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

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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;
- Competency in English; and
- Other information regarding admissions and application procedures for Graduate and Postdoctoral Studies.

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## 6 Fellowships, Awards, and Assistantships

Please refer to [University Regulations & Resources > Graduate > : Fellowships, A](#)

- 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:** Indi

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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 Gov

- synoptic and mesoscale meteorology; and
- remote sensing of weather and climate.

Some faculty members have close ties with other departments, schools, and centres, including the Chemistry and the Mathematics and Statistics departments; the *Bieler School of Environment*; *ArcticNet*; and *Quebec Ocean*. Facilities include the McGill Atmospheric Profiling Observatory, as well as state-of-the-art field and laboratory equipment for atmospheric chemistry. Graduate students have access to computers, ranging from desktop PCs to the high-performance computing clusters available through the Digital Research Alliance of Canada. In some cases, M.Sc. and Ph.D. research may include a field component. Most students also participate in national and international conferences.

Financial assistance in the form of research stipends is available for all qualified graduate students. Additional financial support is provided in the form of teaching assistantships, subject to availability and eligibility constraints.

#### ***section 11.1.4: Master of Science (M.Sc.) Atmospheric and Oceanic Sciences (Thesis) (45 credits)***

Our program applies mathematics, physics, computing, and sometimes chemistry to study the atmosphere and/or oceans. The ideal student would therefore have a strong quantitative background in one or more of these fields. Although some of our students have undergraduate knowledge of meteorology or physical oceanography, this background is not necessary to succeed in the program. McGill offers the only program in Canada that includes both atmospheric and oceanic sciences. Students benefit from a high professor-to-student ratio and access to state-of-the-art computing, remote sensing, and atmospheric chemistry laboratory equipment. The Department also has close ties with Environment & Climate Change Canada's numerical weather prediction centre in Dorval, Quebec.

Our program allows considerable flexibility as to the choice of research topics, and gives students both a strong classroom knowledge of the subject as well as the opportunity to choose from a variety of thesis research projects. Students who do not choose to continue in academia find employment in a variety of areas and places; for example, working with Environment & Climate Change Canada as research associates or weather forecasters.

#### ***section 11.1.5: Doctor of Philosophy (Ph.D.) Atmospheric and Oceanic Sciences***

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

#### ***section 11.1.6: Doctor of Philosophy (Ph.D.) Atmospheric and Oceanic Sciences: Environment***

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

The Ph.D. in Atmospheric and Oceanic Sciences: Environment (option) is a research program offered in collaboration with the *Bieler School of Environment*. As a complement to the unit's expertise, the program considers how various dimensions (scientific, social, legal, ethical) interact to define environment and sustainability issues. The Environment option builds on the same program and a similar undergraduate background as described under Doctor of Philosophy (Ph.D.) Atmospheric and Oceanic Sciences. In addition, the Environment option includes required courses from Atmospheric and Oceanic Sciences and from Environment, as well as complementary courses in Atmospheric and Oceanic Sciences and in Environment.

Prospective Environment Option students must apply for admission to both Atmospheric and Oceanic Sciences and the School of Environment and must meet the entrance requirements of both. Acceptability into the Environment option will be based on academic experience and performance, availability of a supervisor or co-supervisor, the proposed research, and plans for funding as articulated by the supervisor(s). This option is not available to students entering at the Ph.D. 1 level, but can be chosen in subsequent years.

## **11.1.3 Atmospheric and Oceanic Sciences Admission Requirements and Application Procedures**

### **11.1.3.1 Admission Requirements**

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

Applicants to the Ph.D. program would normally have a strong background in meteorology, physical oceanography, or related disciplines such as mathematics, physics, chemistry, and engineering. Many students will have an M.Sc. degree in one of these fields, although this is not a formal requirement. All Ph.D. students are required to take at least two graduate-level courses in atmospheric and oceanic sciences. Students entering without a master's degree or without a sufficient background in atmospheric and/or oceanic sciences are admitted at the Ph.D. 1 level and are required to take an additional five graduate-level courses in atmospheric and oceanic sciences, these usually being completed in the first two semesters.

Applicants to the Environment Option of our Ph.D. program must apply for admission to both Atmospheric and Oceanic Sciences and the Bieler School of Environment and must meet the entrance requirements of both programs (see also information here: [mcgill.ca/environment/envroption](http://mcgill.ca/environment/envroption)). Acceptability into the Environment option will be based on academic experience and performance, availability of a supervisor or co-supervisor, the proposed research, and plans for funding as articulated by the supervisor(s). This option is not available to students entering at the PhD 1 level, but can be chosen in subsequent years.

Inquiries should be addressed directly to the [Student Affairs Coordinator](#), Department of Atmospheric and Oceanic Sciences; see the [department website](#) for more information.

### English Language Proficiency

For graduate applicants whose mother tongue is not English, and who have not completed an undergraduate or graduate degree from a recognized Canadian or American (English or French) institution or from a recognized foreign institution where English is the language of instruction, documented proof of English proficiency is required prior to admission. For a list of acceptable test scores and minimum requirements, visit [mcgill.ca/gradapplicants/international/proficiency](http://mcgill.ca/gradapplicants/international/proficiency)

### 11.1.3.2 Application Procedures

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

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

#### 11.1.3.2.1 Additional Requirements

The item below is an additional requirement set by this department:

- Acceptance by a research supervisor – required for the Ph.D. program

### 11.1.3.3 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 Atmospheric and Oceanic Sciences. Applicants are responsible for verifying all deadlines and documentation requirements well in advance by consulting the departmental website at [mcgill.ca/meteo/programs-0/graduate-studies/prospective-graduate-students](http://mcgill.ca/meteo/programs-0/graduate-studies/prospective-graduate-students).

Please note that application deadlines may exceptionally be revised during the application cycle. For current deadline information, please visit the above-mentioned departmental website ().

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.



