



**Faculty of Medicine and Health Sciences  
(Graduate)**

**Programs, Cour**



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

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- 
- 11.1.5 Medicine, Family, page 26
    - 11.1.5.1 Location, page 26
    - 11.1.5.2 About Family Medicine, page 26
    - 11.1.5.3 Medicine, Family Admission Requirements and Application Procedures, page 27
    - 11.1.5.4 Master of Science (M.Sc.) Family Medicine (Thesis) (45 credits) , page 28
    - 11.1.5.5 Master of Science (M.Sc.) Family Medicine (Thesis): Bioethics (45 credits) , page 29
    - 11.1.5.6 Master of Science (M.Sc.) Family Medicine (Thesis): Medical Education (45 credits) , page 30
    - 11.1.5.7 Doctor of Philosophy (Ph.D.) Family Medicine & Primary Care , page 30
  - 11.1.6 Oncology, page 31
    - 11.1.6.1 Location, page 31
    - 11.1.6.2 Graduate Diploma in Oncology, page 31
    - 11.1.6.3 Graduate Diploma (Grad. Dip.) Oncology (30 credits) , page 31
  - 11.1.7 Otolaryngology – Head and Neck Surgery, page 33
    - 11.1.7.1 Location, page 33
    - 11.1.7.2 About Otolaryngology – Head and Neck Surgery, page 33
    - 11.1.7.3 Otolaryngology Admission Requirements and Application Procedures, page 33
    - 11.1.7.4 Master of Science (M.Sc.) Otolaryngology (Thesis) (45 credits) , page 34
  - 11.1.8 Pathology, page 34
    - 11.1.8.1 Location, page 34
    - 11.1.8.2 About Pathology, page 35
    - 11.1.8.3 Pathology Admission Requirements and Application Procedures, page 35
    - 11.1.8.4 Master of Science (M.Sc.) Pathology (Thesis) (45 credits) , page 36
    - 11.1.8.5 Doctor of Philosophy (Ph.D.) Pathology , page 36
  - 11.1.9 Psychiatry, page 37
    - 11.1.9.1 Location, page 37
    - 11.1.9.2 About Psychiatry, page 37
    - 11.1.9.3 Psychiatry Admission Requirements and Application Procedures, page 37
    - 11.1.9.4 Master of Science (M.Sc.) Mental Health (Thesis) (45 credits) , page 38
    - 11.1.9.5 Doctor of Philosophy (Ph.D.) Mental Health , page 38
  - 11.1.10 Surgical and Interventional Sciences, page 39
    - 11.1.10.1 Location, page 39
    - 11.1.10.2 About Surgical and Interventional Sciences, page 39
    - 11.1.10.3 Surgical and Interventional Sciences (formerly Experimental Surgery) Admission Requirements and Application Procedures, page 41
    - 11.1.10.4 Master of Science (M.Sc.) Surgical and Interventional Sciences (Thesis) (45 credits) , page 42
    - 11.1.10.5 Master of Science (M.Sc.) Surgical and Interventional Sciences (Thesis): Digital Health Innovation (45 credits) , page 42
    - 11.1.10.6 Master of Science (M.Sc.) Surgical and Interventional Sciences (Thesis): Global Surgery (45 credits) , page 43

- 11.1.10.7 Master of Science (M.Sc.) Surgical and Interventional Sciences (Thesis): Surgical Education (45 credits) , page 43
  - 11.1.10.8 Master of Science (M.Sc.) Surgical and Interventional Science (Thesis): Surgical Innovation (45 credits) , page 44
  - 11.1.10.9 Master of Science (M.Sc.)Surgical and Interventional Sciences (Thesis): Surgical Outcomes Research (45 credits) , page 44
  - 11.1.10.10 Master of Science (M.Sc.) Surgical and Interventional Sciences (Non-Thesis): Oncology (45 credits) , page 45
  - 11.1.10.11 Master of Science (M.Sc.) Surgical and Interventional Sciences (Non-Thesis) (45 credits) , page 46
  - 11.1.10.12 Doctor of Philosophy (Ph.D.) Surgical and Interventional Sciences , page 48
  - 11.1.10.13 Graduate Certificate (Gr. Cert.) Surgical Innovation (15 credits) , page 48
  - 11.1.10.14 Graduate Diploma (Gr. Dip.) Surgical Innovation (30 credits) , page 49
- 11.2 Biomedical Sciences,

- 11.2.5.3 Human Genetics Admission Requirements and Application Procedures, page 67
- 11.2.5.4 Master of Science (M.Sc.) Human Genetics (Thesis) (45 credits) , page 68
- 11.2.5.5 Master of Science (M.Sc.) Human Genetics (Thesis): Bioinformatics (45 credits) , page 69
- 11.2.5.6 Master of Science (M.Sc.) Human Genetics (Thesis): Bioethics (45 credits) , page 69
- 11.2.5.7 Master of Science (M.Sc.) Genetic Counselling (Non-Thesis) (48 credits) , page 70
- 11.2.5.8 Doctor of Philosophy (Ph.D.) Human Genetics , page 70
- 11.2.5.9 Doctor of Philosophy (Ph.D.) Human Genetics: Bioinformatics , page 71
- 11.2.6 Microbiology and Immunology, page 71
  - 11.2.6.1 Location, page 71
  - 11.2.6.2 About Microbiology and Immunology, page 72
  - 11.2.6.3 Microbiology and Immunology Admission Requirements and Application Procedures, page 72
  - 11.2.6.4 Master of Science (M.Sc.) Microbiology and Immunology (Thesis) (45 credits) , page 73
  - 11.2.6.5 Doctor of Philosophy (Ph.D.) Microbiology and Immunology , page 73
- 11.2.7 Pharmacology and Therapeutics, page 74
  - 11.2.7.1 Location, page 74
  - 11.2.7.2 About Pharmacology and Therapeutics, page 74
  - 11.2.7.3 Pharmacology and Therapeutics Admission Requirements and Application Procedures, page 75
  - 11.2.7.4 Master of Science (M.Sc.) Pharmacology (Thesis) (45 credits) , page 76
  - 11.2.7.5 Master of Science (M.Sc.) Pharmacology (Thesis): Environmental Health Sciences (45 credits) , page 76
  - 11.2.7.6 Doctor of Philosophy (Ph.D.) Pharmacology , page 77
  - 11.2.7.7 Doctor of Philosophy (Ph.D.) Pharmacology: Environmental Health Sciences , page 77
  - 11.2.7.8 Graduate Certificate (Gr. Cert.) Biomedical Science Translational Research (15 credits) , page 78
- 11.2.8 Physiology, page 78
  - 11.2.8.1 Location, page 78
  - 11.2.8.2 About Physiology, page 79
  - 11.2.8.3 Physiology Admission Requirements and Application Procedures, page 80
  - 11.2.8.4 Master of Science (M.Sc.) Physiology (Thesis) (45 credits) , page 80
  - 11.2.8.5 Master of Science (M.Sc.) Physiology (Thesis): Bioinformatics (45 credits) , page 81
  - 11.2.8.6 Master of Science (M.Sc.) Physiology (Thesis): Chemical Biology (45 credits) , page 81
  - 11.2.8.7 Doctor of Philosophy (Ph.D.) Physiology , page 82
  - 11.2.8.8 Doctor of Philosophy (Ph.D.) Physiology: Bioinformatics , page 82
  - 11.2.8.9 Doctor of Philosophy (Ph.D.) Physiology: Chemical Biology , page 83
- 11.3 Communication Sciences and Disorders, page 84
  - 11.3.1 Location, page 84
  - 11.3.2 About Communication Sciences and Disorders, page 84
  - 11.3.3 Communication Sciences and Disorders Admission Requirements and Application Procedures, page 86
    - 11.3.3.1 Admission Requirements, page 86
    - 11.3.3.2 Application Procedures,



- 
- 11.3.5 Master of Science, Applied (M.Sc.A.) Communication Sciences & Disorders (Non-Thesis):
    - Speech-Language Pathology (82 credits) , page 87
  - 11.3.6 Doctor of Philosophy (Ph.D.) Communication Sciences and Disorders , page 88
  - 11.3.7 Doctor of Philosophy (Ph.D.) Communication Sciences and Disorders: Language Acquisition , page 89
  - 11.4 Population and Global Health, page 90
    - 11.4.1 Location, page 90
      - 11.4.1.1 About the School of Population and Global Health , page 90
    - 11.4.2 Bioethics, page 90
      - 11.4.2.1 Location, page 90
      - 11.4.2.2 About Bioethics, page 90
      - 11.4.2.3 Bioethics Admission Requirements and Application Procedures, page 91
    - 11.4.3 Epidemiology and Biostatistics, page 91
      - 11.4.3.1 Location, page 91
      - 11.4.3.2 About Epidemiology and Biostatistics, page 91
      - 11.4.3.3 Epidemiology, page 92
      - 11.4.3.4 Biostatistics, page 102
    - 11.4.4 Occupational Health, page 105
      - 11.4.4.1 Location, page 105
      - 11.4.4.2 About Occupational Health, page 105
      - 11.4.4.3 Occupational Health Admission Requirements and Application Procedures, page 106
      - 11.4.4.4 Master of Science, Applied (M.Sc.A.) Occupational Health (Non-Thesis) (Resident) (46 credits) , page 106
      - 11.4.4.5 Master of Science, Applied (M.Sc.A.) Occupational Health (Non-Thesis) (Distance) (45 credits) , page 107
      - 11.4.4.6 Doctor of Philosophy (Ph.D.) Occupational Health , page 107



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## 1 Graduate and Postdoctoral Studies

### 1.1 Administrative Officers

#### Administrative Officers

Josephine Nalbantoglu; B.Sc., Ph.D.(McG.)

**Associate Provost (Graduate Education) and Dean (Graduate and Postdoctoral Studies)**

Lorraine Chalifour; B.Sc., Ph.D. (Manit.)

**Associate Dean (Graduate and Postdoctoral Studies)**

Nathan Hall; B.A., M.A., Ph.D. (Manit.)

**Associate Dean (Graduate and Postdoctoral Studies)**

Russell Steele; B.S., M.S. (Carn. Mell), Ph.D. (Wash.)

**Associate Dean (Graduate and Postdoctoral Studies)**

### 1.2 Location

James Administration Building, Room 400  
845 Sherbrooke Street West  
Montreal QC H3A 0G4  
Website: [mcgill.ca/gps](http://mcgill.ca/gps)



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

### 1.3 Graduate and Postdoctoral Studies' Mission

The mission of Graduate and Postdoctoral Studies (GPS) is to promote university-wide academic excellence for graduate and postdoctoral education at McGill. GPS provides leadership and strategic direction across the university in close collaboration with the academic and administrative units, and the graduate and postdoctoral community.

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## 2 Important Dates

For all dates relating to the academic year, consult [mcgill.ca/importantdates](http://mcgill.ca/importantdates).

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## 3 Graduate Studies at a Glance

Please refer to [University Regulations & Resources](#) > *Graduate* > : [Graduate Studies at a Glance](#) for a list of all graduate departments and degrees currently being offered.

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## 4 Program Requirements

Refer to [University Regulations & Resources](#) > *Graduate* > *Regulations* > : [Program Requirements](#) for graduate program requirements for the following:

- Master's Degrees
- Doctoral Degrees

- Coursework for Graduate Programs, Diplomas, and Certificates

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## 5 Graduate Admissions and Application Procedures

Please refer to [University Regulations & Resources > Graduate > : Graduate Admissions and Application Procedures](#) for information on:

- Application for admission;
- Admission requirements;
- Application procedures;
- CompetencworgEnglish;s an;

- ii. Upon registration, postdocs will be eligible for a University identity card issued by Enrolment Services.
- iii. Leaves of absence must comply with the Graduate and Postdoctoral Studies Policies for Vacation, Parental/Familial, and Health Leave (see [section 7.3: Vacation Policy for Graduate Students and Postdocs](#) and [University Regulations & Resources](#) > Graduate > Regulations > Categories of Students > : [Leave of Absence Status](#)).

### **3. Appointment, Funding, Letter of Agreement**

- i. Postdoctoral appointments may not exceed the registration eligibility period as defined above.
- ii. In order to be registered, the postdoc must be assured of financial support other than from personal means during their stay at McGill University. This amount must be equivalent to the minimal stipend requirement set by the University in accordance with guidelines issued by federal and provincial research granting agencies or the collective agreement, as applicable. Funding during parental leave is subject to the conditions of the funding agency or the collective agreement, as applicable.
- iii. Postdocs require a [Letter of Agreement for Postdoctoral Education](#) signed by the postdoc, the supervisor, and the department/unit head or delegate.
- iv. Postdocs with full responsibility for teaching a course should be compensated over and above

- to clarify expectations regarding intellectual property rights in accordance with the University's policy;
- to provide mentorship for career development; and
- to prepare, sign, and adhere to a Letter of Agreement for Postdoctoral Education.

vi. Some examples of the responsibilities of postdocs are:

- to inform themselves of and adhere to the University's policies and/or regulations for postdocs as outlined at [mcgill.ca/gps/postdocs](http://mcgill.ca/gps/postdocs) and [mcgill.ca/students/srr](http://mcgill.ca/students/srr), and the Graduate and Postdoctoral Studies *University Regulations and Resources*;
- to submit a complete file for registration to Enrolment Services;
- to sign and adhere to their Letter of Agreement for Postdoctoral Education;
- to communicate regularly with their supervisor; and
- to inform their supervisor of their absences.

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

- to register postdocs;
- to provide an appeal mechanism in cases of conflict;
- to provide documented policies and procedures to postdocs;
- to provide postdocs with the necessary information on McGill University student services (Postdoctoral Fellows and Scholars) and HR policies and guidelines (Postdoctoral Researchers).

