program

Each student will be assigned to one academic staff member of the Department, who will act as his/her supervisor and who will guide him/her in the preparation of a definite research protocol.

11.16.3.2.1 Additional Requirements

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

M.Sc. Applied (Resident)

- Curriculum Vitae
- Personal Statement

M.Sc. Applied (Distance Education)

- Curriculum Vitae
- Personal Statement

Ph.D. Program

- Curriculum Vitae
- Personal Statement
- Research Proposal

11.16.3.3 Application Deadlines

The application deadlines listed here are set by the Department of Epidemiology, Biostatistics and Occupational Health and may be revised at any time. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at www.mcgill.ca/gps/contact/graduate-program.

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

Admission to graduate studies is competitive, accordingly late and/or incomplete applications are considered only as time and space permit.

Note: Applications for Winter/Summer term admission will not be considered, with the exception of admission as Special Students in the Winter term.

11.16.4 Occupational Health Faculty

Chair
G. Paradis

Emeritus Professors
M.R. Becklake; M.B.B.Ch., M.D.(Witw.), F.R.C.P.
A. Lippman; B.A.(Cornell), Ph.D.(McG.)
J.C. McDonald; M.D., B.S.(Lond.), M.Sc.(Hyg.), F.R.C.P.(C)
I.B. Pless; B.A., M.D.(W

Emeritus Professors

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

G. Th riault; 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.(Cornell), Ph.D.(McG.)

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

G. Th riault; 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. Broph

Adjunct Professors
Boehringer Ingleheim GmbH: D. Bartels
Caro Research: J. Caro
Contex: J.P. Gauvin
Direction régionale de la santé publique: M. Baillargeon, G. Denis, A. Kossowski, R. Lessard, R. Massé, S. Salvieri, S. Perron, M. Roy
Harvard Univ.: J. Brownstein
Health Canada: S. Weichenthal
Hôpital Sainte-Justine: M. Henderson
Independent: I. Arnold, J. Lemke, M. Schweigert, L. Scott
INSPQ: E. Lo, P. Robillard, D. Roy, S. Stock
Montreal Chest Hospital Centre: P. Rohan
Mount Sinai: M. Baltzan
Sanexen: P. Simon
Shire Inc: A. Koutsavlis
Univ. of Calgary: A. Clarke
Univ. de Montréal: J. Siemiatycki
Univ. de Sherbrooke: C. Rochefort
Universitair Medisch Centrum: P. Bruijning-Verhagen

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

Research Project (15 credits)

OCCH 699	(15)	Project Occupational Health and Safety

Required Courses (30 credits)

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

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 605	(6)	Physical Health Hazards
OCCH 608	(3)	Biological Hazards
OCCH 612	(3)	Principles of Toxicology
OCCH 614	(3)	Topics in Occupational Health
OCCH 615	(3)	Occupational Safety Practice
OCCH 616	(3)	Occupational Hygiene

11.16.6 Master of Science, Applied (M.Sc.A.); Occupational Health (Distance) (45 credits)

This program is currently not accepting applicants.

Research Project (15 credits)

OCCH 699	(15)	Project Occupational Health and Safety

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.

11.16.7 Doctor of Philosophy (Ph.D.); Occupational Health

This program is currently not accepting applicants.

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 that the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly discussion 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.

11.17 Otolaryngology – Head and Neck Surgery

11.17.1 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
Fax: 514-340-7934
Website: www.mcgill.ca/ent

About Otolaryngology – Head and Neck Surger

11.17.4 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

Co-Directors of Undergraduate Medical Education

M. Tewfik, J. Young

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

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.(B.C.), 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)

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

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

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

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)

L. H.P. Nguyen; M.D.,C.M.(McG.), M.Sc.(Otol.)(McG.), F.R.C.S.(C)

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

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

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)

M. Duval; M.D.(Ott.), C.M., M.Sc.(Epid.)(Lond.), F.R.C.S.(C)

Assistant Professors
V.I. F

OTOL 693	(6)	M.Sc. Thesis 4
OTOL 694	(12)	M.Sc. Thesis 5

Required Courses (12 credits)

When appropriate, courses OTOL 602, OTOL 612, OTOL 603, or OTOL 613 may be replaced by other Basic Science or Clinical (500, 600, or 700 level) courses of relevance to Otolaryngology as recommended or approved by the Department.

OTOL 602	(3)	Physiology, Histopathology and Clinical Otolaryngology 1
OTOL 603	(3)	Advanced Scientific Principles - Otolaryngology 1
OTOL 612	(3)	Physiology, Histopathology and Clinical Otolaryngology 2
OTOL 613	(3)	Advanced Scientific Principles - Otolaryngology 2

Complementary Course

(3-4 credits)

EPIB 507	(3)	Biostatistics for Health Professionals

or equivalent.

Students aiming to acquire an interdisciplinary background will be expected to take additional elective courses, at the undergraduate level if necessary.