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

## 11.1.4 Master of Science (M.Sc.) Atmospheric and Oceanic Sciences (Thesis) (45 credits)

The Master of Science (M.Sc.) in Atmospheric and Oceanic Sciences is a comprehensive, research-driven program, focusing on topics related to climate dynamics, atmospheric chemistry, physical oceanography, weather forecasting, climate change impacts, air-sea interactions, and polar sciences. This program offers training on effective data collection, research methods, and the effective communication of scientific ideas. The program can be completed in the standard two years.

### Thesis Courses (24 credits)

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



ATOC 525	(3)	Atmospheric Radiation
ATOC 531	(3)	Dynamics of Current Climates
ATOC 540	(3)	Synoptic Meteorology 1
ATOC 541	(3)	Synoptic Meteorology 2
ATOC 548	(3)	Mesoscale Meteorology
ATOC 568	(3)	Ocean Physics
ATOC 626	(3)	Atmospheric/Oceanic Remote Sensing
CHEM 519*	(3)	Advances in Chemistry of Atmosphere

\* Students may select either ATOC 519 or CHEM 519.

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

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

### 11.1.5 Doctor of Philosophy (Ph.D.) Atmospheric and Oceanic Sciences

#### 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

(1 credit)

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

#### Complementary Courses (7 credits)

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

1 credit from:

ATOC 751D1	(1)	Seminar: Atmosphere and Ocean
ATOC 751D2	(.5)	Seminar: Atmosphere and Ocean
ATOC 752D1	(.5)	Atmospheric, Oceanic and Climate Dynamics
ATOC 752D2	(.5)	Atmospheric, Oceanic and Climate Dynamics

### Required Courses (4 credits)

ATOC 700	(1)	Ph.D. Proposal Seminar
ATOC 701	(0)	Ph.D. Comprehensive (General)
ENVR 615	(3)	Interdisciplinary Approach Environment and Sustainability

### Complementary Courses (13 credits)

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

1 credit from:

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

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

3-6 credits from:

ENVR 610	(3)	Foundations of Environmental Policy
ENVR 614	(3)	Mobilizing Research for Sustainability

0-3 credits from:

ENVR 585	(3)	Readings in Environment 2
ENVR 630	(3)	Civilization and Environment
ENVR 680	(3)	Topics in Environment 4

or 3 credits at the 500 level or higher recommended by the Advisory Committee and approved by the Environment Option Committee.

---

## 11.2 Biology

### 11.2.1 Location

Department of Biology  
Stewart Biological Sciences Building  
1205 Dr. Penfield Avenue  
Montreal QC H3A 1B1  
Telephone: 514-398-5478  
Fax: 514-398-5069  
Email: [ancil.gittens@mcgill.ca](mailto:ancil.gittens@mcgill.ca)  
Website: [mcgill.ca/biology](http://mcgill.ca/biology)

### 11.2.2 About Biology

The M.Sc. and Ph.D. graduate training programs in the Department of Biology are focused on excellence in research across all scales of the biological world, from molecules to cells, from cells to organisms, and from organisms to ecosystems. Our research is highly interdisciplinary, and so are our trainees and faculty members. Our programs offer graduate trainees the opportunity to do cutting-edge research and develop their professional skills, including writing and communication, which are essential for careers inside and outside of academia. McGill Biology graduate students enjoy a rigorous training program with the goal of becoming successful research scientists. A graduate degree in Biology prepares students for a wide range of careers. Alumni have gone on

to pursue careers in academia and beyond, including researchers in industry, and work as wildlife biologists, forensic technologists, and science policy advisors, to name a few.

Graduate students choose a project in one of the department's three main research focus areas:

- [Conservation, Ecology, Evolution and Behaviour](#)
- [Molecular, Cellular and Developmental Biology](#)
- [Neurobiology and Behaviour](#)

In addition to the regular M.Sc. and Ph.D. programs, the Biology Department offers specialized program options in Environment and Neotropical Environment (NEO) (see below).

Both the M.Sc. and Ph.D. are research-intensive degrees, and the emphasis in both programs is on developing the intellectual and technical skills necessary for independent research. The main component of both degrees is a thesis presenting the results of this work in the form of a student's original contribution to scientific knowledge. Formal coursework includes a two-course sequence on research and professional skills, and one to two topical courses, usually in the form of literature-based seminars. To complement their classroom and research training, students regularly attend seminar series and journal clubs, and present their own work annually in a formal seminar.

The Department of Biology is embedded in an outstanding and collaborative research environment with access to state-of-the-art infrastructure in the Stewart Biology Building and the Bellini Life Science Complex, as well as excellent field facilities in Canada and abroad. Affiliated centres and field stations include:

- [McGill University Phytotron](#)
- [Redpath Museum](#)
- [Integrated Quantitative Biology Initiative \(IQBI\)](#)
- [Advanced BioImaging Facility \(ABIF\)](#)
- [Gault Nature Reserve](#) at Mont St. Hilaire (Quebec)
- [Penfield Nature Conservancy](#) on Lake Memphrémagog (Quebec)
- [McGill Subarctic Research Station](#) at Schefferville (Quebec)
- [Bellairs Research Institute](#) (Barbados)
- [Smithsonian Tropical Research Institute \(STRI\)](#) (Panama)

The Department of Biology offers financial support to both Canadian and international students. Funding packages include a stipend to offset living expenses and a tuition and fees subsidy. For more information on graduate student funding in Biology, please visit [Biology > Graduate Studies > Current Graduate Students > Graduate Funding](#).

#### [section 11.2.4: Master of Science \(M.Sc.\) Biology \(Thesis\) \(45 credits\)](#)

The Master of Science in Biology is a research-focused program that encompasses a diverse range of topics in biology, from molecules and cells to organisms and ecosystems, including development, behaviour and evolution. Research themes include: (1) molecular, cellular and developmental biology, (2) conservation, ecology and evolution, and (3) neurobiology and behaviour. This program allows students considerable flexibility in their choice of research and coursework and encourages cross-disciplinary thinking.