*Approved by Senate, April 2000; revised May 2014; February 2020.*

### 7.3 Vacation Policy for Postdocs

Please refer to the : [Vacation Policy for Graduate Students and Postdocs](#).

### 7.4 Leave of Absence for Health and Parental/Familial Reasons

A leave of absence may be granted for maternity or parental reasons or for health reasons (see *University Regulations & Resources > Graduate > : Leave of Absence Status*).

Such a leave must be requested on a term-by-term basis and may be granted for a period of up to 52 weeks. For a maternity or parental leave, the eligibility period of a maximum of 52 consecutive weeks is determined based on when the child is born; if the leave is interrupted for one or two terms, the eligibility period cannot be extended. Students and Postdocs must make a request for such a leave in writing to their department and submit a medical certificate. The department shall forward the request to Enrolment Services. See the procedure in *University Regulations & Resources > Graduate > : Leave of Absence Status*.

Students who have been granted such a leave will have to register for the term(s) in question and their registration will show as "leave of absence" on their record. No tuition fees will be charged for the duration of the authorized leave. Research supervisors are not obligated to remunerate students and Postdocs on leave. A summary table of various leave policies (paid or unpaid) for students and Postdocs paid from the Federal and Quebec Councils through fellowships or research grants is available at [mcgill.ca/gps/funding/getting-paid](http://mcgill.ca/gps/funding/getting-paid) under "Leave Policies and Form."

### 7.5 Postdoctoral Research Trainees

#### Eligibility

If your situation does not conform to the Government of Quebec's definition of a Postdoctoral Fellow, you may be eligible to attend McGill as a Postdoctoral Research Trainee. While at McGill, you can perform research only (you may not register for courses or engage in clinical practice). Medical specialists who will have clinical exposure and require a training card must register through Postgraduate Medical Education of the Faculty of Medicine and Health Sciences—not Graduate and Postdoctoral Studies.

The category of Postdoctoral Research Trainee is for:

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

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

**Category 3:** An individual who holds a professional degree (or equivalent) in a regulated health profession (as defined under CIHR-eligible health profession) and is enrolled in a program of postgraduate medical education at another institution. This individual wishes to conduct the research stage or elective component of their program of study at McGill University under the supervision of a McGill professor. This individual will be engaged in full-time research with well-defined objectives, responsibilities, and methods of reporting. Applications must be accompanied by a letter of permission from the applicant's home institution (signed by the Department Chair, Dean, or equivalent) confirming registration in their program and stating the expected duration of the

research stage. Individuals who are expecting to spend more than one year are encouraged to obtain formal training (Master's or Ph.D.) through application to a relevant graduate program.

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



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

#### General Conditions

- The maximum duration is three years.
- The individual must be engaged in full-time research.
- The individual must provide copies of official transcripts/diplomas.
- 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. Any 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.

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## 8 Graduate Studies Guidelines and Policies

Refer to [University Regulations & 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. Comprehensives Policy
- Graduate Studies Reread Policy
- Failure Policy
- Guideline on Hours of Work

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## 9 Graduate Student Services and Information

Graduate students are encouraged to refer to [: Student Services and Information](#) for information on the follo

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

Refer to [University Regulations & Resources](#) > *Graduate* > : [Research Policy and Guidelines](#) for information on the following:

- Regulations on Research Policy
- Regulations Concerning the Investigation of Research Misconduct
- Requirements for Research Involving Human Participants
- Policy on the Study and Care of Animals
- Policy on Intellectual Property
- Regulations Governing Conflicts of Interest
- Safety in Field Work
- Office of Sponsored Research
- Postdocs
- Research Associates

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## 11 Browse Academic Units & Programs

The programs and courses in the following sections have been approved for the 2024–2025 session as listed.

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### 11.1 School of Medicine

#### 11.1.1 Location

School of Medicine  
680 Sherbrooke St. West, Suite 1701  
Montreal QC H3A 2M7  
Website: [mcgill.ca/schoolofmedicine](http://mcgill.ca/schoolofmedicine)

#### 11.1.2 About the School of Medicine

The School is comprised of a total of 35 departments and divisions, and includes the areas of Undergraduate Medical Education/MDCM programs, Postgraduate Medical Education, and Continuing Professional Development.

For further information, visit [the School's website](#).

#### 11.1.3 Medical Physics

##### 11.1.3.1 Location

Medical Physics Unit, DS1-4556  
McGill University Health Centre – Glen Site  
Cedars Cancer Centre  
1001 Décarie Boulevard  
Montreal QC H4A 3J1  
Telephone: 514-934-1934 ext. 44158  
Fax: 514-934-8229  
Email: [margery.knewstubb@mcgill.ca](mailto:margery.knewstubb@mcgill.ca)  
Website: [mcgill.ca/medphys](http://mcgill.ca/medphys)



### 11.1.3.2 About Medical Physics



MDPH 602	(3)	Radiotherapy Physics
MDPH 603	(2)	Laboratory Radiotherapy Physics
MDPH 607	(3)	Medical Imaging
MDPH 608	(2)	Laboratory - Diagnostic Radiology and Nuclear Medicine
MDPH 609	(2)	Radiation Biology
MDPH 610	(2)	Instrumentation and Computation in Medical Physics
MDPH 613	(2)	Health Physics
MDPH 614	(3)	Physics of Diagnostic Radiology
MDPH 615	(2)	Physics of Nuclear Medicine
MDPH 618	(3)	Anatomy and Physiology for Medical Physics

### 11.1.3.5 Graduate Diploma (Gr. Dip.) Medical Radiation Physics (30 credits)

The Graduate Diploma in Medical Radiation Physics is intended to provide candidates holding a graduate degree in a related field with the knowledge required to enter into the field of medical physics. The program relies on a strong fundamental science background. The graduate diploma program is accredited by the Commission for Accreditation of Medical Physics Education Programs (CAMPEP) only for students holding a Ph.D. degree.

#### Required Courses (30 credits)

\* Or an equivalent course, at the 500-level or higher, as deemed appropriate by the Graduate Program Director.

MDPH 601	(3)	Radiation Physics
MDPH 602	(3)	Radiotherapy Physics
MDPH 603	(2)	Laboratory Radiotherapy Physics
MDPH 607	(3)	Medical Imaging
MDPH 608	(2)	Laboratory - Diagnostic Radiology and Nuclear Medicine
MDPH 609	(2)	Radiation Biology
MDPH 610	(2)	Instrumentation and Computation in Medical Physics 2
MDPH 613	(2)	Health Physics
MDPH 614	(3)	Physics of Diagnostic Radiology
MDPH 615	(2)	Physics of Nuclear Medicine
		Anatomy and Phn Medical Ph

and treatment of disease. The Division offers various programs, each of which has different training objectives (see below). The internationally recognized high-quality training our graduates receive is in essence what distinguishes graduates of our programs from the graduates of comparable programs in peer institutions.













EXMD 625	(1)	Clinical Trials and Research 2
EXMD 626	(1)	Clinical Trials and Research 3
EXMD 627	(18)	Practicum in Clinical Research

### Complementary Courses (6 credits)

Six credits at the 500 level or higher chosen from: Experimental Medicine (EXMD), Pharmacology and Therapeutics (PHAR), Epidemiology and Biostatistics (EPIB). With prior approval from the Division's Student Affairs Coordinator, courses at the 500 level or higher, from other Allied Health Sciences departments may be accepted.

## 11.1.5 Medicine, Family

### 11.1.5.1 Location

Department of Family Medicine  
5858 Côte-des-Neiges Road, 3rd Floor  
Montreal QC H3S 1Z1  
Email: [graduateprograms.fammed@mcgill.ca](mailto:graduateprograms.fammed@mcgill.ca)  
Website: [mcgill.ca/familymed/education/graduate-programs](http://mcgill.ca/familymed/education/graduate-programs)

### 11.1.5.2 About Family Medicine

The McGill Department of Family Medicine 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, in Canada, and internationally by:

- developing research and scholarly activity to contribute to the academic discipline;
- promoting curriculum innovation and education research;
- engaging in international and global health activities;
- developing and engaging in public policy discussions;
- training medical students, residents, and other health care professionals to become committed to primary care, contributing to accessibility, continuity, coordination, accountability, patient-centredness, and health promotion and prevention;
- promoting innovation in family medicine and primary health care delivery and practice.

We understand that research in family medicine and primary care is essential to the achievement of excellence in health care delivery, patient care, and education. Our research division is composed of Ph.D. and clinical researchers who dedicate their efforts to producing and translating knowledge that advances the discipline, practice, and teaching of family medicine and primary care while supporting the scholarly activities of clinicians and residents in the Department. We have developed unique and rigorous research programs for **M.Sc.** and **Ph.D.** students that advance academic excellence in family medicine and primary health care through patient-oriented, community-based research with innovative methodologies and participatory approaches.

#### *section 11.1.5.4: Master of Science (M.Sc.) Family Medicine (Thesis) (45 credits)*

The M.Sc. in Family Medicine is a research-oriented thesis-based graduate program in family medicine. The objective is to increase the skills of those interested in carrying out research pertinent to the practice of family medicine.

As many relevant research questions cross conventional boundaries of disciplines and research traditions, we incorporate an **interdisciplinary approach** with an emphasis on **participatory research** and **community engagement**.

This program provides training in epidemiology and statistics, as well as in qualitative, quantitative and mixed methods. Students are also oriented for knowledge synthesis, and participatory research approaches.

An emphasis is placed on the relevance of the thesis research to family practice and primary health care. Close links are maintained with the main family medicine clinical sites located around Montreal and Quebec.

#### *section 11.1.5.5: Master of Science (M.Sc.) Family Medicine (Thesis): Bioethics (45 credits)*

The objectives of this program are to allow students to conduct innovative research in relation to a bioethical issue pertinent to health care and to acquire a working knowledge of bioethical issues from the current viewpoint of other relevant disciplines such as law, philosophy, and religious studies. A minimum of 45 credits is required including the thesis. The research culminates in the preparation of a thesis.

### *section 11.1.5.6: Master of Science (M.Sc.) Family Medicine (Thesis): Medical Education (45 credits)*

This program will have very close ties to the *Family Medicine Educational Research Group* (FMER), which is the corollary of the educational innovations in teaching and research conceived and established in the McGill Department of Family Medicine since 2005. The FMER group'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;
3. rigorously develop and inform medical education policy.

This research agenda of FMER is articulated into four interrelated streams:

1. family physician's professional identity formation;
2. information use and technology in the learning episodes of practicing physicians and organizational learning;
3. program evaluation of educational innovations;
4. knowledge synthesis.

### *section 11.1.5.7: Doctor of Philosophy (Ph.D.) Family Medicine & Primary Care*

The Ph.D. program will build upon our M.Sc in Family Medicine. Research topics in the field of family medicine and primary health care cross conventional discipline boundaries and research traditions. Our training program focuses on patient-oriented, community-based research using innovative methodologies and participatory approaches. The program advances academic excellence in family medicine and primary health care.

## **11.1.5.3 Medicine, Family Admission Requirements and Application Procedures**

### **11.1.5.3.1 Admission Requirements**

On the program page, the following information is provided: 1262.846.8839.93 9.28 (, a 1ailam CGat rg 0 0 1 RG /F2 8.1 Tf 1 0 0 1 154.9 227.3This85 9.28 (, a 1mcgj 1.ca/gr1 368.681

- Practicing family physicians
- Undergraduate university students with a strong interest in family medicine research
- Family medicine residents who are completing their residency and would like to continue with their education by completing an enhanced skills program specializing in family medicine research with the possibility of obtaining an M.Sc. degree. If interested, you may learn more about the Clinician Scholar Program [here](#)

#### **What do we look for?**

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

**Proof of competency in oral and written English:** TOEFL: International students who have not received their instruction in English, or whose mother tongue is not English, must pass the Test of English as a Foreign Language (*TOEFL*) with a minimum score of 86 on the Internet-based test (iBT), with each component score not less than 20 (internet-based test).



**Note:** The TOEFL institution code for McGill University is 0935. For further information, please refer to the [TOEFL website](#).

Alternatively, students may submit International English Language Testing System (*IELTS*) scores with a minimum overall band score of 6.5. Original score reports must be submitted (photocopies will not be accepted).

For overseas graduates, an attempt is made to situate the applicant's academic grades among the standards of their universities. Grades are, however, converted to their McGill equivalent. [International Grade Conversion charts](#), as well as required admission documentation for each country, are provided on the application page.



FMED 616	(1)	Applied Literature Reviews
FMED 625	(3)	Introduction to Qualitative Research in Health

**Elective Courses (8 credits)**

8 credits at the 500 level or higher chosen by the student and the Department in consultation with the student's thesis supervisor(s) of which 3 credits may be chosen from another department at McGill.

FMED 504D1	(.5)	Family Medicine Research Seminars
FMED 504D2	(.5)	Family Medicine Research Seminars
FMED 511	(1)	Introduction to Art in Healthcare: Making Art Accessible
FMED 525	(3)	Foundations of Translational Science
FMED 601	(3)	Advanced Topics in Family Medicine
FMED 604	(3)	Advanced Participatory Research in Health
FMED 605	(1)	AI and Analytical Decision-Making in Healthcare
FMED 606	(1)	Operational Issues in Survey Methods in Primary Care
FMED 607	(1)	Intro to Discourse Analysis & Interpretive Health Research
FMED 608	(1)	Advanced Mixed Methods Seminar in Health Research
FMED 610	(1)	Foundations of Family Medicine
FMED 611	(3)	Healthcare Systems, Policy and Performance
FMED 612	(1)	Evaluation Research and Implementation Science
FMED 615	(1)	Applied Knowledge Translation and Exchange in Health
FMED 618	(1)	Topics in Pharmacoeconomics, Drug Safety and Policy
FMED 619	(3)	Program Management in Global Health and Primary Health Care Participatory Health Systems for Safe Birthwle&

**Elective Courses (11 credits)**

11 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.