11.18 Pathology

11.18.1 Location

Department of Pathology
Duff Medical Building
3775 University Street
Montreal QC H3A 2B4
Canada

Telephone: 514-398-7192, ext 00481 or 00494
Fax: 514-398-3465
Email: pathology.teaching.med@mcgill.ca
Website: www.mcgill.ca/pathology

11.18.2 About Pathology

Pathology is the specialized area of biomedical science that emphasizes the study of disease, and it is therefore one of the most multidisciplinary fields research. Investigators in a pathology department may be utilizing information and experimental techniques originally developed in almost any area of modern biology and, in return, may contribute

Professors

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

M.N. Burnier Jr; M.D., M.Sc., Ph.D.

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

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

Z. Gao; M.D., M.Sc.(Qingdao), Ph.D.(Peking), 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) (Miranda Fraser Professor of Comparative Pathology)

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

Associate Professors

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

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

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

S. Camilleri-Brot; M.D., Ph.D.(Paris VI)

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)

M.-C. Guiot; B.Sc., M.D.(Bordeaux)

T. Haliotis; M.D.(Athens), Ph.D.(Qu(ofessor)Tj /F1 8.1 Tf.(Mosul),t. n Tm (v)Tj 8557.4j /F1 8.1 Tf.CheQgAC.PE

Assistant Professors

Y. Kanber; M.D.(Marmara)

J. Karamchandani; M.D.(Stan.)

J. Lavoie; B.Sc., M.Sc., Ph.D.(Laval)

H.R. Lopez-Valle; M.D.(Univ. Autonoma, San Luis Potosi)

A.T. Marcus; B.Sc., M.D.,C.M.(McG.), F.R.C.P.(C)

V.-H. Nguyen; M.D.(Montr.), F.R.C.P.(C)

A. Omeroglu; M.D.(Istanbul)

G. Omeroglu-Altinel; M.D.(Istanbul)

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)

H. Wang, M.D.(China), F.R.C.P.(C)

Associate Members

B.S.Abulkarim, M.D., Ph.D.(Paris XI), F.R.C.P.(C)

C.J. Baglole; M.Sc.(PEI), Ph.D.(Calg.)

P.J. Chauvin; M.Sc.(Wont.), D.D.S.(McG.)

M. Divangahi; Ph.D.(McG.)

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

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

M. Park; Ph.D.(Glasgow), F.R.S.C.

S. Sabri; Ph.D.(Paris VII)

A. Schwertani; M.D.,C.M., Ph.D.(Lond.)

11.18.5 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 Committe

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.

Doctor of Philosophy (Ph.D.); Pathology

- cancer;
- developmental pharmacology;
-

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 tw

1. Preliminary approval by the Department©s Graduate Committee based on the student©s transcript, references, and other documents submitted with t 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.

11.19.3.2 Application Procedures

McGill' 133.309 679.973eproposals are Tcii4 Tm (applicat2.19vmacolTc 1 0 0 1 prdi)Tj 1 0 0 1 15 .eogrr0 00 0 1 15 .er0 0 1 67.52 67sists of tw

Professors

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.)

T. Hébert; Ph.D.(Tor.)

D. Maysinger; Ph.D.(USC)

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

G. Multhaup; Ph.D.(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.)

Associate Professors

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 Professors

B. Castagner; Ph.D.(Col.)

L. Münter; Ph.D.(Free Univ., Berlin)

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

J.F. Trempe; Ph.D.(Oxf.)

Associate Members

M. Alaoui-Jamali; Ph.D.(Paris IV)

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

L. Diatchenko, M.D., Ph.D.(RNRMU)

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

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.(Mont.)

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

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

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

S. Laporte; Ph.D.(Sher.)

C. O©Flaherty; Ph.D.(Buenos Aires)

V. Papadopoulis; Ph.D.(Paris VI)

R. Prichard; Ph.D.(UNSW)

S. Rousseau; Ph.D.(Laval)

Y. Shir; M.D.(Israel), Ph.D.(Johns Hop.)

L. Stone; Ph.D.(Minn.)

M. Ware; M.B.B.S.(West Indies)

Associate Members

T. P. Wong; Ph.D.(McG.)

Adjunct Professors

B. Allen, M. Boucher, L. Breton, M. Bruno, S. Chemtob, Y. De Koninck, L. Garofalo, J. Gillard, J. S. Joyal, J.M.A. Laird, J. Mancini, K. Meerovitch, G. Miller, T. Sanderson

11.19.5 Master of Science (M.Sc.); Pharmacology (Thesis) (45 credits)

The program leading to a master's degree is designed to provide students the opportunity to acquire knowledge in Pharmacology, to conduct a research project, to analyze data, and to write a thesis. Students will also receive essential training in Research Professionalism and Scientific Communication.

Thesis Courses (24 credits)

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

Required Courses (12 credits)

PHAR 601	(6)	Comprehensive
PHAR 609	(1)	Research Professionalism for Pharmacologists
PHAR 610	(2)	Scientific Communication for Pharmacologists
PHAR 712	(3)	Statistics for Pharmacologists

Complementary Courses (9 credits)

9 credits, from the following courses:

PHAR 503*	(3)	Drug Discovery and Development 1
PHAR 505*	(3)	Structural Pharmacology
PHAR 562	(3)	Neuropharmacology
PHAR 563	(3)	Endocrine Pharmacology

Or completion of an equivalency exam

Or an exemption granted by the Graduate Training Committee (GTC) on the basis of previous courses.