Incoming graduate students will have a strong background in the biological sciences, often with specific strengths in their proposed area of study. To encourage interdisciplinary work, the program may also accept students with a high scholastic standing in fields other than biology (medicine, engineering, chemistry, physics, etc.). Alumni have gone on to pursue a wide range of careers in academia and beyond, including as researchers in industry, wildlife biologists, forensic technologists, or science policy advisors, to name a few.

#### [section 11.2.5: Master of Science \(M.Sc.\) Biology \(Thesis\): Environment \(45 credits\)](#)

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

The M.Sc. in Biology; [Environment option](#) is a research program offered in collaboration with the [Bieler School of Environment \(BSE\)](#). As a complement to the unit's expertise, the program considers how various dimensions (scientific, social, legal, ethical) interact to define environment and sustainability issues. Students learn to explain and defend their research and thinking in a broader context and understand how knowledge is transferred into action with regard to the environment and sustainability.

#### [section 11.2.6: Master of Science \(M.Sc.\) Biology \(Thesis\): Neotropical Environment \(45 credits\)](#)

The McGill-Smithsonian Tropical Research Institute (STRI) [Neotropical Envir.](#)

*courses will be taught in Panama. NEO's educational approach seeks to facilitate (w/ knowledge) Tju21 41 02 272.567 156lw1 0 0 1 (Ins3j1 0 0 1 319 co72.567 1 429.256 560.9*

*section 11.2.7: Doctor of Philosophy (Ph.D.) Biology*

The Doctor of Philosophy in Biology is a research-focused program that encompasses a diverse range of topics in biology, from molecules and cells to organisms and ecosystems, including development, behaviour, and evolution. Research themes include: (1) molecular, cellular, and developmental biology; (2) conservation, ecology, and evolution; and (3) neurobiology and behaviour. This program allows students considerable flexibility in their choice of research and coursework and encourages cross-disciplinary thinking.

Incoming graduate students will hav



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

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

The Master of Science in Biology is a research-focused program that encompasses a diverse range of topics in biology, from molecules and cells to organisms and ecosystems, including development, behaviour and evolution. Research themes include: (1) molecular, cellular and developmental biology, (2) conservation, ecology and evolution, and (3) neurobiology and behaviour. This program allows students considerable flexibility in their choice of research and coursework and encourages cross-disciplinary thinking.

##### Required Courses (39 credits)

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

##### Complementary Courses (6 credits)

3 credits from the following [choose BIOL 601 and either BIOL 602 or BIOL 603]:

BIOL 601	(1.5)	Introduction to Graduate Studies in Biology
BIOL 602	(1.5)	Molecular Biology Research and Professional Skills
BIOL 603	(1.5)	Organismal Biology Research and Professional Skills

\*Or 3 credits at the 500 level or higher with the approval of the Graduate Program Director.

3 credits at the 500, 600, or 700 level in Biology or other departments, and approved by the Supervisory Committee.

#### 11.2.5 Master of Science (M.Sc.) Biology (Thesis): Environment (45 credits)

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

The M.Sc. in Biology; En

(3)

Topics in Environment 4

6 credits at the 500, 600, or 700 level in Biology or other departments, and approved by the Supervisory Committee

### 11.2.8 Doctor of Philosophy (Ph.D.) Biology: Environment

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

The Ph.D. in Biology- Environment Option is a research program offered with the Bieler School of Environment and other academic units at McGill. As a complement to the unit's expertise, the program considers how various dimensions (scientific, social, legal, ethical) interact to define environment and sustainability issues.

#### 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 (9 credits)

BIOL 700	(0)	Doctoral Qualifying Examination
BIOL 702	(6)	Ph.D. Seminar
ENVR 615	(3)	Interdisciplinary Approach Environment and Sustainability

#### Complementary Courses (6 credits)

3-6 credits chosen from:

ENVR 610	(3)	Foundations of Environmental Policy
ENVR 614	(3)	Mobilizing Research for Sustainability

0-3 credits chosen from:

ENVR 585	(3)	Readings in Environment 2
ENVR 630	(3)	Civilization and Environment
ENVR 680	(3)	Topics in Environment 4

or 3 credits at the 500 level or higher recommended by the Advisory Committee and approved by the Environment Option Committee.

### 11.2.9 Doctor of Philosophy (Ph.D.) Biology: Neotropical Environment

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

#### Thesis

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

#### Required Courses (12 credits)

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

#### Elective Courses (3 credits)





research links to the [Quebec Centre for Advanced Materials](#), the Centre for Biorecognition and Biosensors, the [Centre for the Physics of Materials](#), and the [Centre for Bone and Periodontal Research](#). Synthetic approaches to new materials include research in dendrimers, polynucleic acid architectures, polymers that conduct electrons or light, and biopolymers. Polymer and colloid science figure prominently as does research and applications of the chemistry and physical properties of nanostructures. There is significant activity in understanding directed molecular assembly at interfaces and in the application of sophisticated spectroscopic tools to explore them.

### **Green and Sustainable Chemistry**

Green Chemistry is a concept developed in the 1990s by pioneers Paul Anastas and John Warner. It proposes a vision for chemistry in which its products and processes are designed so as to not harm our health or our environment. The sister concept of sustainable chemistry was developed in parallel, with the idea to add the notion of ensuring the renewability of resources. Green and Sustainable Chemistry is now a strategic, key area of research development, with its own vibrant community, dedicated journals and international research centres. It is also identified as a key strategic area for McGill University, as the Department of Chemistry has pioneered the teaching of the topic since 1999. Typically Green and Sustainable Chemistry covers research using tools in organic, inorganic, physical, and biological chemistries with the goal to develop concepts and solutions to grand challenges in sustainability. This field is directly harnessing the powers of chemistry as a toolbox to enable the Sustainable Development Goals, set by the United Nations in 2015.