**11.1.5.6 Master of Science (M.Sc.) Family Medicine (Thesis): Medical Education (45 credits)**

The M.Sc. in Family Medicine; Medical Education focuses on educating future scholars in family medicine education research. The program includes teaching and learning in research methodologies while emphasizing training in educational theories and topics, with a particular attention to health professions education. The thesis must concern an educational issue related to family medicine.

**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 (12 credits)**

EDPE 637	(3)	Issues in Health Professions Education
FMED 505	(3)	Epidemiology and Data Analysis in Primary Care 1
FMED 610	(1)	Foundations of Family Medicine
FMED 614	(2)	Foundations of Mixed Methods Research
FMED 625	(3)	Introduction to Qualitative Research in Health

**Complementary courses (9 credits)**

3 credits from the following:

FMED 509	(3)	Epidemiology and Data Analysis in Primary Care 2
FMED 603	(1)	Foundations of Participatory Research
FMED 606	(1)	Operational Issues in Survey Methods in Primary Care
FMED 615	(1)	Applied Knowledge Translation and Exchange in Health
FMED 616	(1)	Applied Literature Reviews

6 credits from the following:

EDEC 612	(3)	Digital Media and Learning
EDEM 644	(3)	Curriculum Development and Implementation
EDEM 673	(3)	Leadership Theory in Education
EDPE 635	(3)	Theories of Learning and Instruction
EDPE 664	(3)	Expertise, Reasoning and Problem Solving
EDPE 670	(3)	Educational Assessment and Evaluation

**11.1.5.7 Doctor of Philosophy (Ph.D.) Family Medicine & Primary Care**

The PhD program will build upon our MSc in Family Medicine.

Research topics in the field of family medicine and primary health care cross conventional discipline boundaries and research traditions. Our training program focuses on patient-oriented, community-based research using innovative methodologies and participatory approaches. The program advances academic excellence in family medicine and primary health care.

**Thesis**

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

### PhD Comprehensive Exam

PhD students are expected to demonstrate proficiency in the following topics: basic statistics, epidemiology, qualitative and mixed methods, literature synthesis, knowledge translation and participatory research approaches. If a PhD candidate does not have prior training in any of these areas and believes that he or she cannot answer questions on these topics during the comprehensive exam, additional courses will be required for the PhD student.

FMED 701	(0)	PhD Comprehensive Examination
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### Required Courses (9 credits)

FMED 601	(3)	Advanced Topics in Family Medicine
FMED 604	(3)	Advanced Participatory Research in Health
FMED 702*	(1)	Advanced Doctoral Primary Care Research Seminars

\* Note: this slot course must be taken three times (3 cr.)

### Elective Course (3 credits)

3 credits in advanced research methods, at the 600 level or higher. May be chosen from outside the Department, in consultation with the student's academic adviser or supervisor.

## 11.1.6 Oncology

### 11.1.6.1 Location

Gerald Bronfman Department of Oncology  
5100 de Maisonneuve Blvd West, Suite 720  
Montreal QC H4A 3T2  
Website: [mcgill.ca/oncology](http://mcgill.ca/oncology)

### 11.1.6.2 Graduate Diploma in Oncology

The Graduate Diploma in Oncology provides students the opportunity to gain exposure to the principles and practice of oncology as well as its research domains, while exploring in more detail one of four areas of focus:

- Population and Global Cancer Control
- Psychosocial Oncology/Palliative Care
- Clinical Cancer Research
- Cancer Care Services and Quality

### 11.1.6.3 Graduate Diploma (Grad. Dip.) Oncology (30 credits)

The Graduate Diploma in Oncology provides exposure to the entire spectrum of principles and practice in all fields of oncology as well as its research domains while allowing exploration in more detail of a specific area of focus through courses and a practicum. The areas of focus are: population and global cancer control, psychosocial oncology/palliative care, clinical cancer research, or cancer care services and quality.

### Required Courses (12 Credits)

ONCO 610D1	(3)	Fundamentals of Oncology and Cancer Research
ONCO 610D2	(3)	Fundamentals of Oncology and Cancer Research
ONCO 620	(3)	Best Practices in Biomedical Research
ONCO 630	(3)	Oncology Practicum

### Complementary Courses (12 Credits)

6 credits from:

EPIB 671	(3)	Cancer Epidemiology and Prevention
PPHS 612D1	(1.5)	Principles of Public Health Practice
PPHS 612D2	(1.5)	Principles of Public Health Practice

OR

NUR2 783	(3)	Psychosocial Oncology Research
ONCO 635	(3)	Qualitative and Psychosocial Health Research

OR

EXMD 617	(1)	Workshop in Clinical Trials 1
EXMD 618	(1)	Workshop in Clinical Trials 2
EXMD 619	(1)	Workshop in Clinical Trials 3
ONCO 615	(3)	Principles and Practice of Clinical Trials

OR

ONCO 625	(3)	Quality Improvement Principles and Methods
PPHS 528	(3)	Economic Evaluation of Health Programs

If a course in the course grouping is not available in a given year, a suitable replacement will be chosen by the Graduate Program Director in consultation with the Program Committee.

3 credits from:

DENT 505	(3)	Epidemiology and Data Analysis in Primary Care 1
EPIB 507	(3)	Biostats for Health Sciences
EPIB 521	(3)	Regression Analysis for Health Sciences
EXMD 634	(3)	Quantitative Research Methods
FMED 505	(3)	Epidemiology and Data Analysis in Primary Care 1

OR

3 credits of a research design or statistics course at the 500 level or higher chosen in consultation with the student's mentor and approved by the Program Committee and the Graduate Program Director. Students who already have a very strong background in statistics may be exempt from taking a statistics course and would choose another 3-credit course. This must be approved by the Program Committee and the Graduate Program Director.

3 credits from:

EPIB 671	(3)	Cancer Epidemiology and Prevention
EXMD 614	(3)	Environmental Carcinogenesis
EXMD 620	(1)	Clinical Trials and Research 1
EXMD 625	(1)	Clinical Trials and Research 2
EXMD 626	(1)	Clinical Trials and Research 3
EXMD 640	(3)	Experimental Medicine Topic 1
EXSU 505	(3)	Trends in Precision Oncology
FMED 619	(3)	Program Management in Global Health and Primary Health Care
HGEN 690	(3)	Inherited Cancer Syndromes
NUR2 705	(3)	Palliative Care



ONCO 611	(3)	Proteomics for Precision Medicine
ONCO 615	(3)	Principles and Practice of Clinical Trials
ONCO 625	(3)	Quality Improvement Principles and Methods
ONCO 635	(3)	Qualitative and Psychosocial Health Research
ONCO 645	(3)	Seminars in Global Oncology
POTH 637	(3)	Cancer Rehabilitation
PPHS 528	(3)	Economic Evaluation of Health Programs
PSYC 507	(3)	Emotions, Stress, and Illness
SWRK 668	(3)	Living with Illness, Loss and Bereavement

The course will be chosen in consultation with the student's mentor and must be approved by the Program Committee and the Graduate Program Director.

### Elective Courses (6 credits)

6 credits at the 500 level or higher can be chosen from the course list above or from other courses. The courses do not necessarily have to include cancer-related content, but must have relevance to the field. The courses will be chosen in consultation with the student's mentor and must be approved by the Program Committee and the Graduate Program Director.

## 11.1.7 Otolaryngology – Head and Neck Surgery

### 11.1.7.1 Location

Department of Otolaryngology – Head and Neck Surgery  
 MUHC (Royal Victoria Hospital)  
 1001 Boul. Decarie, D05.5709  
 Montreal QC H4A 3J1  
 Canada  
 Telephone: 514-934-1934, ext. 36386  
 Website: [mcgill.ca/ent](http://mcgill.ca/ent)

### 11.1.7.2 About Otolaryngology – Head and Neck Surgery

The Master of Science degree offered by the Department of Otolaryngology – Head and Neck Surgery provides inter-disciplinary training for clinical or basic science research in Otolaryngology. Master's programs can include research on normal function and disease of head and neck structures: otology, neuro-otology, laryngology, rhinology, oncology, surgery, auditory-vestibular sciences, middle-ear modelling, oto-toxicity, genomics, infection, thyroid disease, or genetics.

#### *section 11.1.7.4: Master of Science (M.Sc.) Otolaryngology (Thesis) (45 credits)*

The master's program is intended for those having with a strong interest in otolaryngology research (e.g., Otolaryngologists, physicians, Ph.D.s, dentists, therapists, veterinarians, medical professionals, engineering or science undergraduates, etc.). The program addresses research questions using an interdisciplinary approach, combining methodologies of both the clinical sciences and the basic sciences. The master's program is unique in Canada and rare elsewhere. Graduates of the program can better treat ear-nose-throat diseases; they are better positioned to do, and to evaluate, research in Otolaryngology. They typically obtain the most highly sought positions in their fields..

### 11.1.7.3 Otolaryngology Admission Requirements and Application Procedures

#### 11.1.7.3.1 Admission Requirements

Admission to the M.Sc. program requires acceptance by a research supervisor, and the proposed program must be approved by the Department.

Applicants require a strong interest in otolaryngology research. They can be otolaryngologists, physicians, Ph.D.s, dentists, therapists, veterinarians, medical professionals, engineering, or science undergraduates, among others.

The results of the Test of English as a Foreign Language (TOEFL) (minimum of 86 on the Internet-based test—iBT) with each component score not less than 20 is required for 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).

#### 11.1.7.3.2 Application Procedures

McGill's online application form for graduate program candidates is available at [mcgill.ca/gradapplicants/apply](http://mcgill.ca/gradapplicants/apply).

See [University Regulations & Resources](#) > Graduate > Graduate Admissions and Application Procedures > : [Application Procedures](#) for detailed application procedures.

Prospective students should contact research supervisors individually.

#### 11.1.7.3.2.1 Additional Requirements

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

- Curriculum Vitae
- Personal Statement
- Acceptance by a research supervisor, possibly after Departmental coordination

#### 11.1.7.3.3 Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Department of Otolaryngology 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 [mcgill.ca/gps/contact/graduate-program](http://mcgill.ca/gps/contact/graduate-program).

Information on application deadlines is available at [mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines](http://mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines).

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

#### 11.1.7.4 Master of Science (M.Sc.) Otolaryngology (Thesis) (45 credits)

##### Thesis Courses (30 credits)

OTOL 690	(3)	M.Sc. Thesis 1
OTOL 691	(3)	M.Sc. Thesis 2
OTOL 692	(6)	M.Sc. Thesis 3
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)	Biostats for Health Sciences
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or equivalent.

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

#### 11.1.8 Pathology

##### 11.1.8.1 Location

Department of Pathology  
Duff Medical Building  
3775 University Street, Room B4  
Montreal QC H3A 2B4  
Canada  
Telephone: 514-398-3045

Email: [gradstudies.pathology@mcgill.ca](mailto:gradstudies.pathology@mcgill.ca)

Website: [mcgill.ca/pathology](http://mcgill.ca/pathology)

### 11.1.8.2 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 of 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 new knowledge of benefit to many other disciplines. Research on disease may target any of the organ systems, in normal and abnormal conditions, and studies may be conducted from a structural, functional, or molecular perspective at any level—from the intact organism down to specific components of the individual cell. Research in pathology often provides a unique link to human data, with an opportunity to translate experimental research into improved methods of diagnosis and therapy.

The Graduate Studies Program in the Department of Pathology has been designed to achieve three major goals:

1. To train students in the design, performance, interpretation, and documentation of laboratory research by guiding them as they carry out a thesis project in one of the many sub-disciplines of pathology.
2. To ensure that students have a comprehensive knowledge of biomedical science, with an advanced and up-to-date understanding of pathology. In addition to the scientific component, Ph.D. candidates should also become familiar with the general principles of diagnostic pathology. (Foreign medical graduates should be aware that this level of conceptual knowledge regarding diagnostic procedures is **not** adequate preparation for clinical employment and those wishing to practise Pathology as a medical specialty should apply for residency training rather than graduate studies.)
3. To provide initial training in effective techniques of scientific communication: organizing and delivering lectures and research seminars; preparing and evaluating manuscripts and grant applications.

The Pathology Department offers research training in a wide variety of areas such as:

- Cancer research, including the fundamental biology of breast cancer, ovarian cancer

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

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

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.

- **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), with each component score not less than 20, or 6.5 on the IELTS test

and

*Master of Science: Psychiatry (thesis)*

- A B.Sc., B.A., B.N., or M.D. degree
- Demonstration of financial support through a scholarship/award and/or by the student's supervisor

*Doctor of Philosophy: Mental Health*

- A M.Sc., or M.A. degree
- The student's statement of purpose for seeking a Ph.D.
- Confirmation of supervision, including confirmation of funding from the supervisor or from an external scholarship

### 11.1.9.3.2 Application Procedures

McGill's online application form for graduate program candidates is available at [mcgill.ca/gradapplicants/apply-now](http://mcgill.ca/gradapplicants/apply-now).

See [University Regulations & Resources](#) > Graduate > Graduate Admissions and Application Procedures > : [Application Procedures](#) for detailed application procedures.

#### 11.1.9.3.2.1 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 [mcgill.ca/psychiatry/education/graduate-program/prospective-students/msc-mental-health/application-steps](http://mcgill.ca/psychiatry/education/graduate-program/prospective-students/msc-mental-health/application-steps))
- Written Confirmation of Supervision form (see Department [mcgill.ca/psychiatry/education/graduate-program/prospective-students/msc-mental-health/application-steps](http://mcgill.ca/psychiatry/education/graduate-program/prospective-students/msc-mental-health/application-steps)) from the proposed research supervisor

### 11.1.9.3.3 Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Department of Psychiatry 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 [mcgill.ca/gps/contact/graduate-program](http://mcgill.ca/gps/contact/graduate-program).

Information on application deadlines is available at [mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines](http://mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines).