* Students may take PHAR 503 or PHAR 505, but not both.

Students who have taken these courses as part of their undergraduate degree, passed the equivalency exam, or been exempted, will register for the following course:

PHAR 697	(6)	Thesis Preparation 1

3 credits, at the 700-level PHAR course(s), or the equi

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)	Neuropharmacology
PHAR 563	(3)	Endocrine Pharmacology

or, for students who have taken PHAR 562 and PHAR 563 as part of their under

PHAR 503	(3)	Drug Discovery and Development 1

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

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 that 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.

Students must successfully complete, or be exempted from, the same courses as for the equivalent M.Sc. in Pharmacology plus one additional 700-level graduate course (for a total of three).

11.19.8 Doctor of Philosophy (Ph.D.); Pharmacology — 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 that 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 (13 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
PHAR 601	(6)	Comprehensive
PHAR 712	(3)	Statistics for Pharmacologists

Complementary Courses (14 credits)

6 credits, from the following courses:

PHAR 562	(3)	Neuropharmacology
PHAR 563	(3)	Endocrine Pharmacology

or, for students who have taken PHAR 562 and PHAR 563 as part of their undergraduate degree, they can replace them 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

two of the follo

section 11.20.7 Master of Science (M.Sc.); Physiology (Thesis) Ð Chemical Biology (45 credits)

The Chemical Biology option is designed to expose students to aspects of drug design and development, as well as their application to the study of physiological and pathophysiological processes. In addition to thesis work with appropriate mentors, students will participate in lectures, seminar courses, and thematic workshops; all of which are designed to familiarize students with the current state of the ®eld. This interdisciplinary approach will develop researchers interested in academic careers or in the pharmaceutical and biotechnology industries.

section 11.20.8 Doctor of Philosophy (Ph.D.); Physiology

The doctoral program is intended for students from a strong academic background wishing to pursue research 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 provides in-depth training in a broad range of disciplines from molecular and cellular to systems physiology covering multiple organ systems.

section 11.20.9 Doctor of Philosophy (Ph.D.); Physiology Ð Bioinformatics

The intention of the Bioinformatics option is to train Ph.D. students to become researchers in this interdisciplinary ®eld. 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 completing the Bioinformatics option will be ¯uent in concepts, language, approaches, and limitations of the ®eld. 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 ®eld.

section 11.20.10 Doctor of Philosophy (Ph.D.); Physiology Ð Chemical Biology

The Chemical Biology option is designed to expose students to aspects of drug design and development, as well as their application to the study of physiological and pathophysiological processes. In addition to thesis work with appropriate mentors, students will participate in lectures, seminar courses, and thematic workshops; all of which are designed to familiarize students with the current state of the ®eld. This interdisciplinary approach will develop researchers interested in academic careers or in the pharmaceutical and biotechnology industries.

11.20.3 Physiology Admission Requirements and Application Procedures

11.20.3.1 Admission Requirements

Admission to the graduate program is based on evaluation by the Graduate Studies Admissions and Advisory Committee (GSAAC), and on being accepted by a research supervisor. Final acceptance is contingent upon approval of the recommendation of the applicant by Enrolment Services, from whom of®cial notification will be received.

Candidates for the M.Sc. degree must hold a B.Sc. degree or its equivalent. Candidates who have completed an M.Sc. may be admitted directly to the Ph.D. program. M.Sc. students interested in a Ph.D. may transfer to the Ph.D. program after 12±18 months, following successful completion of the comprehensive exam. The M.Sc. thesis requirement is then waived. Candidates with exceptional academic records may be considered to proceed directly to the Ph.D. degree from the B.Sc. degree.

A minimum CGPA of 3.2 out of 4.0 or a GP

- List of supervisor preferences

11.20.3.3 Application Deadlines

The application deadlines listed here are set by the Physiology Department and may be revised at any time. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at www.mcgill.ca/gps/contact/graduate-program.

Canadian	International	Special/Exchange/Visiting
Fall: May 15	Fall: March 1	Fall: N/A
Winter: Sept. 1	Winter: Aug. 15	Winter: N/A
Summer: N/A	Summer: N/A	Summer: N/A

Admission to graduate studies is competitive, accordingly late and/or incomplete applications are considered only as time and space permit.

Interested candidates should refer to the Department website for details regarding application procedures, as well as other important information.

11.20.4 Physiology Faculty

Chair

John Orlowski

Graduate Program Director

John White

Emeritus Professors

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

Kresmir Krnjevic; O.C., B.Sc., Ph.D., M.B., Ch.B.(Edin.), F.R.S.C.

Wayne S. Lapp; M.S.A.(Tr.), Ph.D.(McG.)

Mortimer Levy; B.Sc., M.D., C.M.(McG.), F.R.C.P.(C) (joint appt with Medicine)

George Mandl; B.Sc.(Cédia); Ph.D.(McG.)

Geoffrey Melvill Jones; B.A., M.A., M.B., B.Ch., M.D.(Cant.)