### **Synthesis/Catalysis**

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

At least 24 credits chosen from the following:

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

### Required Courses

(5 credits)

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

### Complementary Courses

(9-16 credits)

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

## 11.3.5 Doctor of Philosophy (Ph.D.) Chemistry

### 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

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

### Complementary Courses

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

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

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## 11.4 Computer Science

### 11.4.1 Location

School of Computer Science  
McConnell Engineering, Room 318  
3480 University Street  
Montreal QC H3A 0E9  
Canada  
Telephone: 514-398-7071

Fax: 514-398-3883  
Email: [grad.cs@mcgill.ca](mailto:grad.cs@mcgill.ca)  
Website: [cs.mcgill.ca](http://cs.mcgill.ca)

#### **11.4.2 About Computer Science**

The School of Computer Science is one of the leading teaching and research centres for computer science in Canada and offers several graduate programs. The Master of Science (M.Sc.) Thesis and Doctor of Philosophy (Ph.D.) are research-centric programs preparing students for research careers in academia or industry

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

#### 11.4.3.2 Application Procedures

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.

##### 11.4.3.2.1 Additional Requirements

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

- Curriculum Vitae – required for both M.Sc. and Ph.D. programs
- Statement of Purpose – required for both M.Sc. and Ph.D. programs
- [Graduate Record Examination](#) (GRE General Test) is optional for all programs.

For further details about each required document, consult the [School of Computer Science's website](#).

#### 11.4.3.3 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 Computer Science 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.

For further details on our admission requirements, please visit our website at [cs.mcgill.ca/graduate/future/overview/](https://cs.mcgill.ca/graduate/future/overview/).



**Scholarship Deadlines: December 15** for applicants who wish to be considered for scholarship awards; otherwise, December 15 for International and February 15 for Canadian students for admission to the Fall term.

### 11.4.4 Master of Science (M.Sc.) Computer Science (Thesis) (45 credits)

The M.Sc. in Computer Science; Thesis program explores advanced topics in computer science and offers training in performing cutting-edge research.

#### Thesis Courses (29 credits)

29 credits selected from:

COMP 691	(3)	Thesis Research 1
COMP 696	(3)	Thesis Research 2
COMP 697	(4)	Thesis Research 3
COMP 698	(10)	Thesis Research 4
COMP 699	(12)	Thesis Research 5

#### Required Courses (2 credits)

COMP 602	(1)	Computer Science Seminar 1
COMP 603	(1)	Computer Science Seminar 2

#### Complementary Courses (14 credits)

14 credits of COMP (or approved) courses at the 500-, 600-, or 700-level, with at least 3-4 credits from two of the following three categories of courses.

Category A: Theory

COMP 523	(3)	Language-based Security
COMP 525	(3)	Formal Verification
COMP 527	(3)	Logic and Computation

COMP 531	(3)	Advanced Theory of Computation
COMP 532	(4)	Propositional Proof Complexity
COMP 540	(4)	Matrix Computations
COMP 547	(4)	Cryptography and Data Security
COMP 552	(4)	Combinatorial Optimization
COMP 553	(4)	Algorithmic Game Theory
COMP 554	(4)	Approximation Algorithms
COMP 562	(4)	Theory of Machine Learning
COMP 566	(3)	Discrete Optimization 1
COMP 567	(3)	Discrete Optimization 2
COMP 594	()	
COMP 595	()	
COMP 610	(4)	Information Structures 1
COMP 611	(4)	Mathematical Tools for Computer Science
COMP 642	(4)	Numerical Estimation Methods
COMP 647	(4)	Advanced Cryptography
COMP 649	(4)	Quantum Cryptography
COMP 690	(4)	Probabilistic Analysis of Algorithms
COMP 760	(4)	Advanced Topics Theory 1
COMP 761	(4)	Advanced Topics Theory 2

Category B: Systems and Programming

COMP 512	(4)	Distributed Systems
COMP 513	(4)	Advanced Computer Systems
COMP 520	(4)	Compiler Design
COMP 529	(4)	Software Architecture
COMP 533	(3)	Model-Driven Software Development
COMP 535	(4)	Computer Networks 1
COMP 555	(4)	Information Privacy
COMP 596	(3)	Topics in Computer Science 3
COMP 597	(4)	Topics in Computer Science 4
COMP 614	(4)	Distributed Data Management
COMP 621	(4)	Program Analysis and Transformations
COMP 762	(4)	Advanced Topics Programming 1
COMP 763	(4)	Advanced Topics Programming 2
COMP 764	(4)	Advanced Topics Systems 1
COMP 765	(4)	Advanced Topics Systems 2

Category C: Applications

COMP 511	(4)	Network Science
COMP 514	(4)	Applied Robotics
COMP 521	(4)	Modern Computer Games

COMP 545	(4)	Natural Language Understanding with Deep Learning
COMP 546	(4)	Computational Perception
COMP 549	(3)	Brain-Inspired Artificial Intelligence
COMP 550	(3)	Natural Language Processing
COMP 551	(4)	Applied Machine Learning
COMP 557	(4)	Fundamentals of Computer Graphics
COMP 558	(4)	Fundamentals of Computer Vision
COMP 559	(4)	Fundamentals of Computer Animation
COMP 561	(4)	Computational Biology Methods and Research
COMP 564	(3)	Advanced Computational Biology Methods and Research
COMP 565	(4)	Machine Learning in Genomics and Healthcare
COMP 579	(4)	Reinforcement Learning
COMP 585	(4)	Intelligent Software Systems
COMP 588	(4)	Probabilistic Graphical Models
COMP 598	(3)	Topics in Computer Science 1
COMP 599	(4)	Topics in Computer Science 2
COMP 654	(4)	Graph Representation Learning
COMP 680	(4)	Mining Biological Sequences
COMP 685	(4)	Machine Learning Applied to Climate Change
COMP 766	(4)	Advanced Topics Applications 1
COMP 767	(4)	Advanced Topics: Applications 2

#### 11.4.5 Master of Science (M.Sc.) Computer Science (Thesis): Bioinformatics (45 credits)

The Master of Science (M.Sc.) in Computer Science; Bioinformatics provides training in this

interdisciplinary field, which lies at the intersection of biological/medical sciences and mathematics/computer science/engineering. The program 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, artificial intelligence, and statistics. The thesis must focus on bioinformatics in relation to computer science.