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

### 11.1.9.4 Master of Science (M.Sc.) Mental Health (Thesis) (45 credits)

The M.Sc. in Mental Health provides training in research methodology related to psychiatry and mental health topics and entails the completion of a thesis research project.

#### Thesis Courses (36 credits)

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

#### Complementary Courses (9 credits)

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

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

### 11.1.9.5 Doctor of Philosophy (Ph.D.) Mental Health

The Ph.D. in Mental Health, which is rooted in a strong tradition of multidisciplinary research approaches, focuses on the development of mental health

The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

#### Required Courses (6 credits)

PSYT 605	(3)	History and Philosophy of Psychiatry
PSYT 606	(3)	Mental Illness: Symptoms Diagnostics and Determinants
PSYT 701	(0)	Comprehensive Exam Mental Health

#### Complementary Courses (3 credits)

3 credits from the following or 3 credits of 500 level or higher from another unit chosen in consultation with the student's academic advisor or supervisor:

PSYT 500	(3)	Advances: Neurobiology of Mental Disorders
PSYT 515	(3)	Advanced Studies in Addiction
PSYT 620	(3)	Trends in Clinical Psychiatry
PSYT 625	(3)	Qualitative Research in Health Care
PSYT 630	(3)	Statistics for Neurosciences
PSYT 633	(3)	Social and Cultural Research Methods
PSYT 682	(3)	Psychosocial Issues of Disease
PSYT 696	(3)	Special Topics in Psychiatry
PSYT 711	(3)	Cultural Psychiatry
PSYT 713	(3)	Psychiatric Epidemiology

### 11.1.10 Surgical and Interventional Sciences

#### 11.1.10.1 Location

Surgical and Interventional Sciences (formerly Experimental Surgery)  
 Montreal General Hospital  
 1650 Cedar Avenue, T5-110  
 Montreal QC H3G 1A4  
 Graduate Program Coordinator, Ph.D. program: Sharon Turner [gradstudies.surgery@mcgill.ca](mailto:gradstudies.surgery@mcgill.ca)  
 Student Affairs Coordinator, M.Sc. thesis program: Laura Epure [surgicalresearch.med@mcgill.ca](mailto:surgicalresearch.med@mcgill.ca)  
 Program Administrator, M.Sc. thesis program (on assignment): 514-396-2190.  
 Website: [mcgill.ca/surgicalandinterventionalsciences](http://mcgill.ca/surgicalandinterventionalsciences)

#### 11.1.10.2 About Surgical and Interventional Sciences

Please note: In 2024, Experimental Surgery was renamed Surgical and Interventional Sciences.

Surgical and Interventional Sciences division offers graduate-level training leading to an **M.Sc.** or **Ph.D.**. At the master's level, in addition to the core program, those who are interested have a new opportunity to choose a concentration in Surgical Innovation, Surgical Education, or Global Surgery. The Surgical and Interventional Sciences division is responsible for the administration of the graduate programs and allows excellent opportunities for training under the supervision of professors located in the Research Institute of the McGill University Health Centre or other McGill teaching hospitals. The scope of the research and close connections with other Montreal research centres and McGill departments provide ample opportunities for collaboration. Research in the Department covers a wide spectrum, including injury, repair, recovery, tissue engineering, transplantation, fibrosis, cancer and stem cell biology, biomechanics, organ failure, surgical stimulation, surgical innovation, education, and evaluative/outcomes research.

For those interested in exploring the clinical technology sector, we also offer both a **Graduate Certificate** and **Graduate Diploma** in Surgical Innovation.

Please consult our department page for more information on [finding a supervisor](#).

#### ***section 11.1.10.4: Master of Science (M.Sc.) Surgical and Interventional Sciences (Thesis) (45 credits)***

The M.Sc. core program is intended for students wishing to pursue careers in academia, the medical field, 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.









**11.1.10.6 Master of Science (M.Sc.) Surgical and Interventional Sciences (Thesis): Global Surgery (45 credits)**

The M.Sc. in Surgical and Interventional Sciences; Global Surgery emphasizes health care needs

specifically within the surgical field in resource-limited settings. It comprises three main pillars: research, education, and mentorship. The program involves extensive research work, the design and implementation of innovative approaches in surgical care and injury surveillance, that advance the surgical capacities in low and middle income countries. The program offers global surgical endeavours allowing professionals from partner countries and Canada to engage in a learning and knowledge transfer experience. The program provides the opportunity to engage in international research projects including injury epidemiology surveillance and assessment of surgical access through the study of databases. The thesis must be relevant to global surgery.

**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 (9 credits)**

EPIB 507	(3)	Biostats for Health Sciences
EPIB 521	(3)	Regression Analysis for Health Sciences
EXSU 602	(3)	Knowledge Management 2

**Complementary Courses (6 credits)**

6 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 Advisory Committee to take additional courses.

**11.1.10.7 Master of Science (M.Sc.) Surgical and Interventional Sciences (Thesis): Surgical Education (45 credits)**

The M.Sc. in Surgical and Interventional Sciences; 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, 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 (6 credits)**

EDPH 689	(3)	Teaching and Learning in Higher Education
EXSU 603	(3)	Surgical Education Foundations

**Complementary Courses (9 credits)**

3 credits from the following:

EDPE 575	(3)	Statistics for Practitioners
EDPE 637	(3)	Issues in Health Professions Education
EXSU 606	(3)	Statistics for Surgical Research

And:

6 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.

**11.1.10.8 Master of Science (M.Sc.) Surgical and Interventional Science (Thesis): Surgical Innovation (45 credits)**

The M.Sc. in Surgical and Interventional Sciences; Surgical Innovation program focuses on hands-on learning experience and the skills necessary for the creation of novel, needs driven and marketable prototypes used in development of novel surgical and medical devices. Identification of clinical needs and innovate solutions.

**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 619	(3)	The Hospital Environment
EXSU 620	(3)	Surgical Innovation 1
EXSU 621	(3)	Surgical Innovation 2

And:

3 credits from the following:

EDPE 575	(3)	Statistics for Practitioners
EPIB 507	(3)	Biostats for Health Sciences
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.

**11.1.10.9 Master of Science (M.Sc.)Surgical and Interventional Sciences (Thesis): Surgical Outcomes Research (45 credits)**

The M.Sc. in Surgical and Interventional Sciences; Surgical Outcomes Research program focuses on the science of measuring and improving the outcomes of surgical patients. The program addresses research methods, biostatistics, and strategies to measure and improve postoperative outcomes. The thesis component of the program must focus on a topic in the field of surgical outcomes research.

**Required Courses (33 credits)**

EXSU 610	(3)	Surgical Outcomes Research Foundations
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

**Complementary Courses (12 credits)**

3 credits from the following:

EPIB 600	(3)	Clinical Epidemiology
EXMD 600	(3)	Principles of Clinical Research

3 credits from the following:

- |          |     |                               |
|----------|-----|-------------------------------|
| EPIB 507 | (3) | Biostats for Health Sciences  |
| EXMD 634 | (3) | Quantitative Research Methods |

6 credits from the following:

- |          |     |   |
|----------|-----|---|
| EPIB 521 | (3) | Regression Analysis for Health Sciences |
|          | (3) | Knowledge Synthesis                     |

EPIB 681	(3)	Global Health: Epidemiological Research
EXMD 609	(3)	Cellular Methods in Medical Research
EXMD 610	(3)	Molecular Methods in Medical Research
EXSU 505	(3)	Trends in Precision Oncology
EXSU 601	(3)	Knowledge Management 1
EXSU 603	(3)	Surgical Education Foundations
EXSU 605	(3)	Biomedical Research Innovation
EXSU 620	(3)	Surgical Innovation 1
EXSU 684	(3)	Signal Transduction
FMED 525	(3)	Foundations of Translational Science
FMED 619	(3)	Program Management in Global Health and Primary Health Care
ONCO 611	(3)	Proteomics for Precision Medicine
ONCO 615	(3)	Principles and Practice of Clinical Trials
ONCO 625	(3)	Quality Improvement Principles and Methods
ONCO 635	(3)	Qualitative and Psychosocial Health Research
ONCO 645	(3)	Seminars in Global Oncology
PHGY 517	(0)	
PHGY 518	(3)	Artificial Cells
PHGY 550	(3)	Molecular Physiology of Bone
PPHS 511	(3)	Fundamentals of Global Health
PPHS 528	(3)	Economic Evaluation of Health Programs
PPHS 529	(3)	Global Environmental Health and Burden of Disease

### Electives (15 credits)

15 credits at the 500 level or higher may be chosen from the course list above or from other courses. The courses should have a surgery or oncology related theme. Selections to be approved by the director of the program or adviser.

### 11.1.10.11 Master of Science (M.Sc.) Surgical and Interventional Sciences (Non-Thesis) (45 credits)

This M.Sc. in Surgical and Interventional Sciences; Non Thesis offers training in core fundamentals of modern surgical research. The program is flexible and provides the core disciplines in more specific areas such as global surgery, innovation, education, or other disciplines. The individual research interests of the faculty cover a wide spectrum, from injury, repair, recovery, tissue engineering, transplantation, fibrosis, cancer and stem cell biology, biomechanics, and organ failure, to surgical simulation, surgical innovation, education, and evaluative/outcomes research. Importantly, the project(s) is performed in a collaborative spirit with basic and clinician scientists working together using interdisciplinary approaches to solve the most challenging problems in the field of surgery.

### Required Courses (12 credits)

EXSU 500	(3)	Artificial Intelligence in Medicine
EXSU 602	(3)	Knowledge Management 2
EXSU 623	(6)	Surgery Research Project 2

### Complementary Courses (24 credits)

3 credits selected from:

EDPE 575	(3)	Statistics for Practitioners
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EPIB 507	(3)	Biostats for Health Sciences
EXSU 606	(3)	Statistics for Surgical Research

Or 3 credits of a research design or statistics course at the 500 level or higher.

3 credits selected from:

EXSU 603	(3)	Surgical Education Foundations
FMED 525	(3)	Foundations of Translational Science

6 credits selected from the following\*:

EDPE 637	(3)	Issues in Health Professions Education
EDPH 689	(3)	Teaching and Learning in Higher Education
EPIB 521	(3)	Regression Analysis for Health Sciences
EXSU 505	(3)	Trends in Precision Oncology
EXSU 620	(3)	Surgical Innovation 1
EXSU 621	(3)	Surgical Innovation 2
PPHS 528	(3)	Economic Evaluation of Health Programs

\*Note: Students either take EDPE 637 and EDPH 689; or EPIB 521 and PPHS 528; or EXSU 620 and EXSU 621; or EXSU 505 and any course in the course grouping av

**Elective Courses (9 credits)**

9 credits taken from 500-, 600-, or 700-level courses at the University, which may include courses from the list above, will be taken with the approval of the director of the program/adviser.

**11.1.10.12 Doctor of Philosophy (Ph.D.) Surgical and Interventional Sciences**

The Ph.D. in Surgical and Interventional Sciences focuses on the field of surgery and interventions. The program emphasizes research that involves innovative surgical techniques, patient management strategies, and the application of new technological advances in the medical field.

**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 w



9 credits in:

EXSU 619	(3)	The Hospital Environment
EXSU 620	(3)	Surgical Innovation 1
EXSU 621	(3)	Surgical Innovation 2

And:

3 credits from the following:

EDPE 575	(3)	Statistics for Practitioners
EPIB 507	(3)	Biostats for Health Sciences
EXSU 606	(3)	Statistics for Surgical Research

Some courses may be substituted with equivalents if timetabling requires it.

### Elective Course (3 credits)

3 credits at the 500 level or higher, taken in consultation with the program director/adviser.

### 11.1.10.14 Graduate Diploma (Gr. Dip.) Surgical Innovation (30 credits)

The cores of this 30-credit program are two-fold. Firstly, two innovation courses are offered by the McGill Department of Experimental Surgery (EXSU 620-Surgical Innovation & 621-Surgical Innovation 2) and supporting courses are delivered by the McGill Department of Surgery with some sessions in those courses provided by external partners: Local Industry (Regulatory & IP), the John Molson School of Business (JMSB) (lean start-up), Concordia University (software design), and L'École de technologie supérieure (ETS) (prototyping). Secondly, fundamental business and management courses provided by the School of Continuing Studies (McGill) and JMSB are taken concurrently and reinforce the innovation project team experience. Students embark on a hospital-based needs finding process by observing all aspects of clinical activity in their focus themes. The trainees learn basic prototyping skills, start-up organization, and project management. This is supplemented by a basic statistics course and an introduction to the current status of biomedical research innovation. This graduate diploma then gives a business-oriented training in the surgical innovation process.

### Required Courses (15 credits)

12 credits in:

CORG 556	(3)	Managing and Engaging Teamwork
EXSU 619	(3)	The Hospital Environment
EXSU 620	(3)	Surgical Innovation 1
EXSU 621	(3)	Surgical Innovation 2

And:

3 credits from the following:

EDPE 575	(3)	Statistics for Practitioners
EPIB 507	(3)	Biostats for Health Sciences
EXSU 606	(3)	Statistics for Surgical Research

### Complementary Courses (9 credits)

9 credits from the following:

CACC 520	(3)	Accounting for Management
CMR2 642	(3)	Marketing Principles and Applications
CPL2 510	(3)	Communication and Networking Skills

Or:

9 credits of graduate-level courses taken at Concordia University, chosen in consultation with the program director/adviser.

**Elective Courses (6 credits)**

6 credits at the 500 lever or higher, taken in consultation with the program director/adviser.

Some courses may be substituted with equivalents at the 500 level or higher if timetabling or background of the student requires it, e.g., prior qualification in accounting.