Joseph Milic-Emili; M.D.(Milan) (joint appt with Medicine)

Canio Polosa; M.D., Ph.D.(McG.)

Douglas G.D. Watt; M.D., Ph.D.(McG.)

Professors

Monroe W. Cohen; B.Sc., Ph.D.(McG.)

Ellis J. Cooper; B.Eng.(Sir Wms.), M.Sc.(Sur.), Ph.D.(McM.)

Kathleen Cullen; B.Sc.(Brown), Ph.D.(Chic.)

Leon Glass; B.S.(Brooklyn), Ph.D.(Chic.), Rosenfield Professor of Medicine (joint appt. with Medicine)

Phil Gold; C.C., B.Sc., M.Sc., Ph.D., M.D., C.M.(McG.), F.R.C.P.(C), F.R.S.C. (Douglas G. Cameron Professor of Medicine) (joint appt. with Medicine)

John Hanrahan; Ph.D.(BCol.)

Gergely Lukacs; M.D., Ph.D.(Budapest)

Michael Mackey; B.A., Ph.D.(Wash.) (Drake Professor of Medicine)

Sheldon Magder; M.D.(Tr.) (joint appt. with Medicine)

Jacopo P. Mortola; M.D.(Milan)

John Orlowski; B.Sc.(McG.), M.Sc., Ph.D.(Qu.) (James McGill Professor)

Premsyl Ponka; M.D., Ph.D.(Prague) (joint appt. with Medicine)

Alvin Shrier; B.Sc.(Cédia), Ph.D.(Dal.) (Bloomer Professor of Physiology)

Professors

JohnWhite; B.Sc., M.Sc.(Car), Ph.D.(Harv.) (joint appt. with Medicine)

Associate Professors

Nicole Bernard; B.Sc.(McG.), Ph.D.(Dal.) (part-time)

Maurice Chacron; Ph.D.(Ott.)

Erik Cook; Ph.D.(Baylor Coll.,Tx)

Mladen Glavinovic; B.Sc.(Zagreb), M.Sc.(Tor.), Ph.D.(McG.)

Michael Guevara; Ph.D.(McG.)

Russell Jones; Ph.D.(Tor.)

Ursula Stochaj; Ph.D.(Cologne)

Ann Wechsler; B.A.(Tor.), M.Sc., Ph.D.(McG.)

Assistant Professors

Claire Brown; B.Sc.(St. Mary©s), Ph.D.(Dal.)

Anmar Khadra; B.Sc.(C©dia), M.Sc., Ph.D.(Alta.)

Connie Krawczyk; B.Sc.(Guelph), Ph.D.(Tor.) (joint appt. with Microbiology & Immunology)

Judith Natalia Mandl; B.Sc.(Haw.), Ph.D.(Emory)

Anastasiya Nyzhmyk; M.Biochem., Ph.D.(Oxf.)

Reza Sharif-Naeini; B.Sc.(Mont.), M.Sc., Ph.D.(McG.)

Associate Members

Anaesthesia: Steven Backman

Biomedical Engineering: Robert Kearney, Satya Prakash

Biomedical Ethics: Jennifer Fishman

Kinesiology and Physical Education: Dilson Rassier

Medicine: Nicole Bernard, Volker Blank, Mark Blostein, Andrey Cybulsky, Geoffrey Hendy, Louise Laron6 75 r64 /F532255.267 349ne-Blai, LouzoBloSe.(Mon

Required Courses (12 credits)

PHGY 601	(1)	M.Sc. Proposal Seminar
PHGY 602	(2)	Literature Search and Research Proposal
PHGY 604	(0)	Responsible Conduct in Research
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.

11.20.6 Master of Science (M.Sc.); Physiology (Thesis) — Bioinformatics (45 credits)

Thesis Courses (27 credits)

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

Required Courses (12 credits)

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
PHGY 601	(1)	M.Sc. Proposal Seminar
PHGY 602	(2)	Literature Search and Research Proposal
PHGY 604	(0)	Responsible Conduct in Research
PHGY 607	(3)	Laboratory Research 1
PHGY 608	(3)	Laboratory Research 2

Complementary Courses (6 credits)

6 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

11.20.7 Master of Science (M.Sc.); Physiology (Thesis) — Chemical Biology (45 credits)

The Graduate Option in Chemical Biology is centered on the pursuit of an original research project under the direction of one or more program mentors. This research training is augmented by student participation in lecture and seminar courses and in a series of thematic, all of which are designed to expose students to the diverse approaches and research issues that characterize the current state of the ®eld. Students with training in this interdisciplinar approach will be highly quali®ed to seek careers in academic research as well as the pharmaceutical and biotechnology industries.

Thesis Courses (27 credits)

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

Required Courses (12 credits)

PHGY 601	(1)	M.Sc. Proposal Seminar
PHGY 602	(2)	Literature Search and Research Proposal
PHGY 604	(0)	Responsible Conduct in Research
PHGY 607	(3)	Laboratory Research 1
PHGY 608	(3)	Laboratory Research 2
PHGY 620	(3)	Progress in Research

Complementary Courses (6 credits)

3 credits from the following Chemical Biology seminars:

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

3 credits from the following:

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

11.20.8 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 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 that the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly discussion and for publication in the public domain.