##### Thesis Courses (24 credits)

22 credits selected from:

COMP 691	(3)	Thesis Research 1
COMP 696	(3)	Thesis Research 2
COMP 697	(4)	Thesis Research 3
COMP 698	(10)	Thesis Research 4
COMP 699	(12)	Thesis Research 5

##### Required Courses (3 credits)

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

##### Required Course

COMP 601	(2)	Thesis Literature Review
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**Complementary Courses (18 credits)**

6 credits chosen from the following courses:

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

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

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

**11.4.6 Master of Science (M.Sc.) Computer Science (Non-Thesis) (45 credits)**

The M.Sc. in Computer Science; Non-Thesis offers an in depth study of advanced topics in computer science, mainly through course-based work. The program includes the possibility to complete a short research project or to conduct an internship for practical experience.

**Required Courses (2 credits)**

COMP 602	(1)	Computer Science Seminar 1
COMP 603	(1)	Computer Science Seminar 2

**Complementary Courses (43 credits)**

Choose either: project courses and course work; or internship and course work; or all course work.

**Research Project**

0-15 credits from:

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

**Internship**

0-15 credits from:

COMP 689	(15)	Internship in Computer Science
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**Course Work**

28-43 credits of lecture- or seminar-based COMP courses at the 500 level or higher.

The following courses outside of the School of Computer Science may count towards the complementary courses, subject to approval by an academic adviser.

ECSE 507	(3)	Optimization and Optimal Control
ECSE 508	(3)	Multi-Agent Systems
ECSE 516	(3)	Nonlinear and Hybrid Control Systems
ECSE 518	(3)	Telecommunication Network Analysis
ECSE 523	(3)	Speech Communications
ECSE 526	(3)	Artificial Intelligence
ECSE 539	(4)	Advanced Software Language Engineering
ECSE 542	(4)	Human Computer Interaction

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### **Complementary Courses**

Two courses chosen from the following:

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

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

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## **11.5 Earth and Planetary Sciences**

### **11.5.1 Location**

Department of Earth and Planetary Sciences  
Frank Dawson

Response of the marine ecosystem to climate change and anthropogenic stresses through observations of the modern ocean, and e

*section 11.5.4: Master of Science (M.Sc.) Earth and Planetary Sciences (Thesis) (45 credits)*

The nature of graduate research in the Department of Earth and Planetary Sciences is highly variable. As a result, students may enter the graduate program with backgrounds in earth sciences, chemistry, or physics, depending on their research interests and the supervisor with whom they wish to work. Students pursuing an M.Sc. are required to take four courses, but their major project is an M.Sc. thesis that typically results in a journal publication. Research for the thesis typically begins in the first year of residence and is completed, together with the written results, in the second year of residence.

Students graduating from the program typically proceed to a Ph.D. or work in the mineral exploration or petroleum industries. Excellent students admitted into the M.Sc. program can be fast-track

**Thesis Courses (33 credits)**

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

**Complementary Courses (12 credits)**

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

**11.5.5 Doctor of Philosophy (Ph.D.) Earth and Planetary Sciences**

Highly qualified B.Sc. graduates may be admitted directly to the Ph.D. 1 year. Students with the M.Sc. degree are normally admitted to the Ph.D. 2 year.

\* Students are required to take four graduate-level courses in the Ph.D. 1 year, and two courses plus a comprehensive oral examination in the Ph.D. 2 year.

**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**

EPSC 700	(0)	Preliminary Doctoral Examination
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**Complementary Courses**

Two to six courses (6 to 18 credits) approved at the 500, 600, or 700 level selected in consultation with the student's supervisor and approved by the Academic Standing Committee.

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**11.6 Geography****11.6.1 Location**

Department of Geography  
Burnside Hall  
805 Sherbrooke Street West, Room 305  
Montreal QC H3A 0B9  
Canada  
Telephone: 514-398-4111  
Email: [grad.geog@mcgill.ca](mailto:grad.geog@mcgill.ca)  
Website: [mcgill.ca/geography](http://mcgill.ca/geography)

**11.6.2 About Geography**

The Department of Geography offers research and thesis-based graduate programs leading to a **Master of Arts (M.A.)**, a **Master of Science (M.Sc.)**, or a **Doctorate (Ph.D.)**. In its scope, our program includes the opportunity to conduct field-based studies in both the natural (i.e., biophysical) and the social sciences. Thematic areas of study include:

- Political, Urban, Economic, and Health Geography;
- Environment and Development;
- Geographic Information Systems and Remote Sensing;
- Land Surface Processes, Ecosystem Biogeochemistry, and Ecohydrology;
- Earth System Science and Global Change;
- Sustainability Science and Environmental Management.

Geography houses McGill's *Geographic Information Centre (GIC)*, maintains arctic and subarctic field stations, and has strong ties with McGill's *Bieler School of Environment*. Faculty and students conduct research in fields as diverse as climate change impacts, periglacial geomorphology, and forest resource history in regions ranging from the Arctic to Africa, Southeast Asia, and Latin America.

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

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

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

### **McGill Northern Research Stations**

The Faculty of Science, in collaboration with the Department of Geography operates two *northern research field stations*. The McGill Sub-Arctic Research Station (MSARS) is located in Schefferville, in the centre of Quebec-Labrador. The McGill Arctic Research Station (MARS) is located at Expedition Fiord on Axel Heiberg Island in the High Arctic. These facilities support field research in most areas of physical geography, including glaciology, permafrost hydrology, and geomorphology in the arctic, and some areas of human geography in the subarctic. For additional information on these stations, contact the Graduate Program Coordinator at [grad.geog@mcgill.ca](mailto:grad.geog@mcgill.ca).

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

Detailed program requirements for the following M.A. programs are found in [Arts](#) > [Graduate](#) > [Browse Academic Units & Programs](#) > [Geography](#).