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**11.2 Biomedical Sciences****11.2.1 Location**

School of Biomedical Sciences  
3605 Rue de la Montagne  
Montreal QC H3G 2M1  
Website: [mcgill.ca/medhealthsci/education/our-schools-1829-present/school-biomedical-sciences](http://mcgill.ca/medhealthsci/education/our-schools-1829-present/school-biomedical-sciences)

**11.2.2 Anatomy and Cell Biology****11.2.2.1 Location**

Department of Anatomy and Cell Biology  
Strathcona Anatomy and Dentistry Building  
3640 University Street, Rooms M21-M31  
Montreal QC H3A 0C7  
Canada  
Telephone: 514-398-6350  
Fax: 514-398-5047  
Website: [mcgill.ca/anatomy](http://mcgill.ca/anatomy)

**11.2.2.2 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;
- tumour cell biology;
- developmental biology;
- neurobiology; and
- aging.

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

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

**Funding**

The minimum yearly stipend for Canadian Citizens and Permanent Residents is \$20,000 for MSc students, and \$22,000 for Ph.D. students. M.Sc. and Ph.D. International students will receive a minimum yearly stipend of \$24,000 to compensate for tuition fees higher than Canadian Citizens, Permanent Residents, and Quebec-resident students. The minimum stipend for International students is guaranteed for the duration of the residency period in which students pay their highest fees.

All students are financially supported either by their supervisor or through fellowships or scholarships. Prospective students are urged to make every effort to secure their own funding. Applications may be made for a variety of fellowships administered by the University or by various federal, provincial, or private agencies. For more information on fellowships and awards, see the [Graduate and Postdoctoral Studies website](#).

### **Departmental Seminars**

Nationally and internationally recognized scientists present their research findings to the Department at a regular [seminar series](#) throughout the academic year. On a regular basis, graduate students also present their own research progress and results to other students, postdoctoral fellows, and researchers in the Department through the Research in Progress Seminar Series.

#### ***section 11.2.2.4: Master of Science (M.Sc.) Cell Biology (Thesis) (45 credits)***

Graduate research activities leading to the presentation of the M.Sc. Thesis involve original experimental work in one of the areas being actively investigated by the Department's research supervisors. Our graduate program offers training in a personal, unique, and multidisciplinary environment in a top Canadian university with worldwide recognition. The thesis-based Master's training is intended for students with a B.Sc. or B.A. 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. Students are trained in how to address biological problems with an integrative understanding of cell biology by conducting hypothesis-driven projects. The training provor p alsohe Dese training pablerviquii rg0 Deriv

### 11.2.2.3.1 Additional Requirements

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

- Agreement of a faculty member to act as Thesis Supervisor and to provide adequate financial support

### 11.2.2.3.3 Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Department of Anatomy and Cell Biology 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 [mcgill.ca/gps/contact/graduate-program](http://mcgill.ca/gps/contact/graduate-program).

Information on application deadlines is available on our [Graduate Webpage](#).

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

### 11.2.2.4 Master of Science (M.Sc.) Cell Biology (Thesis) (45 credits)

#### Thesis Course (24 credits)

ANAT 698	(24)	M.Sc. Thesis Research 1
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#### 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 690D1	(3)	Cell and Developmental Biology
ANAT 690D2	(3)	Cell and Developmental Biology

#### Human Systems Biology Stream

\*\* This stream is currently under review. \*\*

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 Identification
BMDE 519	(3)	Biomedical Signals and Systems
BTEC 501	(3)	Bioinformatics
COMP 564	(3)	Advanced Computational Biology Methods and Research
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

NEUR 502 (3) Basic and Clinical Aspects of Neuroimmunology

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

### 11.2.2.5 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 field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

#### Required Courses

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

## 11.2.3 Biochemistry

### 11.2.3.1 Location

Department of Biochemistry  
 McIntyre Medical Sciences Building  
 3655 Promenade Sir-William-Osler  
 Montreal QC H3G 1Y6  
 Canada  
 Christine Laberge: Student Affairs Officer/Graduate Program Coordinator  
 Telephone: 514-398-2423  
 Email: [christine.laberge@mcgill.ca](mailto:christine.laberge@mcgill.ca)  
 Website: [mcgill.ca/biochemistry](http://mcgill.ca/biochemistry)

### 11.2.3.2 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;
- cancer.

Specialized graduate training programs in Chemical Biology, Human Systems Biology (Bioinformatics), *Cancer Research/Oncology*, and *Structural Biology* are available. Laboratories are located in the new Bellini Life Sciences Building and Rosalind and Morris Goodman Cancer Research Institute, and the renovated McIntyre Medical Sciences Building, together comprising one of the best-equipped research facilities in Canada. The outstanding quality of our research has been recognized by recent awards including a Gairdner Award, two Killam Prizes, and eight Canada Research Chairs.

#### Funding

Master's students receive a minimum stipend of \$20,000 annually; doctoral students receive \$22,000. The Department is committed to helping graduate students secure adequate funding for their research. All students are financially supported either by their supervisor or through fellowships or scholarships.

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*section 11.2.3.8: Doctor of Philosophy (Ph.D.) Biochemistry: Bioinformatics*

Students successfully completing the Bioinformatics option at the Ph.D. level will be fluent in the concepts, language, approaches, and limitations of the field, and hav

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

#### 11.2.3.3.2 Application Procedures

McGill's online application form for graduate program candidates is available at [mcgill.ca/gradapplicants/apply](https://mcgill.ca/gradapplicants/apply).

See [University Regulations & Resources](#) > [Graduate](#) > [Graduate Admissions and Application Procedures](#) > : [Application Procedures](#) for detailed application procedures. Information for prospective students is also available on the Department of Biochemistry's [website](#).

All applicants are advised to contact potential research supervisors during or before the application process since supervisor acceptance is required. Information about the research interests of faculty members can be found at [mcgill.ca/biochemistry/research](https://mcgill.ca/biochemistry/research) and [mcgill.ca/biochemistry/about-us/department/faculty-members](https://mcgill.ca/biochemistry/about-us/department/faculty-members).

##### 11.2.3.3.2.1 Additional Requirements

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

- Curriculum Vitae
- Personal Statement
- Agreement of a faculty member to act as Thesis Supervisor and to provide adequate financial support
- Acceptance by a Bioinformatics or Chemical Biology research director

#### 11.2.3.3.3 Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Department of Biochemistry 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 [mcgill.ca/gps/contact/graduate-program](https://mcgill.ca/gps/contact/graduate-program).

Information on application deadlines is available at [mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines](https://mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines).

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

#### 11.2.3.4 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
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##### Complementary Courses\* (6 credits)

At least 3 credits must be chosen from the following:

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
BIOC 670	(3)	Biochemistry of Lipoproteins
EXMD 615	(3)	Essentials of Glycobiology
EXMD 635D1	(3)	Experimental/Clinical Oncology
EXMD 635D2	(3)	Experimental/Clinical Oncology

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



\* 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.

### 11.2.3.5 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 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
BIOC 670	(3)	Biochemistry of Lipoproteins
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.

### 11.2.3.6 Master of Science (M.Sc.) Biochemistry (Thesis): Chemical Biology (47 credits)

#### Thesis Courses (33 credits)

BIOC 695	(6)	Thesis Research 1 (Chemical - Biology)
BIOC 698	(12)	Thesis Research 2

BIOC 699 (15) Thesis Research 3

**Required Course (3 credits)**

BIOC 696 (3) Seminars in Biochemistry

**Complementary Courses\* (11 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

At least 3 credits from the following:

CHEM 502 (3) Advanced Bio-Organic Chemistry

CHEM 503 (3) Drug Discovery

PHAR 503 (3) Drug Discovery and Development 1

and at least 3 credits from the following:

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

BIOC 670 (3) Biochemistry of Lipoproteins

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 11 complementary course credits from the following list:

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

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.

### 11.2.3.7 Doctor of Philosophy (Ph.D.) Biochemistry

#### Thesis

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

#### Required Courses (3 credits)

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

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

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

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

#### Complementary Courses\*\*\* (6 credits)

At least 3 credits selected from:

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
BIOC 670	(3)	Biochemistry of Lipoproteins
EXMD 615	(3)	Essentials of Glycobiology
EXMD 635D1	(3)	Experimental/Clinical Oncology
EXMD 635D2	(3)	Experimental/Clinical Oncology

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

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

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

### 11.2.3.8 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

BIOC 701**	(0)	Research Seminar 1
BIOC 702**	(0)	Ph.D. Thesis Proposal
BIOC 703**	(0)	Ph.D. Seminar
COMP 616D1	(1.5)	Bioinformatics Seminar
		Bioinformatics Seminar

BIOC 690	(1)	Seminars in Chemical Biology 4
BIOC 696*	(3)	Seminars in Biochemistry
BIOC 701**	(0)	Research Seminar 1
BIOC 702**	(0)	Ph.D. Thesis Proposal
BIOC 703**	(0)	Ph.D. Seminar

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

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

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

### Complementary Courses\*\*\* (9 credits)

At least 3 credits from the following:

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

At least 3 credits from the following:

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
BIOC 670	(3)	Biochemistry of Lipoproteins
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 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
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.

## 11.2.4 Biomedical Engineering

### 11.2.4.1 Location

Department of Biomedical Engineering  
Duff Medical Building  
3775 University Street, Room 316  
Montreal QC H3A 2B4  
Canada  
Telephone: 514-398-6736  
Website: [mcgill.ca/bme](http://mcgill.ca/bme)

### 11.2.4.2 About Biomedical Engineering

Excellent laboratory facilities for basic and applied research are available in the Department and in the laboratories of associated staff 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 nutraceuticals;
- medical imaging;
- microfluidics;
- nanomedicine and nanotechnology;
- bioinformatics in genomics and proteomics.

Staff members are also active in more applied research related to the development of quantitative analysis tools and instruments for biomedical research. Areas of activity here include: signal analysis, system identification, modelling, simulation and parameter estimation, image processing, pattern recognition, ultrasound, and biorobotics.

#### *section 11.2.4.4: Master of Science, Applied (M.Sc.A.) Translational Biomedical Engineering (Non-Thesis) (45 credits)*

The M.Sc.(Applied) in Translational Biomedical Engineering; Non-Thesis is a full-time specialized 13- to 16-month professional program in translation biomedical engineering. This is an intensive program that focusses on the biomedical engineering industry through a comprehensive curriculum covering essential skills and knowledge needed to translate biomedical engineering research into clinical and commercial solutions.

The program consists of three main components that are unique to the translational process in biomedical engineering, including: 1) translational course on intellectual property, regulatory affairs, quality management systems, clinical trials and reimbursement; 2) fundamental science courses in biomedical engineering; and 3) an experiential component, comprising of a closely supervised 4-month internship in the biomedical engineering industry.

None of the courses taken in the Graduate Certificate in Translational Biomedical Engineering can be credited towards the M.Sc.(Applied) once the Graduate Certificate has been awarded.

*section 11.2.4.5: Graduate Certificate (Gr. Cert.) Translational Biomedical Engineering (15 credits)*

This program will enable students to translate advances in biomedical engineering research to clinical and commercial solutions. Students will learn the complementary skills needed to take early-stage research results from the bench to the bedside and bridge the gap between invention and product innovation.





BMDE 501 (3) Selected Topics in Biomedical Engineering

#### Biomedical Signals and Systems

BMDE 502 (3) BME Modelling and Identification  
BMDE 503 (3) Biomedical Instrumentation  
BMDE 512 (3) Finite-Element Modelling in Biomedical Engineering  
BMDE 519 (3) Biomedical Signals and Systems

#### Medical Imaging

BIEN 530 (3) Imaging and Bioanalytical Instrumentation  
BMDE 610 (3) Functional Neuroimaging Fusion  
BMDE 650 (3) Advanced Medical Imaging  
MDPH 607 (3) Medical Imaging

#### Biomaterials and Tissue Engineering

BIEN 510 (3) Engineered Nanomaterials for Biomedical Applications  
BMDE 504 (3) Biomaterials and Bioperformance  
BMDE 505 (3) Cell and Tissue Engineering

#### Biosensors and Devices

BIEN 550 (3) Biomolecular Devices  
BIEN 560 (3) Design of Biosensors  
BMDE 503 (3) Biomedical Instrumentation  
BMDE 508 (3) Introduction to Micro and Nano-Bioengineering

#### Translational Biomedical Engineering

BMDE 656 (3) Medical Device Development Process

## 11.2.5 Human Genetics

### 11.2.5.1 Location

Department of Human Genetics  
Strathcona Anatomy & Dentistry Building  
3640 University Street, Room 2/38F  
Montreal QC H3A 0C7  
Canada  
Telephone: 514-398-4198  
Fax: 514-398-2430  
Email: [dept.humangenetics@mcgill.ca](mailto:dept.humangenetics@mcgill.ca)  
Website: [mcgill.ca/humangenetics](http://mcgill.ca/humangenetics)

### 11.2.5.2 About Human Genetics

The Department of Human Genetics provides a unified curriculum of study in genetics. Areas of specialization include:  
11.2.5.2

- 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, pediatrics, pharmacology, psychiatry, etc.) within the Faculties of Science and Medicine and Health Sciences. 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 Victor Phillip Dahdaleh Institute of Genomic Medicine, the Centre for Genomics and Policy, the Lady Davis Research Institute, the Douglas Hospital Research Centre and the Goodman Cancer Institute.

**M.Sc. and Ph.D. Degrees in the Department of Human Genetics**

The Department of Human Genetics of

### ***section 11.2.5.7: Master of Science (M.Sc.) Genetic Counselling (Non-Thesis) (48 credits)***

The M.Sc. in Genetic Counselling program provides the academic foundation and clinical training required for the contemporary practice of genetic counselling. Genetic counsellors are health professionals who provide information and support to families who have members with birth defects or genetic disorders and to families who may be at risk for a variety of inherited conditions. Genetic counsellors investigate the problem present in the family, analyze inheritance patterns and risks of recurrence, and review available options with the family. Some counsellors also work in administrative and academic capacities, and many engage in research activities.