Required Courses (8 credits)

PHGY 604	(0)	Responsible Conduct in Research
PHGY 701	(0)	Ph.D. Comprehensive Examination
PHGY 703	(1)	Ph.D. Progress Seminar 1
PHGY 704	(1)	Ph.D. Progress Seminar 2
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

Elective Courses (9 credits)

9 credits of Physiology or Science at the 500 level or above, in consultation with the GSAC and the candidate's supervisor

11.20.9 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 that 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 (11 credits)

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
PHGY 604	(0)	Responsible Conduct in Research
PHGY 701	(0)	Ph.D. Comprehensive Examination
PHGY 703	(1)	Ph.D. Progress Seminar 1
PHGY 704	(1)	Ph.D. Progress Seminar 2
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 Courses (6 credits)

6 credits 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

11.20.10 Doctor of Philosophy (Ph.D.); Physiology — Chemical Biology

The Graduate Option in Chemical Biology is centered on the pursuit of an original research project under the direction of one or more program mentors. This research training is augmented by student participation in lecture and seminar courses and in a series of thematic, all of which are designed to expose students to the diverse approaches and research issues that characterize the current state of the field. Students with training in this interdisciplinary approach will be highly qualified to seek careers in academic research as well as the pharmaceutical and biotechnology industries.

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 that 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 (11 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
PHGY 604	(0)	Responsible Conduct in Research

PHGY 701	(0)	Ph.D. Comprehensive Examination
PHGY 703	(1)	Ph.D. Progress Seminar 1
PHGY 704	(1)	Ph.D. Progress Seminar 2
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

11.21.3 Psychiatry Admission Requirements and Application Procedures

11.21.3.1 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 the 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
- Sufficient funding to support their studies
- 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 86 on the TOEFL Internet-based test (iBT) or 550 on the paper-based test [PBT]), with each component score not less than 20, or 6.5 on the IELTS test

11.21.3.2 Application Procedures

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

See: Application Procedures for detailed application procedures.

11.21.3.2.1 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)
- Written Confirmation of Supervision form (see Department website) from the proposed research supervisor

11.21.3.3 Application Deadlines

The application deadlines listed here are set by the Department of Psychiatry and may be changed at any time. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at www.mcgill.ca/gps/contact/graduate-program.

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

Admission to graduate studies is competitive; accordingly, late and/or incomplete applications are considered only as time and space permit.

11.21.4 Psychiatry Faculty

Chair
G. Turecki

Professors

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

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

D. Boivin; Ph.D.(Montr)

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

M. Bond; B.Sc., M.D.,C.M.(McG.)

J. Breitner; B.A.(Harv), M.P.H.(Johns Hop.), M.D.(Penn.)

M. Cole; B.Sc., M.D.,C.M.(McG.)

S. El Mestikawy; Ph.D.(ParisVI)

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

B. Giros; M.Sc., Ph.D.(ParisVI)

A. Gratton; Ph.D.(C©dia)

J. Guzder; B.Sc., M.D.,C.M., F.R.C.P.

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

R. Joober; M.D.(Tunisia), Ph.D.(McG.)

B. Kieffer; Ph.D.(Strasbourg)

S. King; Ph.D.(Virg.)

L.J. Kirmayer; B.Sc., M.D.,C.M., Dipl.Psych.(McG.), (James McGill Professor)

E. Latimer; B.A.Sc.(Wat.), M.S., Ph.D.(Carn. Mell)

M. Lepage; B.A.(C©dia), Ph.D.(UQAM)

M. Leyton; Ph.D.(C©dia), (William Dawson Scholar)

G. Luheshi; Ph.D.(Newcastle, UK)

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

J. Pruessner; Ph.D.(Tier)

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

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

L.K. Srivastava; B.Sc., M.Sc.(Allahabad), Ph.D.(J. Nehru)

H. Steiger; Ph.D.(McG.)

G. Turecki; M.Sc., M.D.,C.M., Ph.D.(McG.), (William Dawson Scholar)

C.-D. Walker; B.Sc., Ph.D.(Geneva)

A. Young; B.A., M.A., Ph.D.(Penn.)

Associate Professors

J. Armony; B.Sc.(Buenos Aires), M.Sc., Ph.D.(NYU)

P. Assalian; Dip.Psychol.(McG.), M.B.,Ch.B.(Cairo)

S. Beaulieu; M.D./Ph.D.(Laval)

Associate Professors

V. Bohbot; B.A.(McG.), M.A., Ph.D.(Ariz.)

M.J. Brouillette; M.D.,C.M.(Sher.)