**: Master of Arts (M.A.) Geography (Thesis): Neotropical Environment (45 credits)**

educational approach seeks to facilitate a broader understanding of tropical environmental issues and the development of skills relevant to working in the tropics.

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

Detailed program requirements for the following M.Sc. programs are found in [Science](#) > [Graduate](#) > [Browse Academic Units & Programs](#) > [Geography](#).

**section 11.6.4: Master of Science (M.Sc.) Geography (Thesis) (45 credits)**

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

**section 11.6.5: Master of Science (M.Sc.) Geography (Thesis): Environment (45 credits)**

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

The Environment option is offered in association with the [Bieler School of Environment](#) (BSE) and is composed of a thesis component; required Geography and Environment courses; and complementary Geography and Environment courses. The graduate option in Environment provides students with an appreciation for the role of science in informed decision-making in the environmental sector, and its influence on political, socio-economic, and ethical



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

**Required Course (3 credits)**

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

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

**11.6.5 Master of Science (M.Sc.) Geography (Thesis): Environment (45 credits)**

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

The Master of Science in Geography; Thesis — Environment is a research-based 543.4234Tmc credits).Tj1 0 0 1 19405.41s3.423 Tm\*\*This programnot of



University and from STRI. Some research and teaching is conducted in Latin America and Panama. The thesis must be on a topic that relates to both the neotropical environment and geography.

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

#### Thesis Courses (30 credits)

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

#### Required Courses (9 credits)

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

#### Complementary Course (3 credits)

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

#### Elective Course (3 credits)

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

### 11.6.7 Doctor of Philosophy (Ph.D.) Geography

The Doctor of Philosophy in Geography is a research-based program that provides the opportunity to conduct research, including field-based studies, in both the natural (i.e., biophysical) and the social sciences and includes supervision by a faculty member. Research themes reflect the expertise and interests of current faculty members. A thesis, based on original research, is required.

#### 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

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

#### Complementary Courses

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

### 11.6.8 Doctor of Philosophy (Ph.D.) Geography: Environment

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

The Doctor of Philosophy in Geography; Environment is a research-based program offered in collaboration with the Bieler School of Environment (BSE). The program focuses on the role of science in informed decision-making in the environmental sector, and its influence on political, socio-economic, and ethical judgments. The thesis must be on a topic that relates to both the environment and geography.

#### 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)**

ENVR 615	(3)	Interdisciplinary Approach Environment and Sustainability
GEOG 631	(3)	Methods of Geographical Research
GEOG 700	(0)	Comprehensive Examination 1
GEOG 701	(0)	Comprehensive Examination 2
GEOG 702	(0)	Comprehensive Examination 3

**Complementary Courses (9 credits)**

3-6 credits chosen from:

ENVR 610	(3)	Foundations of Environmental Policy
ENVR 614	(3)	Mobilizing Research for Sustainability

0-3 credits chosen from:

ENVR 585	(3)	Readings in Environment 2
ENVR 630	(3)	Civilization and Environment
ENVR 680	(3)	Topics in Environment 4

or 3 credits at the 500 level or higher recommended by the Advisory Committee and approved by the Environment Option Committee.

0-3 credits of Geography course at the 500 level or higher selected according to the guidelines of the Department.

**11.6.9 Doctor of Philosophy (Ph.D.) Geography: Gender and Women's Studies**

The Doctor of Philosophy in Geography; Gender and W



- Geometric Group Theory;
- Logic;
- Mathematical Biology;
- Mathematical Economics;
- Mathematical Physics;
- Mathematics of Machine Learning;
- Number Theory;
- Numerical Analysis;
- Optimization;
- Partial Differential Equations;
- Probability;
- Statistics.

In the basic master's programs, students must choose between the thesis option and the non-thesis option, which requires a project. The Ph.D. program in Mathematics and Statistics is thesis only.

The [Department's website](#) provides extensive information on the Department and its facilities, including the research activities and research interests of individual faculty members. It also provides detailed supplementary information concerning our programs, admissions, funding of graduate students, thesis requirements, advice concerning the choice of courses, etc.

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

#### **Master of Arts (M.A.) Programs in Mathematics and Statistics**

Detailed program requirements for the following M.A. programs are found in [Arts](#) > [Graduate](#) > [Browse Academic Units & Programs](#) > [Mathematics and Statistics](#).

##### **[: Master of Arts \(M.A.\) Mathematics and Statistics \(Thesis\) \(45 credits\)](#)**

The Master of Arts (M.A.) in Mathematics and Statistics (Thesis) is an advanced program for students working in the areas of Applied Mathematics, Pure Mathematics, and Statistics. The thesis option requires a thesis and six approved courses.

##### **[: Master of Arts \(M.A.\) Mathematics and Statistics \(Non-Thesis\) \(45 credits\)](#)**

The Master of Arts (M.A.) in Mathematics and Statistics (Non-Thesis) is an advanced program for students working in the areas of Applied Mathematics, Pure Mathematics, and Statistics. The non-thesis option requires a project, that is a shorter work than a thesis, and eight approved courses.

#### **Master of Science (M.Sc.) Programs in Mathematics and Statistics**

Detailed program requirements for the following M.Sc. programs are found in [Science](#) > [Graduate](#) > [Browse Academic Units & Programs](#) > [Mathematics and Statistics](#).

##### **[section 11.7.4: Master of Science \(M.Sc.\) Mathematics and Statistics \(Thesis\) \(45 credits\)](#)**

The Master of Science (M.Sc.) in Mathematics and Statistics (Thesis) is an advanced program for students working in the areas of

### **11.7.3 Mathematics and Statistics Admission Requirements and Application Procedures**

#### **11.7.3.1 Admission Requirements**

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

##### **Master's Degree**

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

Applicants wishing to concentrate in pure mathematics should hav

**11.7.5 Master of Science (M.Sc.) Mathematics and Statistics (Non-Thesis) (45 credits)**

The Master of Science (M.Sc.) in Mathematics and Statistics; Non-Thesis is an advanced program focusing on the areas of applied mathematics, pure mathematics, and statistics.