The curriculum includes a variety of required courses in human genetics and other departments, and 40 weeks of supervised clinical training spread over four semesters. Graduates will be eligible to sit for both the Canadian Association of Genetic Counsellors and the American Board of Genetic Counselling certification examinations. Upon completion of the M.Sc. in Genetic Counselling program, students will demonstrate competence in, or satisfactory knowledge of: principles of human genetics, including cytogenetics, biochemical, molecular, and population genetics; methods of interviewing and counselling, and the dynamics of human behaviour in relation to genetic disease; and social, legal, and ethical issues in genetics. Enrolment will be limited to four students.

### ***section 11.2.5.8: Doctor of Philosophy (Ph.D.) Human Genetics***

The Department of Human Genetics provides a unified curriculum of study in genetics. Areas of specialization include: biochemical genetics, genetics of development, animal models of human diseases, cancer genetics, molecular pathology, gene therapy, genetic dissection of complex traits, genetics of infectious and inflammatory diseases, non-Mendelian genetics, bioinformatics, behavioural genetics, neurogenetics, bioethics, and genomics. Many of our faculty hold cross-appointments in various departments (including: biochemistry, biology, cardiology, medicine, microbiology, immunology, neurology, pathology, pediatrics, 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 11.2.5.9: Doctor of Philosophy (Ph.D.) Human Genetics: Bioinformatics***

**\*\*This program is currently not offered.\*\***

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

**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.**

## **11.2.5.3 Human Genetics Admission Requirements and Application Procedures**

### **11.2.5.3.1 Admission Requirements**

#### **M.Sc. in Genetic Counselling**

##### **Prerequisites:**

- Bachelor's or medical degree – minimum cumulative grade point average (CGPA) of 3.2 out of 4.0, or 3.4 out of 4.0 in the last two full-time academic years;
- Recent (within the past five years) university-level courses in molecular/cell biology, biochemistry, advanced genetics (preferably human), statistics, and a minimum of two courses in psychology;
- Some experience (either paid or volunteer) working with adults in a counselling or advisory capacity, ideally in a crisis setting.

For detailed information, visit the [Genetic Counselling Program website](#).

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

##### **Prerequisites:**

- B.Sc. – minimum CGPA of 3.2 out of 4.0;
- A minimum of 6 credits in cellular and molecular biology or biochemistry, 3 credits in mathematics or statistics, and 3 credits in genetics.f studygenetics.f studygen

Applicants to graduate studies whose mother tongue is not English, and who have not completed an undergraduate or graduate degree from a recognized foreign institution where English is the language of instruction or from a recognized Canadian institution (anglophone or francophone), must submit a *TOEFL* or *IELTS* test score to McGill University. For TOEFL, a minimum score of 100 on the Internet-based test (iBT) is required, with each component scoring 20 or higher. On the IELTS the minimum standard for consideration is 7.



**Note:** TOEFL scores must be sent electronically by the testing agency to McGill University using our institution code of 0935. Scanned copies of results or hard copies sent in the mail will not be entered as received in your application. IELTS scores also must be submitted electronically by the test centre to McGill University.

#### 11.2.5.3.2 Application Procedures

McGill's online application for graduate program candidates is available at [mcgill.ca/gradapplicants/apply](http://mcgill.ca/gradapplicants/apply).

See [University Regulations & Resources](#) > Graduate > Graduate Admissions and Application Procedures > : [Application Procedures](#) for detailed application procedures.

#### 11.2.5.3.3 Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Department of Human Genetics 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 [mcgill.ca/gps/contact/graduate-program](http://mcgill.ca/gps/contact/graduate-program).

Information on application deadlines is available at [mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines](http://mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines).

Applications for thesis programs submitted after these deadlines may be considered, if a suitable supervisor can be secured. However, 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. **No late applications or applications for Summer or Winter terms for the Genetic Counselling program will be considered under any circumstances.**

**Master of Science (M.Sc.) 8.1 Tf1 0 e Df11 305.153 500**

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

#### 11.2.5.5 Master of Science (M.Sc.) Human Genetics (Thesis): Bioinformatics (45 credits)

The M.Sc. in Human Genetics; Bioethics is a graduate thesis program that focuses on the fundamental questions about life and the interventions by healthcare in research, policy, and practice. The program promotes modern research methodologies, and the knowledge and techniques needed to apply a bioethical analysis to the base discipline of human genetics.

##### Thesis Courses (33 credits)

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

##### Required Courses (6 credits)

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
HGEN 692	(3)	Human Genetics

##### Complementary Courses (6 credits)

6 credits from the following courses:

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

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

#### 11.2.5.6 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:

CMPL 642	(3)	Law and Health Care
PHIL 643	(3)	Seminar: Medical Ethics

RELG 571 (3) Ethics, Medicine and Religion

**11.2.5.7 Master of Science (M.Sc.) Genetic Counselling (Non-Thesis) (48 credits)**

The M.Sc. in Genetic Counselling: Non-Thesis is a full-time professional program that focuses on the contemporary practice of genetic counselling and adapts to future developments in the dynamic field of medical genetics and genomics.

**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)	Introductory 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
	(0)	Managing Interprofessional Conflict

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 course.

HGEN 670	(3)	Advances in Human Genetics 1
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Note: The Graduate Advisory Committee may stipulate additional coursework depending on the background of the candidate.

### 11.2.5.9 Doctor of Philosophy (Ph.D.) Human Genetics: Bioinformatics

\*\* This program is currently not offered. \*\*

#### Thesis

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

#### Required Courses (6 credits)

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

#### Complementary Courses (6 credits)

\* Two courses from the following:

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

\* Note: Students who enter in Ph.D. 1 will need to take an additional 6 credits of complementary courses chosen from the departmental offerings listed for the Ph.D. in Human Genetics and/or from among 500-, 600-, or 700-level courses in the Faculties of Medicine or Science.

## 11.2.6 Microbiology and Immunology

### 11.2.6.1 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](mailto:grad.microimm@mcgill.ca)  
 Website: [mcgill.ca/microimm](http://mcgill.ca/microimm)

### 11.2.6.2 About Microbiology and Immunology

The Department offers graduate programs leading to the degrees of **M.Sc.** and **Ph.D.** Each program is tailored to fit the needs and backgrounds of individual students. The graduate program is designed to offer students state-of-the-art training, concentrating on four key areas of research:

- cellular and molecular immunology;
- microbial physiology and genetics;
- molecular biology of viruses;
- 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 11.2.6.4: Master of Science (M.Sc.) Microbiology and Immunology (Thesis) (45 credits)*

The primary goal of this program is to provide students with unique opportunities to learn experimental designs and fundamental research techniques, and objectively synthesize information from scientific literature. These tools enable the students to focus on major research topics offered by the Department: molecular microbiology, mycology, microbial physiology, virology, genetics, immunology, drug design, and aspects of host-parasite relationships. Each M.Sc. student chooses their preferred major research area and research supervisor. Following an interview, the student is presented with a research topic and offered a studentship (amounts vary). Each student must register for our graduate courses (two seminars, two reading and conference courses). If pertinent to the student's research program, the research advisor 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 fast-track to 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 11.2.6.5: 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 v



See [University Regulations & Resources](#) > Graduate > Graduate Admissions and Application Procedures > : [Application Procedures](#) for detailed application procedures.

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

#### 11.2.6.3.1 Additional Requirements

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

- [Supervisor Confirmation Form](#)
- Personal Statement
- CV

#### 11.2.6.3.3 Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Department of Microbiology and Immunology 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 [mcgill.ca/gps/contact/graduate-program](http://mcgill.ca/gps/contact/graduate-program).

Information on application deadlines is available at [mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines](http://mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines).

Online applications and all required documents must be submitted prior to the application deadline.

#### 11.2.6.4 Master of Science (M.Sc.) Microbiology and Immunology (Thesis) (45 credits)

##### Thesis Courses (33 credits)

MIMM 697	(11)	Master's Research 1
MIMM 698	(11)	Master's Research 2
MIMM 699	(11)	Master's Research 3

##### Required Courses (6 credits)

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

##### Complementary Courses (6 credits)

Minimum 6 credits from:

MIMM 607	(3)	Biochemical Pathology
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
NEUR 502	(3)	Basic and Clinical Aspects of Neuroimmunology

Any life sciences-related 500-level or above course (3 credits). Department approval required.

\* Not offered in every academic year.

#### 11.2.6.5 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.

##### 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 ho

**Required Courses (9 credits)**

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

**Complementary Courses (9 credits)**

9 credits from the following:

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

OR

Any life sciences-related courses at the 500 level or higher. Departmental approval is required.

**11.2.7 Pharmacology and Therapeutics****11.2.7.1 Location**

Department of Pharmacology and Therapeutics  
McIntyre Medical Sciences Building  
3655 Promenade Sir-William-Osler, Room 1325  
Montreal QC H3G 1Y6  
Canada  
Telephone: 514-398-3623  
Fax: 514-398-2045  
Email: [gradstudies.pharmacology@mcgill.ca](mailto:gradstudies.pharmacology@mcgill.ca)  
Website: [mcgill.ca/pharma](http://mcgill.ca/pharma)

**11.2.7.2 About Pharmacology and Therapeutics**

The Department of Pharmacology and Therapeutics offers training leading to **M.Sc.** (Thesis) and **Ph.D.** degrees.

Pharmacology is a multidisciplinary science that deals with all aspects of drugs and their interactions with living organisms. Thus, pharmacologists study the physical and chemical properties of drugs, their biochemical and physiological effects, mechanisms of action, pharmacokinetics, and therapeutic and other uses. The Department offers broad exposure and training in both basic and clinical research in a range of areas of specialty, including:

- neuropharmacology;
- reproductive pharmacology;
- endocrine pharmacology;
- receptor pharmacology;
- cardiovascular pharmacology;
- cancer;
- developmental pharmacology;
- autonomic pharmacology;
- clinical pharmacology;
- biochemical pharmacology;
- molecular biology;
- toxicology.

The present 51 full and affiliate members of the Department have research laboratories located in the McIntyre Medical Sciences Building and in a variety of hospitals, institutes, and industry including the Douglas Hospital Research Centre, Allan Memorial Institute, Montreal Children's Hospital, Montreal

General Hospital, Montreal Heart Institute, Lady Davis Research Institute, Pfizer Canada, and MUHC Research Institute. The participation of researchers from both industry and government ensures the relevance of the Department's applications-oriented training programs.

**section 11.2.7.4: Master of Science (M.Sc.) Pharmacology (Thesis) (45 credits)**

The objective of the M.Sc. (Thesis) and Ph.D. degree training programs is to provide in-depth independent research experience in a specific area of pharmacology. 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.

**section 11.2.7.5: Master of Science (M.Sc.) Pharmacology (Thesis): Environmental Health Sciences (45 credits)**

The M.Sc. in Pharmacology: Environmental Health Sciences focuses on the interplay between the environment and health. Environmental health research is highly interdisciplinary; students will be given the opportunity to acquire a broad environmental perspective on exposure sciences, hazard screening methodologies, epidemiological approaches, health implications of environmental quality, and policy approaches.

**section 11.2.7.6: Doctor of Philosophy (Ph.D.) Pharmacology**

The objective of the M.Sc. (Thesis) and Ph.D. degree training programs is to provide in-depth independent research experience in a specific area of pharmacology. The program leading to a doctoral degree is designed to provide students the opportunity to acquire knowledge in pharmacology, to conduct an original research project, to analyze data, and to write a thesis. Students will also receive essential training in research professionalism and scientific communication.

**section 11.2.7.7: Doctor of Philosophy (Ph.D.) Pharmacology: Environmental Health Sciences**

The Ph.D. in Pharmacology: Environmental Health Sciences program is designed to train professionals for advanced research, teaching, and leadership positions in environmental health sciences. The Option will add a distinct focus on the interplay between the environment and health research. Students will acquire a broad environmental perspective, including exposure sciences, hazard screening methodologies, epidemiological approaches, health implications of environmental quality, and policy approaches.

**section 11.2.7.8: Graduate Certificate (Gr. Cert.) Biomedical Science Translational Research (15 credits)**

The Graduate Certificate in Biomedical Science Translational Research is an introduction to relevant clinical aspects of translating scientific discovery as a means of bridging the gap between research and application in clinical settings, while promoting future collaboration among scientists, clinicians, and clinician-scientists while promoting future collaboration. The program includes clinical mentorship.

**11.2.7.3 Pharmacology and Therapeutics Admission Requirements and Application Procedures**

**11.2.7.3.1 Admission Requirements**

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

Admission is based on a student's academic record, letters of assessment, and—whenever possible—interviews with staff members. Students are required to take the Graduate Record Examination Aptitude T





### Complementary Courses (3 credits)

3 credits from the following:

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

or the equivalent, upon approval by the Graduate Training Committee (GTC.)

### 11.2.7.8 Graduate Certificate (Gr. Cert.) Biomedical Science Translational Research (15 credits)

The Graduate Certificate in Biomedical Science Translational Research is an introduction to relevant clinical aspects of translating scientific discovery as a means of bridging the gap between research and application in clinical settings, while promoting future collaboration among scientists, clinicians and clinician-scientists while promoting future collaboration. The program includes clinical mentorship.