A. Brunet; Ph.D.(Montr.)

J. Caron; B.A., M.A.(Moncton), Ph.D.(UQAM)

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

N. Cermakian; B.Sc.(UQTR), M.Sc., Ph.D.(Montr.)

D. Charney; M.D.,C.M.(McG.)

F. Cramer-Azima; B.A.(Qu.), M.A.(Cornell), Ph.D.(Montr.)

A. Crocker; Ph.D.(Montr.) (William Dawson Scholar)

J.B. Debruille; M.D.(Paris XI), Ph.D.(Paris VI)

S. Dongier-Montagnac; M.D.,C.M.(Provence-Aix-Marseille)

B.O. Dubrovsky; M.D.(Buenos Aires)

D. Dunkley; B.Sc.(Tor.), Ph.D.(McG.)

F. Elgar; M.Sc.(N¯d.), Ph.D.(Dal.)

P. tienne; M.D.(Liege)

C. Fichten; B.Sc.(McG.), M.Sc.(C©dia), Ph.D.(McG.)

M.-J. Fleury; M.A., Ph.D.(Montr.)

C. Flores; B.Sc., M.A., Ph.D.(C©dia)

D. Frank; Dip.Psychol., M.D.,C.M.(McG.)

R. I. Fraser; M.D.(Dal.)

G. Galbaud du Fort; M.D., Ph.D.(Paris) (joint appt. with Epidemiology and Biostatistics)

K.G. Gill; B.Sc.(Br. Col.), M.A., Ph.D.(C©dia)

G. Gobbi; M.D.(Rome), Ph.D.(Cagliari)

I. Gold; Ph.D.(Princ.)

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

B. Greenfield; M.D.(Wash.)

N. Grizenko; M.D.,C.M.(Sher.)

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

R. Gruber; B.A., M.S., Ph.D.(T.Aviv)

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E. Jarvis; M.D.(Alta.), M.Sc.(McG.), F.R.C.P.

R. Koenekoop; M.D.(Alta.), M.Sc.(McG.), F.R.C.P.

T. Kolivakis; M.D.(Athens)

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M. Lalinec-Michaud; B.A., M.D.,C.M.(Paris IV)

M. Lepage; Ph.D.(Qu.)

K. Looper; B.Sc., M.D.(Ott.), M.Sc.(McG.)

H. C. Margolese; M.D.(McG.), C.M., M.Sc.

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

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G. Myhr; M.D.,C.M., M.Sc.(McG.)

Associate Professors

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J. Palacios-Boix; M.D., FR.C.P.(C)

J. Pecknold; B.Sc.(Cédia), M.D.,C.M.(McG.)

D. Pedersen; M.D.(Buenos Aires)

M. Perreault; Ph.D.(Montr)

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J. Rochford; M.A.(Qu.), Ph.D.(Cédia)

P. Rosa; M.D.(Rio Grande do Sul), Ph.D.(Aarhus)

Z. Rosberger; Ph.D.(Cédia)

R. Russell; M.D.(McG.)

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

S. Singh; M.D.(Calg.), FR.C.P.

D. Sookman; B.A.(McG.), M.A.(Guelph), Ph.D.(Cédia)

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S. Williams; Ph.D.(Montr)

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M. Berlim; M.Med., M.D.(Rio Grande do Sul)

M. Bernard-Brodeur; M.Sc., Ph.D.(Montr)

Assistant Professors

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D. Bloom; B.Sc.(Regina), M.D.(Qu.)

M. Boily; B.Sc., M.D.(Laval)

F. Bourque; M.D.(Laval), Ph.D.(KCNS)

I. Bradley; M.Sc.(Tor.), Ph.D.(Wat.)

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T.G. Brown; Ph.D.(C©dia)

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E. Chachamovich; M.D.(Rio Grande do Sul), Ph.D.(Edin.)

M. Chakravarty; Ph.D.(McG.)

S. Choudhury; Ph.D.(Univ Coll. Lond.)

D. Claveau; M.D.(Laval)

P. Cote; B.A.(Laval), M.D.,C.M.(Laval/Ott.)

L. Creti; Ph.D.(C©dia)

H. Cvejic; M.D.(NUI)

L. Dabby; M.D.(Tor.)

M.E. Davis; Dip.Psychol., M.D.,C.M.(McG.)

R. Desautels; B.Sc., M.D.,C.M.(McG.)

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

M. di Tomasso; M.D.(McG.)

M. Elie; B.Sc., M.D.,C.M.(McG.)

M. Elsabbagh; Ph.D.(Qu.)

C.P. Ernst; B.Sc.(McG.), M.Sc.(Bish Col.), Ph.D.(McG.)

J. Errunza; M.D.(McG.)

K. Faridi; M.D.(Calg.)

A. Fielding; M.D.,C.M.(McG.)

E. Foley; B.Sc.(T

Assistant Professors

B. Hayton; B.A.(Williams), M.D.,C.M.(McG.)

L. Hoffman; M.D.(McG.)

F. Ianni; B.Sc.(McG.), M.D.,C.M.(Montr)

H. Iskandar; Dip.Psychol.(McG.), M.B.,Ch.B.(Alexandria)

S. Iyer; M.A.(Mumbai), Ph.D.(Nebraska±Lincoln)

C. Jolicoeur; M.D.,C.M.(La

Assistant Professors

Z. Prelevic; Dip.Psychol.(McG.), M.D.,C.M.(Belgrade)

M. Pruessner; M.Sc., Ph.D.(Trier)

M. Rabinovitch; B.Sc., M.D.,C.M.(McG.)

P. Rosa-Neto; M.D.,C.M.(Rio Grande do Sul)

S.B. Rosenbloom; B.A.(C©dia), M.A.(York)