**Research Project (16 credits)**

MATH 640	(8)	Project 1
MATH 641	(8)	Project 2

**Complementary Courses (29 credits)**

At least eight approved graduate courses, at the 500, 600, or 700 level, of 3 or more credits each.

**11.7.6 Doctor of Philosophy (Ph.D.) Mathematics and Statistics**

The Ph.D. in Mathematics and Statistics focuses on research in the mathematical or statistical sciences, including the completion of original research publishable in mainstream refereed journals.

**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**

MATH 701	(0)	Ph.D. Qualifying Examination
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**Complementary Courses (21 credits)**

21 credits of courses at the 500 level or above, including at least 6 credits at the 600 level or above. . A maximum of 4 credits of courses can be Pass/Fail courses. The choice of courses to fulfill this requirement must be prior approved by the student's Advisory Committee. The Department recommends that students take complementary courses in at least three different areas of Mathematics and Statistics.

All credits of complementary courses should be taken before the end of PhD 3. In exceptional circumstances, an extension can be granted by the student's Advisory Committee.

Students who wish to take more that 8 credits of complementary courses from outside the Department should request approval from the Graduate Program Director.

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**11.8 Physics****11.8.1 Location**

Department of Physics  
Ernest Rutherford Physics Building  
3600 University Street  
Montreal QC H3A 2T8  
Canada  
Telephone: 514-398-6485 (Graduate Information)  
Fax: 514-398-8434  
Email: [graduate.physics@mcgill.ca](mailto:graduate.physics@mcgill.ca)  
Website: [physics.mcgill.ca](http://physics.mcgill.ca)

## 11.8.2 About Physics

The Department of Physics currently has a faculty of approximately 40 members, including several holders of Canada Research Chairs and many other prestigious named Chairs. Additionally, we host an impressive number of postdoctoral fellows and research associates and run one of the largest and most vibrant graduate programs in North America. Graduate student enrolment is currently approximately 200.

Faculty members in the Department of Physics are recognized internationally for their excellence. Our members have received national and international prizes and fellowships including *Les Prix Du Québec*, Steacie Prize, Sloan Fellowships, NSERC, and many others. They are also in constant demand as reviewers and referees. Students who earn advanced degrees from the Department of Physics will not only get an excellent education, they will also receive valuable guidance and network contacts to help with subsequent career steps.

The Department offers full **M.Sc.** and **Ph.D.** degree programs in a wide range of disciplines, including:

- astrophysics;
- atmospheric physics;
- bio-physics;
- condensed-matter physics;
- high-energy physics;
- laser spectroscopy;
- material physics;
- non-linear dynamics and atmospheric physics;
- nuclear physics;
- statistical physics;
- medical-radiation physics.

Although most of the teaching and research facilities are located in the Ernest Rutherford Physics Building, the Department has space and research facilities in the Wong Materials Science Centre, adjacent to the Rutherford Building. Our groups also conduct research at the *McGill University Health Centre* (MUHC), the *Jewish General Hospital*, the *Montreal Neurological Institute* (MNI), and laboratories around the world—including *Argonne*, *CERN*, *FermiLab*, *SLAC*, *TRIUMF*, and *KEK*.

Departmental researchers enjoy technical support in the areas of engineering, electronics, and precision machining. The Department maintains an excellent conventional machine shop as well as the McGill Nanotools-Microfab facility. Most of the scientific computing is done with an extensive in-house network of powerful workstations and several Beowulf clusters.

Remote access to supercomputing sites in Canada and the United States is also possible including the McGill HPC super-computing facility which is a part of the nationwide network of high performance computing installations in Quebec.

The Department of Physics offers a competitive funding package for both local and international students. For more information about financial support, please [physics.mcgill.ca/grads/finance.html](http://physics.mcgill.ca/grads/finance.html).

Graduate students in the Department of Physics come from many different countries and cultural backgrounds, providing a stimulating cosmopolitan atmosphere in the Department. This, coupled with the unique opportunities afforded by the city of Montreal, guarantees a quality of life that is second to none among Canadian universities. For graduate admission and application information, please visit [physics.mcgill.ca/grads/application.html](http://physics.mcgill.ca/grads/application.html).

### Fields of Research:

#### High-Energy Physics

*Theoretical:* The McGill high energy theorists have interests in a wide range of areas within quantum field theory, string theory, quantum gravity, and cosmology. Research areas of the high-energy theory faculty include applications of quantum field theory techniques to relativistic heavy ion collisions, baryogenesis, superstring cosmology, theory of cosmological perturbations, black hole physics, super

Students at the M.Sc. and Ph.D. levels are offered a strong program of research in a challenging and rapidly advancing field. Short term master's projects are based mainly on instrumentation or data analysis conducted on campus, while Ph.D. research may involve an extended stay at one of the world's major research laboratories.

### **Nuclear Physics**

*Theoretical:* Current research programs include transport equations for heavy ion collisions at intermediate energy; nuclear equation of state from heavy ion collisions; fragmentation at intermediate energy; electromagnetic probes in relativistic heavy ion collisions; effective Lagrangians for hadronic systems at finite temperature; and Quark-Gluon Plasma, QCD.

*Experimental:* Current research programs in experimental nuclear physics at McGill are focused on two main axes:

- The study of heavy-ion reactions at relativistic energies to determine the properties of nuclear matter at high temperatures and density. This program is being performed at the



#### **section 11.8.4: Master of Science (M.Sc.) Physics (Thesis) (45 credits)**

information from scientific literature. Each M.Sc. student chooses their preferred major research area and research supervisor. Thesis work is available in a broad range of sub-disciplines (see [departmental website](#) for details). Students wishing to continue to our doctoral program have the option, with supervisor approval, of transferring directly to the Ph.D., waiving the M.Sc. thesis submission.