### Required Courses (12 credits)

FMED 525	(3)	Foundations of Translational Science
PHAR 522D1	(3)	Fundamentals of Disease Therapy
PHAR 522D2	(3)	Fundamentals of Disease Therapy
PHAR 524	(3)	Clinical Mentorship

### Complementary Courses (3 credits)

3 credits from:

BMDE 655	(3)	Biomedical Clinical Trials - Medical Devices
EPIB 507	(3)	Biostats for Health Sciences
EXMD 617	(1)	Workshop in Clinical Trials 1
EXMD 618	(1)	Workshop in Clinical Trials 2
EXMD 619	(1)	Workshop in Clinical Trials 3
EXMD 620	(1)	Clinical Trials and Research 1
EXMD 633	(3)	Clinical Aspects of Research in Respiratory Diseases
EXMD 640	(3)	Experimental Medicine Topic 1
PHAR 508	(3)	Drug Discovery and Development 3
PPHS 529	(3)	Global Environmental Health and Burden of Disease

1152.810.1 Physiology 1 0 0 1 433 140.64W 0 0 1 221.9490 0 171.36777cc74r-Osl2.241 560.884

#### 11.2.8.1 Location

Department of Physiology

McLo e3 Tm(Ph)Tj1 0 0 1 91t clinical 4.394 545.521 s 16ildTm3olincinal 4.394 54m.

### 11.2.8.2 About Physiology

The Physiology Department offers training leading to **M.Sc.** and **Ph.D.** degrees. The scope of the ongoing research, and close connections with the McGill teaching hospitals, offer excellent opportunities for collaborations with hospital-based scientists. Research in the Department covers a broad range of topics from systems neuroscience to molecular and cellular biology. Interests include studies of nuclear and membrane receptors, transporters, channels, and signal transduction pathways, to the broader integration of physiological systems (cardiovascular, respiratory, renal, endocrine, immune, and central nervous systems) using an array of molecular and cellular approaches as well as quantitative techniques in data collection, analysis, and mathematical modelling by computational means.

All graduate students in Physiology receive financial support. Any faculty or associate member who agrees to supervise a graduate student who does not hold a fellowship is financially responsible for that student. Students are encouraged to apply for a fellowship; further information is available on our department's [Awards and Financial Assistance](#) page.

#### *section 11.2.8.4: Master of Science (M.Sc.) Physiology (Thesis) (45 credits)*

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

#### *section 11.2.8.5: Master of Science (M.Sc.) Physiology (Thesis): Bioinformatics (45 credits)*

**\*\*This program is currently not offered.\*\***

The intention of the Bioinformatics option is to train M.Sc. students to become researchers in this interdisciplinary field. This includes the development of strategies for experimental design, the construction of tools to analyze datasets, the application of modelling techniques, the creation of tools for manipulating of bioinformatics data, the inte

### **11.2.8.3 Physiology Admission Requirements and Application Procedures**

#### **11.2.8.3.1 Admission Requirements**

Admission to the graduate program is based on an evaluation by the Graduate Student 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 official 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 fast track to the Ph.D. program after 12–18 months. 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 GPA of 3.4 in the last two years is required for an application to be considered.

The *GRE* General Test is no longer required.

#### **Language Requirements**

Test of English as a Foreign Language (*TOEFL*): minimum score of 86 on the Internet-based test with each component score not less than 20 OR IELTS (International English Language Testing System) with an overall band of 6.5 or greater. Only those whose mother tongue is English, who graduated from a North American institution (anglophone or francophone) or who completed an undergraduate or graduate degree at a foreign institution yr1.592 569 Tm(v)Tj1 0 5(North



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.

#### 11.2.8.5 Master of Science (M.Sc.) Physiology (Thesis): Bioinformatics (45 credits)

\*\* This program is currently not offered. \*\*

### 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

#### 11.2.8.6 Master of Science (M.Sc.) Physiology (Thesis): Chemical Biology (45 credits)

\*\* This program is currently not offered. \*\*

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 workshops, 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 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 Discovery
PHAR 503	(3)	Drug Discovery and Development 1

**11.2.8.7 Doctor of Philosophy (Ph.D.) Physiology****Thesis**

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

**Required Courses (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 GSAAC and the candidate's supervisor.

**11.2.8.8 Doctor of Philosophy (Ph.D.) Physiology: Bioinformatics**

\*\* This program is currently not offered. \*\*

**Thesis**

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner.

The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

**Required Courses (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)**

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

### Complementary Courses (6 credits)

6 credits from the following:

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

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## 11.3 Communication Sciences and Disorders

### 11.3.1 Location

School of Communication Sciences and Disorders  
2001 McGill College Avenue, Suite 800  
Montreal QC H3A 1G1  
Telephone: 514-398-4137  
Fax: 514-398-8123  
Email: [scsd@mcgill.ca](mailto:scsd@mcgill.ca)  
Website: [mcgill.ca/scsd](http://mcgill.ca/scsd)

### 11.3.2 About Communication Sciences and Disorders

The School provides both professional and research training in communication sciences and disorders at the graduate level through its **M.Sc. (Applied)**, **M.Sc.**, and **Ph.D.** degrees. We were the first department in Canada to provide both clinical and research degrees. Our M.Sc.A. program aims to educate the next generation of well-prepared and innovative speech-language pathology professionals by providing enriched classroom training, clinical laboratory activities that enhance the transition from theory to practice, and outstanding clinical practicum experiences. Our research degrees are designed to develop leading researchers and scholars, who will go on to train future investigators in the field of communication sciences and disorders and who, through their research, will advance our understanding of the processes of human communication and its breakdown.

Our applied and research degrees may lead to employment in healthcare or educational facilities, academic settings, or private industry.

Interdisciplinary interactions are at the core of our research training approach, which includes preparation to conduct both fundamental and clinically applied investigations. Our professors have collaborative ties with many departments and institutes at McGill, including:

- psychology
- linguistics
- neuroscience
- otolaryngology
- biomedical engineering
- Montreal Neurological Institute and Hospital
- other Montreal universities

They also maintain national and international collaborations. Students can access this rich collaborative network via the [McGill Centre for Research on Brain, Language and Music](#), a world-class interdisciplinary research centre established by the School. The multilingual context in which we reside provides a unique environment for language research.

The School offers:

- a professional degree in Communication Sciences and Disorders at the M.Sc. (Applied) level with specialization in Speech Language Pathology
- two research degrees: an M.Sc. (Research) and a Ph.D. in Communication Sciences and Disorders

### Requirements for Licensure

The majority of pro

### *section 11.3.7: Doctor of Philosophy (Ph.D.) Communication Sciences and Disorders: Language Acquisition*

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 3 credits of coursework in language acquisition outside their home department, and three interdisciplinary seminars (2 credits each) and must include a faculty member in the Language Acquisition Program on their thesis committee. More information about this program can be found at [mcgill.ca/linguistics/graduate/lap](http://mcgill.ca/linguistics/graduate/lap).

## **11.3.3 Communication Sciences and Disorders Admission Requirements and Applications Procedures**

### **11.3.3.1 Admission Requirements**

McGill University Graduate and Postdoctoral Studies requires that applicants to graduate programs hold an undergraduate degree with a minimum B average (3.0 on a 4.0 point scale) or better, however as admission is highly competitive the mean GPA of admitted students is generally much higher. Please note that incomplete or late applications will not be considered.

#### **English Language Requirement for Non-Canadian Students**

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 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.

**M.Sc. (Applied)**

- Brief personal statement
- Curriculum Vitae
- Two reference letters (one professional and one academic)

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

- Personal statement
- Curriculum Vitae
- Writing sample
- Acceptance by a research supervisor
- Two reference letters (academic)

If available, applicants are encouraged to submit reports of their performance on the Graduate Record Examination (*GRE*).

#### **11.3.3.3 Application Dates and Deadlines**

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines 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 consult the list at [mcgill.ca/gps/contact/graduate-program](http://mcgill.ca/gps/contact/graduate-program).

Information on application deadlines is available at [mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines](http://mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines).

### **11.3.4 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.

### **11.3.5 Master of Science, Applied (M.Sc.A.) Communication Sciences & Disorders (Non-Thesis): Speech-Language Pathology (82 credits)**

The M.Sc.(A.) in Communication Sciences and Disorders; Non-Thesis - Speech-Language Pathology focuses on training students to enter the field of Speech-Language Pathology using a curriculum guided by a competency-based framework, including academic and supervised clinical practicum components. This professional program is accredited by The Council for Accreditation of Canadian University Programs in Audiology and Speech-Language Pathology.

#### **Required Courses (82 credits)**

IPEA 500	(0)	Roles in Interprofessional Teams
IPEA 501	(0)	Communication in Interprofessional Teams
IPEA 502	(0)	Patient-Centred Care in Action
SCSD 609	(3)	Neuromotor Disorders
	(.5)	Essential Competencies for Speech-Language Pathology 1

SCSD 611D2	(.5)	Essential Competencies for Speech-Language Pathology 1
SCSD 612D1	(.5)	Essential Competencies for Speech-Language Pathology 2
SCSD 612D2	(.5)	Essential Competencies for Speech-Language Pathology 2
SCSD 613	(1)	Counselling in Speech-Language Pathology
SCSD 614	(3)	Literacy Across the Lifespan
SCSD 616	(3)	Foundations of Audiology
SCSD 617	(1)	Anatomy and Physiology for Speech-Language Pathology
SCSD 619	(3)	Phonological Development
SCSD 624	(3)	Language Development and Processes
SCSD 625	(2)	ASD and Neurodevelopmental Disorders 2
SCSD 626	(2)	Aural Rehabilitation 2
SCSD 627	(3)	Practicum and Seminar 3A
SCSD 628	(3)	Practicum and Seminar 4A
SCSD 629	(2)	Augmentative and Alternative Communication 2
SCSD 630	(2)	Research and Measurement Methodologies 2
SCSD 631	(2)	Speech Science
SCSD 632	(3)	Phonological Disorders: Children
SCSD 636	(3)	Fluency Disorders
SCSD 637	(3)	Developmental Language Disorders 1
SCSD 638	(2)	Neurolinguistics
SCSD 639	(3)	Voice Disorders
SCSD 643	(3)	Developmental Language Disorders 2
SCSD 644	(3)	Acquired Language Disorders
SCSD 646	(4)	Introductory Clinical Practicum
SCSD 679	(12)	Advanced Clinical Practicum
SCSD 680	(3)	Deglutition and Dysphagia
SCSD 681	(3)	Practicum and Seminar 1
SCSD 682	(3)	Practicum and Seminar 2
SCSD 688	(1)	Genetics in Speech-Language Pathology Practice
SCSD 689	(1)	Management Cranio-Facial Disorders

### 11.3.6 Doctor of Philosophy (Ph.D.) Communication Sciences and Disorders

The Ph.D. program provides a foundation for creative research and scientific problem-solving in communication sciences (speech, language, hearing, voice) in typical and atypical populations. The program structure is flexible to encourage students to customize their program through the selection of coursework, seminars, comprehensive topics, research experiences, and thesis topic. The School's doctoral program follows a mentor model and students work closely with faculty supervisors who have international reputations in their respective areas.

Students who have completed a Master's degree with research thesis in Communication Sciences and Disorders or a related area are admitted at level PhD 2. High-caliber students who have not completed a research thesis at the Master's level can enter the Qualifying Year Program (admitted at level PhD 1), which includes extra requirements (coursework and a research project) at the onset of the program.

#### Thesis

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

#### Required Courses (6 credits)



For both PhD 1 and PhD 2:

SCSD 652	(3)	Advanced Research Seminar 1
SCSD 653	(3)	Advanced Research Seminar 2
SCSD 701	(0)	Doctoral Comprehensive

**Complementary Courses (6 or 21 credits)**

For both PhD 1 and PhD 2: 6 credits of statistics courses at the 500 level or higher, pre-approved by the supervisor and the graduate program director.

In addition to the above, students entering at PhD 1 must take the following 15 credits:

Advanced Research Seminar 3A 165.865p1 2tid1.2&creaduate program director

SCSD 654	(3)	Advanced Research Seminar 3
SCSD 685	(3)	Research Project 1
SCSD 686	(3)	Research Project 2

Plus 6 credits, of graduate-level courses pre-approved by the supervisor and the graduate program director.

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## 11.4 Population and Global Health

### 11.4.1 Location

School of Population and Global Health  
 2001 McGill College Avenue, Suite 1200  
 Montreal QC H3A 1G1  
 Telephone: 514-398-5776  
 Email: [spgh.med@mcgill.ca](mailto:spgh.med@mcgill.ca)  
 Website: [mcgill.ca/spgh](http://mcgill.ca/spgh)

#### 11.4.1.1 About the School of Population and Global Health

The School of Population and Global Health is composed of the Department of Epidemiology, Biostatistics and Occupational Health; the Department of Equity, Ethics and Policy; and the Department of Global and Public Health.

### 11.4.2 Bioethics

#### 11.4.2.1 Location

Department of Equity, Ethics, and Policy  
 2001 McGill College Ave, 12th floor  
 Montreal QC H3A 1G1  
 Telephone: 514-398-1236  
 Website: [mcgill.ca/equity-ethics-policy/](http://mcgill.ca/equity-ethics-policy/)

For information, contact the Graduate Program Director:

Jennifer Fishman – [jennifer.fishman@mcgill.ca](mailto:jennifer.fishman@mcgill.ca)

#### 11.4.2.2 About Bioethics

Bioethics programs are located in the Department of Equity, Ethics, and Policy. The new Department, established in 2023, aims to support scholarly research, teaching, and public outreach. Members of the Department have backgrounds in law, sociology, molecular genetics, history, philosophy, public health, epidemiology, economics, and psychology. We offer a master's degree specialization in bioethics for selected master's students in the Division of Experimental Medicine, Department of Human Genetics, Department of Philosophy, School of Religious Studies, and Faculty of Law.

#### Master's Specialization in Bioethics

The Master's Specialization in Bioethics is sponsored by the:

- Faculty of Medicine and Health Sciences, Division of Experimental Medicine, Department of Human Genetics;
- Faculty of Law; and
- Faculty of Arts, Department of Philosophy, School of Religious Studies.

Students receive an **M.A.**, **LL.M.**, or **M.Sc.** degree in the discipline chosen with a specialization in Bioethics.