C. Roy; B.Sc.(McG.), M.D.,C.M.(Dal.)

M. Ruiz Casares; Sebenes; Ph.D.(Cornell)

J. Russell; Ph.D.(McG.)

T. Said; B.Sc.(McG.), M.D.,C.M.(Sher)

S. Sarin; Ph.D.(McG.)

H. Schwartz; M.D.(McG.)

M. Segal; B.A.(C©dia), B.Sc.(Ott.)(McG.), M.D.,C.M.(Ott.)

J. Seguin; B.A., B.Sc., M.D.,C.M.(Ott.)

T. Semeniuk; B.Sc., M.Ed., M.D.,C.M.(Alta.)

S. Sengupta; Ph.D.(SIU Carbondale)

J. Shah; M.Sc.(Lond.), M.D.(T.)

M. Sa06Gc11 170.215 474. (M. Rabino)NSo

Lecturers

D. Groenewegen, P. Harden, J. Harvey, M. Heyman, I. Iordache, H.G. Jean-Francois, M.K. Kunin, N. Kuperstok, R. Lalonde-Richards, J. Lamoureux, A.G. Maccordick, S.K. Magrolese, D. Michaud, J. Moamai, K. Myron, A. Navidzadeh, T. Ngo-Minh, J.P. O©Donnell, Rayeur, L. Peters, G. Pierre-Louis, M. Quintal, T. Reyburn, K. Richter, D. Robitaille, D.T. Rochon, A. Schiavetto, V. Tagalakis, F.C. Toma, N. Vachon, S. Wisebord, D. Zack, J. Zambrana, C. Zarowsky

Associate Members

S. Bond

J.L. Derevensky; Ph.D.

M. Drapeau

A. Evans; Ph.D.

L. McVey

S. Neron

G. O©Driscoll

Adjunct Professors

A. Adamantidis

M. Alda; M.D.

P. Blier; M.D., Ph.D.

L. Booij; Ph.D.

M. Cargo; Ph.D.

A. Daigneault

M. Desjardins

A. Duffy; M.D.

D. Fikretoglu

R. Fugere; M.D.

J.P. Harris

V. Kovess-Masfety; M.D., Ph.D.

O. Lapierre

A. Lesage

F. Lesperance; M.D.

S. Richard-Devantoy

S. Sultan

C. Tranulis

A. Zangen

Post-Retirement

D. P. Dastoor

J. P. Ellman

F. Ervin

C. Gianoulakis

G. P. Harnois

K. Minde

J.C. Negrete

G. Pinard

A. Surkis

section 11.22.7 Master of Science (M.Sc.); Experimental Surgery (Thesis) Ð Surgical Invention (45 credits)

This concentration©s focus is on surgical innovation, and it is intended for students wishing to pursue careers in academia, the medical ®eld, or industry. Thesis projects available in the various laboratories of the Department are multidisciplinary and ensure that students are exposed to a broad spectrum of research projects and experimental approaches. Students who have achieved superior progress in their research have the option to transfer to the Ph.D. program, waiving the M.Sc. thesis submission.

section 11.22.8 Doctor of Philosophy (Ph.D.); Experimental Surgery

The doctoral program is intended for students with excellent academic standing who wish to pursue research-focused careers in academia, the medical ®eld, or industry. Thesis projects, available in the various laboratories of the Department, ensure that students receive in-depth training and exposure to varied conceptual frameworks and a wide array of experimental strategies.

11.22.3 Experimental Surgery Admission Requirements and Application Procedures

11.22.3.1 Admission Requirements

M.Sc. Programs

Usually a B.Sc., M.D., or D.V.M. degree is required, with a minimum CGPA of 3.2/4.0. Applications will be accepted from candidates sponsored by a research supervisor willing to provide laboratory space, funding, and direction for their research work.

Ph.D. Program

Admission is usually from one of the M.Sc. programs either upon completion of the M.Sc. degree or by transfer from the ®rst year of M.Sc. to the second year of Ph.D. studies. Request for such transfer is to be made in writing by the thesis supervisor during the candidate©s ®rst year of M.Sc. studies, not later than March 30 for students enrolled in September or October 15 for those registered in January. The student must then apply for admission to the Ph.D. program in order to effect the transfer. **Transfer is granted on the basis of an examination administered by the student's Research Advisory Committee.** Exceptional students with a minimum 3.5/4.0 CGPA may apply directly to the Ph.D. program.

Students with an M.Sc. degree from other departments or from other recognized universities whose M.Sc. topic is closely related to the subject of their Ph.D. research may be agram uif M.Sc. to theuSc. to theuS1167.52 1 Tv

11.22.4 Surgery, Experimental Faculty

Director

A. Philip

Associate Director

L. Haglund

Professors

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

A. Aprikian; M.D.(Sherb.), F.R.C.S.(C)

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

J. Barralet Beng; Ph.D.(Lond.)

J.D. Bobyn; B.Sc., M.Sc.(McG.), Ph.D.(Qu.)

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

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

L. Feldman; M.D.,C.M., M.Sc.(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.)

R. Hamdy; M.Sc., M.D.(Egypt), F.R.C.S.(C)

E. Harvey; B.Sc.(Ont.), M.D.,C.M., M.Sc.(McG.)

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

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

S. Meterissian; M.D.,C.M., M.Sc.(McG.)

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

A. Philip; M.Sc., Ph.D.(McG.)

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

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)

R. Turc50 1 118.983 275.521 TM.D.,C.M.8M75.55f,C.M., Ph.D.(M.D.,C.I

Associate Professors

J. Lapointe; M.D., Ph.D.(Laval)

L. Lessard; B.Sc., M.D.(Laval), F.R.C.S.(C)

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

S. Paraskevas; M.D., Ph.D.(Laval)

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. Stefen; 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)

D. Zukor; B.Sc., M.D.,C.M.(McG.)

Assistant Professors

S. Bergman; M.Sc., M.D.,C.M.(McG.),.R.C.S.(C)

A. Dragomir; M.Sc., Ph.D.(Montr)

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

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

L. Haglund; B.Sc., Ph.D.(Lund)

T.E. Hebert; Ph.D.(Tr.)

O. Huk; B.Sc., M.D.,C.M.(McG.), M.Sc.(Montr)

P. Jarzem; B.Sc., M.D.(Qu.)

E. Lee; B.A.(Boston), M.Sc., Ph.D.(McG.)

K. Mackenzie; B.Sc.(BrCol.), M.D.,C.M.(McG.), F.R.C.S.(C)

A. Merguerditchian; M.D., M.Sc.(Montr), F.R.C.S., F.A.C.S.

E. Mitmaker; M.D.(TJU), M.Sc.(McG.), F.R.C.S.(C)

C. O©Flaherty; D.V.M., Ph.D.(Buenos Aires,Argentina)

M. Petropavlovskaia; M.Sc., Ph.D.(Moscow)

N. Saran; M.D., B.Sc.(BrCol.)

K. Shaw; M.D.,C.M., M.Sc.(McG.)

11.22.5 Master of Science (M.Sc.); Experimental Surgery (Thesis) (45 credits)

Thesis Courses (30 credits)

EXSU 690	(4)	M.Sc. Research 1
EXSU 691	(4)	M.Sc. Research 2
EXSU 692	(4)	M.Sc. Research 3
EXSU 693	(18)	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, taken from 500, 600, or 700-level courses in consultation with the Research Advisory Committee.

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

11.22.6 Master of Science (M.Sc.); Experimental Surgery (Thesis) — Surgical Education (45 credits)

The M.Sc. in Experimental Surgery, Concentration in Surgical Education, provides a foundation in surgical education practice and research. The program highlights the unique teaching and learning environment of surgery coupled with a basis in educational theory, curricular design, and implementation. A major emphasis of this program is surgical educational research with the elaboration, designs, implementation, and analysis of a research project founded in best practices of educational research. The research project may encompass, but is not limited to, surgical stimulation, technical skills acquisition, surgical technology and assessment.

Thesis Courses (30 credits)

EXSU 690	(4)	M.Sc. Research 1
EXSU 691	(4)	M.Sc. Research 2
EXSU 692	(4)	M.Sc. Research 3
EXSU 693	(18)	M.Sc. Thesis

Required Courses (12 credits)

EDPE 637	(3)	Issues in Health Professions Education
EDPH 689	(3)	Teaching and Learning in Higher Education
EXSU 605	(3)	Biomedical Research Innovation
EXSU 606	(3)	Statistics for Surgical Research

Complementary Courses (3 credits)

3 credits, taken from 500-, 600-, or 700-level courses in consultation with the Research Advisory Committee.

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

11.22.7 Master of Science (M.Sc.); Experimental Surgery (Thesis) — Surgical Innovation (45 credits)

The M.Sc. in Experimental Surgery, Concentration in Surgical Innovation, offers graduate-level training program in experimental surgery, leading to a Master©s degree. This concentration allows for a hands-on learning experience for students to develop skills necessary to work within multi-disciplinary teams in the creation of a novel, needs driven, and marketable prototypes used in development of novel surgical and medical devices. As such participants work in multidisciplinary teams to identify clinical needs and to innovate solutions to them.

Thesis Courses (30 credits)

EXSU 690	(4)	M.Sc. Research 1
EXSU 691	(4)	M.Sc. Research 2
EXSU 692	(4)	M.Sc. Research 3
EXSU 693	(18)	M.Sc. Thesis

Required Courses (12 credits)

EXSU 605	(3)	Biomedical Research Innovation
EXSU 606	(3)	Statistics for Surgical Research
EXSU 620	(3)	Surgical Innovation 1
EXSU 621	(3)	Surgical Innovation 2

Complementary Courses (3 credits)

3 credits, taken from 500-, 600-, or 700-level courses in consultation with the Research Advisory Committee.

11.22.8 Doctor of Philosophy (Ph.D.); Experimental Surgery

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 di500-, 600-, or 700-loo r9iaout r3as well,00-lo de