Some applicants are mid-career professionals currently working as physicians, nurses, social workers, other health care providers, or lawyers. Other applicants have recently completed their undergraduate degrees in science, philosophy, law, religious studies, or other disciplines, and wish to pursue specialized master's level training in bioethics before enrolling in doctoral level studies or entering the workplace.

Students pursuing the master's degree specialization normally take two semesters of courses before beginning their master's thesis. Courses offered include Bioethics Theory, Public Health Ethics and Policy, Research Ethics, and a Practicum that includes placement in a clinical or research setting. Research and writing the thesis normally takes one year. Students must also comply with the course and thesis requirements of their home disciplines.

### **11.4.2.3 Bioethics Admission Requirements and Application Procedures**

#### **11.4.2.3.1 Admission Requirements**

M.D. degree, professional training in a health science, or bachelor's degree in the sciences, social sciences, law, philosophy





### 11.4.3.3.1 Public Health

The Department offers a Master of Science in Public Health. Students apply the methods they learn to the study of diseases, clinical research, health services research, public health, program planning and evaluation, and policy development. Our faculty members are at the forefront of research in epidemiology, biostatistics, clinical medicine, biomedical informatics, public health, health economics, medical sociology, and health geography.

Faculty members in the Department draw on extensive contacts in the public health community locally, nationally, and internationally to facilitate practicum placements in many areas, including:

- urban public health practice;
- clinical and public health informatics;
- environmental and occupational health;
- health care delivery and organization;
- infectious diseases;
- maternal and child health;
- aboriginal health; and
- global health.

Graduates are highly sought after for careers in government agencies, NGOs, clinical settings, research, and industry.

#### *section 11.4.3.3.6: Master of Science (M.Sc.) Public Health (Non-Thesis) (60 credits)*

The mission of the Master of Science in 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 or quantitative sciences (e.g., microbiology, computer science, statistics, economics, geography), social sciences (e.g., sociology, psychology, anthropology), or the health professions (e.g., medicine, nursing, social work, physical and occupational therapy, nutrition). Through a core series of courses, a wide range of electives, and a practicum, students will acquire knowledge and skills in all the core competencies of public health, including public health sciences; assessment and analysis; policy and program planning, implementation and evaluation. Graduates of the program will serve as public health practitioners or research professionals and will possess the competencies and professionalism to carry out broad public health functions in local, provincial, national, and international settings. In exceptional circumstances, the Admissions Committee may take professional experience into account for mid-career or returning/re-entry applicants.

The Master of Science in Public Health program includes a 14–16 week field-based practicum after the first year, which will provide the student with the opportunity to use knowledge and skills acquired in the academic program in a public health practice or research setting.

### 11.4.3.3.2 Epidemiology and Public Health Admission Requirements and Application Procedures

#### *11.4.3.3.2.1 Admission Requirements*

##### **Master's in Epidemiology**

- Applicants to the M.Sc. in Epidemiology programs must hold a bachelor's degree in a related area.
- The M.Sc. Epidemiology programs require substantial quantitative skills. The Admission Committees for these programs will look for proof of quantitative proficiency such as good grades in undergraduate-level courses in differential or integral calculus, or in statistics. Although the GRE is not required, GRE results with a strong score (160+) in the Quantitative score may strengthen your application.
- Cumulative Grade Point



EPIB 607	(4)	Inferential Statistics
EPIB 613	(1)	Introduction to Statistical Software
EPIB 621	(4)	Data Analysis in Health Sciences
PPHS 602	(3)	Foundations of Population Health

**Complementary Course (3 credits)**

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

**11.4.3.3.4 Master of Science (M.Sc.) Epidemiology (Non-Thesis): Environmental & Occupational Health (48 credits)**

This program provides in-depth training for graduate students in methods used in Environmental and Occupational Health (EOH) and the application of these methods to study the effects of environmental and occupational exposures on human health. Students will be provided with tools to critically evaluate studies in EOH, as well as to be able to participate in these studies, learn how to apply specific methods to environmental and occupational problems, and understand how to apply research results to public health or policy. Career opportunities exist in academia, industry, and the public health sectors. Each student will be assigned a supervisor to provide guidance for their project. Research topics must be related to environmental and occupational health and approved by the program coordinating committee.

**Research (12 credits)**

EPIB 691	(12)	Research Project in Epidemiology
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**Required Courses (30 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 621	(4)	Data Analysis in Health Sciences
EPIB 684	(3)	Principles of Environmental Health Sciences 1
EPIB 685	(3)	Principles of Environmental Health Sciences 2
EPIB 686	(3)	Environmental Health Seminar
PPHS 602	(3)	Foundations of Population Health

**Complementary Courses (6 credits)**

6 credits of coursework, at the 500 level or higher, chosen in consultation with the student's academic adviser or supervisor. Complementary courses are meant to further the student's general knowledge in environment, environmental health, methodologies, and related aspects to a student's project.

**11.4.3.3.5 Master of Science (M.Sc.) Epidemiology (Non-Thesis): Pharmacoepidemiology (48 credits)**

This program provides in-depth training for graduate students on pharmacoepidemiologic methods and the application of these methods to study the population effects (benefits and harm) of pharmaceutical products. Students will develop knowledge and capacity to critically evaluate pharmacoepidemiologic studies, learn how to apply specific methods and understand how to apply research results for knowledge translation or policy purpose. Career opportunities for graduates are multiple and include work in industry, government, or academia. Students will be required to participate in the Pharmacoepidemiology Journal Club. Research topics must be related to pharmacoepidemiology and approved by the program coordinating committee.

**Research (12 credits)**

EPIB 691	(12)	Research Project in Epidemiology
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**Required Courses (25 credits)**

Students exempted from any of the courses listed below must replace them with additional complementary course credits at the 500 level or higher.

EPIB 601	(4)	Fundamentals of Epidemiology
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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 621	(4)	Data Analysis in Health Sciences
EPIB 634	(3)	Fundamentals of Pharmacoepidemiology
EPIB 662	(1)	Pharmacological Basis of Pharmacoepidemiology
PPHS 602	(3)	Foundations of Population Health

### Complementary Courses (11 credits)

11 credits of coursework, at the 500 level or higher, chosen in consultation with the student's academic adviser or supervisor. Courses must be approved by the program's academic adviser.

#### 11.4.3.3.6 Master of Science (M.Sc.) Public Health (Non-Thesis) (60 credits)

The M.Sc. in Public Health; Non-Thesis focuses on the foundations and principles of epidemiology and biostatistics as applied to public health research and practice, and 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.

### Required Courses (36 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 621	(4)	Data Analysis in Health Sciences
PPHS 602	(3)	Foundations of Population Health
PPHS 612	(3)	Principles of Public Health Practice
PPHS 630	(12)	MScPH Practicum/Project

Practicum/Project

If a stream is chosen as part of the complementary courses, the practicum must be related to the subject of the selected stream.

### Complementary Courses (9-18 Credits)

#### Environmental Health Sciences

3 credits from:

GEOG 503	(3)	Advanced Topics in Health Geography
OCCH 602	(3)	Occupational Health Practice
OCCH 604	(3)	Monitoring Occupational Environment
PPHS 529	(3)	Global Environmental Health and Burden of Disease

Or other course, at the 500 level or higher, selected with the Program's Academic Adviser.

#### Health Services Research Policy and Management

3 credits from:

PPHS 525	(3)	Health Care Systems in Comparative Perspective
PPHS 527	(3)	Economics for Health Services Research and Policy

PPHS 528	(3)	Economic Evaluation of Health Programs
PPHS 617	(3)	Impact Evaluation

Or other course, at the 500 level or higher, selected with the Program's Academic Adviser.

**Population and Public Health Interventions (social and behavioural science)**

3 credits from:

EPIB 632	(3)	Mental Disorders: Population Perspectives and Methods
PPHS 614	(3)	Knowledge Translation and Public Health Leadership
PPHS 616	(3)	Principles and Practice of Public Health Surveillance
PPHS 618	(3)	Program Planning and Evaluation in Public Health

Or other course, at the 500 level or higher, selected with the Program's Academic Adviser.

0-9 credits from one of the following six streams.

In consultation with and approval by the program's academic adviser, students may focus on one of the following areas.

Courses may not satisfy more than one program requirement.

**Stream 1: Epidemiology**

9 credits from:

EPIB 628	(3)	Measurement in Epidemiology
EPIB 629	(3)	Knowledge Synthesis
EPIB 637	(3)	Advanced Modeling: Survival and Other Multivariable Data
EPIB 638	(3)	Mathematical Modeling of Infectious Diseases
EPIB 648	(3)	Methods in Social Epidemiology

**Stream 2: Global Health**

3 credits in:

PPHS 613	(3)	The Practice of Global Health
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6 credits from:

EPIB 681	(3)	Global Health: Epidemiological Research
PPHS 511	(3)	Fundamentals of Global Health
PPHS 525	(3)	Health Care Systems in Comparative Perspective
PPHS 529	(3)	Global Environmental Health and Burden of Disease
PPHS 614	(3)	Knowledge Translation and Public Health Leadership
PPHS 615	(3)	Introduction to Infectious Disease Epidemiology
PPHS 618	(3)	Program Planning and Evaluation in Public Health

**Stream 3: Population Dynamics**

6 credits in:

SOCI 545	(3)	Sociology of Population
SOCI 626	(3)	Demographic Methods

3 credits from:

- |          |     |  |
|----------|-----|--|
| EPIB 648 | (3) | Methods in Social Epidemiology                 |
| EPIB 681 | (3) | Global Health: Epidemiological Research        |
| PPHS 525 | (3) | Health Care Systems in Comparative Perspective |

6-15 credits of coursework, at the 500 level or higher. Students may choose to focus on more advanced methods in epidemiology, biostatistics, geography, or substantive areas such as environmental or occupational health, or to select a variety of courses that will deepen their general kno



The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

**Required Courses (22 credits)**

EPIB 701	(0)	Ph.D. Comprehensive Examination
EPIB 702	(0)	Ph.D. Proposal
EPIB 703	(2)	Principles of Study Design
EPIB 704	(4)	Doctoral Level Epidemiologic Methods 1
EPIB 705	(4)	Doctoral Level Epidemiologic Methods 2
EPIB 706	(3)	Doctoral Seminar in Epidemiology
EPIB 707	(3)	Research Design in Health Sciences
SOCI 545	(3)	Sociology of Population
SOCI 626	(3)	Demographic Methods

**Complementary Courses (9 credits)**

9 credits of coursework, at the 500 level or higher, with a minimum of 3 credits in biostatistics, 3 credits in epidemiology, and 3 credits from courses approved for the Population Dynamics Option from the list below:

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 648	(3)	Methods in Social Epidemiology
EPIB 681	(3)	Global Health: Epidemiological Research
PPHS 525	(3)	Health Care Systems in Comparative Perspective
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 502	(3)	Sociology of Fertility
SOCI 512	(3)	Ethnicity and Public Policy
SOCI 513	(3)	Social Aspects HIV/AIDS in Africa
SOCI 520	(3)	Migration and Immigrant Groups
SOCI 525	(3)	Health Care Systems in Comparative Perspective
SOCI 535	(3)	Sociology of the Family
SOCI 588	(3)	Biosociology/Biodemography

Courses must be chosen in consultation with the student's supervisor and/or the degree program's director or adviser.

**11.4.3.4 Biostatistics**

Biostatistics involves the development and application of statistical methods to scientific research in areas such as medicine, epidemiology, public health, occupational and environmental health, genetics, and ecology. Biostatisticians play key roles in designing studies—from helping to formulate the questions that can be answered by data collection to the decisions on how best to collect the data—and in analyzing the resulting data. Our biostatistics faculty work in close collaboration with epidemiologists, clinicians, public health specialists, basic scientists, and other health researchers. They also develop new statistical methods for such data. Students will take courses, and may conduct research on topics such as:

- generalized linear models;
- longitudinal data;

- mathematical statistics;
- causal inference;
- statistical methods for epidemiology; and
- survival analysis.

The Department of Epidemiology, Biostatistics, and Occupational Health has one of the largest concentrations of Ph.D.-level statisticians in health sciences in any Canadian university. Faculty members may have funding available for students through their research grants. We provide rich research environments at five univ

Information on application deadlines is available at [mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines](http://mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines).

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

#### 11.4.3.4.2 Master of Science (M.Sc.) Biostatistics (Thesis) (45 credits)

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

##### Thesis Courses (21 credits)

BIOS 690 (21) 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 556 (4) Mathematical Statistics 1

MATH 556 (4) Mathematical Statistics 1

MATH 557 (4) Mathematical Statistics 2

#### 11.4.3.4.3 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

Re(4)



BIOS 701	(0)	Ph.D. Comprehensive Examination
BIOS 702	(0)	Ph.D. Proposal

**Complementary Courses (18-46 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 and Report Writing
MATH 523	(4)	Generalized Linear Models
MATH 533	(4)	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 fields (e.g., epidemiology, social sciences, biomedical sciences).

**11.4.4 Occupational Health**

**11.4.4.1 Location**

Department of Epidemiology, Biostatistics and Occupational Health  
 2001 McGill College, Suite 1200  
 Montreal QC H3A 1G1  
 Canada

**11.4.4.3 Occupational Health Admission Requirements and Application Procedures**  
**11.4.4.3.1 Admission Requirements**

- Applicants to the M.Sc.

OCCH 615	(3)	Occupational Safety Practice
OCCH 616	(3)	Occupational Hygiene

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

\*\*This program is currently not accepting applicants.\*\*

**Research Project (15 credits)**

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

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

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

OCCH 600	(0)	Master's Integrative Exam
OCCH 602	(3)	Occupational Health Practice
OCCH 603	(3)	Work and Environment Epidemiology 1
OCCH 604	(3)	Monitoring Occupational Environment
OCCH 608	(3)	Biological Hazards
OCCH 612	(3)	Principles of Toxicology
OCCH 615OCCH 600	(3)	Occupational Safety Practice