#### **section 11.8.5: Doctor of Philosophy (Ph.D.) Physics**

The doctoral program provides all the tools required for a competitive career in academic settings, as well as in industry or other fields. The multidisciplinary nature of the Department exposes students to a vast array of research interests and experimental or theoretical approaches. Graduate research activities leading to the presentation of a Ph.D. thesis involve original work, with distinct contributions to knowledge. Our graduate program offers training in a unique and multidisciplinary environment in Canada's top university and may involve an extended stay at one of the world's major research laboratories.

### **11.8.3 Physics Admission Requirements and Application Procedures**

#### **11.8.3.1 Admission Requirements**

##### **M.Sc.**

We normally require a background that is equivalent to our : [Bachelor of Science \(B.Sc.\) - Major Physics \(63 credits\)](#).

##### **Ph.D.**

The normal requirement is an M.Sc. in Physics or equivalent, but exceptional students may be considered for direct entry to the Ph.D. program. On the recommendation of the Departmental Graduate Committee, fast-tracking from the M.Sc. program into the Ph.D. program may be granted after one year, if:

- the student has fulfilled the M.Sc. coursework requirements, or;
- the Committee determines that the student qualifies based on the student's academic record.

All students who transfer to the Ph.D. program are required to fulfil Ph.D. coursework requirements in addition to the courses taken as an M.Sc. candidate.

#### **11.8.3.2 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.

##### **Financial Assistance**

Financial assistance will be offered to all students at the time of acceptance, if applicable. For more information, please visit our finance page: [physics.mcgill.ca/grads/finance.html](http://physics.mcgill.ca/grads/finance.html).

#### **11.8.3.2.1 Additional Requirements**

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

- two letters of reference;
- Physics CV;
- personal statement;
- thesis abstract or summary – optional;
- *GRE* – recommended but not required

A list of supporting documentation required by the University can be found at [mcgill.ca/gradapplicants/apply/prepare/checklist/documents](http://mcgill.ca/gradapplicants/apply/prepare/checklist/documents). International students must also demonstrate proficiency in English. Details are available at [mcgill.ca/gradapplicants/international/apply/proficiency](http://mcgill.ca/gradapplicants/international/apply/proficiency).

#### **11.8.3.3 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 Physics 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).

Please note, the Ph.D. program with a research emphasis on medical physics only accepts students in Fall.

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

#### **11.8.4 Master of Science (M.Sc.) Physics (Thesis) (45 credits)**

The M.Sc. in Physics focuses on conducting innovative research in a broad range of fields at the cutting edge of physics, which include but are not limited to astronomy, high energy physics, condensed matter physics, materials science and biophysics. The thesis must focus on research in an area related to one of the Department's research groups.

##### **Required Cour**

## 11.9 Psychology

### 11.9.1 Location

Department of Psychology  
 2001 McGill College Avenue, 7th Floor  
 Montreal QC H3A 1G1  
 Canada  
 Telephone: 514-398-6127/514-398-6137  
 Email: [psychology.grad@mcgill.ca](mailto:psychology.grad@mcgill.ca)  
 Website: [mcgill.ca/psychology](http://mcgill.ca/psychology)

### 11.9.2 About Psychology

The aim of the Experimental program is to provide students with an environment in which they are free to develop skills and expertise that will serve during a professional career of teaching and research as a psychologist. Coursework and other requirements are at a minimum. Success in the program depends on the student's ability to organize unscheduled time for self-education. Continuous involvement in research planning and execution is considered a very important component of the student's activities.

The Clinical program adheres to the scientist practitioner model and as such is designed to train students for careers in university teaching or clinical research, and for service careers (working with children or adults in hospital, clinical, or educational settings). Most of our clinical graduates combine service and research roles. While there are necessarily many more course requirements than in the Experimental program, the emphasis is again on research training. There is no master's program in Clinical Psychology; the Department offers direct entry to a doctoral degree for holders of an undergraduate degree, and students are expected to complete the full program leading to a doctoral degree.

Research interests of members of the Psychology Department include:

- behavioural neuroscience;
- clinical psychology;
- cognition and cognitive neuroscience;
- developmental science;
- health psychology;
- quantitative psychology and modelling; and
- social and personality psychology.

Facilities for advanced research in a variety of fields are available within the Department itself. In addition, arrangements exist with the Departments of Psychology at the Montreal Neurological Institute and Hospital, Allan Memorial Institute, Douglas Mental Health University Institute, Jewish General Hospital, Montreal Children's Hospital, and Montreal General Hospital to permit graduate students to undertake research in a hospital setting.



**Note:** Many MUHC-affiliated hospitals and institutes are now located at the Glen site; further information is available on the [MUHC website](#).

For inquiries about all programs and financial aid, and for application forms, contact the [Graduate Program Administrator](#).

#### Ph.D. Option in Behavioural Neuroscience

Information about this option is available from the Department and at [mcgill.ca/psychology/graduate/program-tracks](http://mcgill.ca/psychology/graduate/program-tracks).

#### Ph.D. Option in Language Acquisition (LAP)

Information about this option is available from the Department and at [psych.mcgill.ca/lap.html](http://psych.mcgill.ca/lap.html) and [mcgill.ca/psychology/graduate/program-tracks/experimental/additional-program-opportunities](http://mcgill.ca/psychology/graduate/program-tracks/experimental/additional-program-opportunities).

#### **: Master of Arts (M.A.) Psychology (Thesis) (45 credits)**

Candidates must demonstrate a sound knowledge of modern psychological theory, of its historical development, and of the logic of statistical methods as used in psychological research. Candidates will be expected to have an understanding of the main lines of current work in areas other than their own field of specialization.

#### **section 11.9.4: Master of Science (M.Sc.) Psychology (Thesis) (45 credits)**

Candidates must demonstrate a sound knowledge of modern psychological theory, of its historical development, and of the logic of statistical methods as used in psychological research. Candidates will be expected to have an understanding of the main lines of current work in areas other than their own field of specialization.

### ***: Doctor of Philosophy (Ph.D.) Psychology***

Please contact the Department for more information about this program.

#### ***section 11.9.6: Doctor of Philosophy (Ph.D.) Psychology: Behavioural Neuroscience***

The Ph.D. in Psychology: Behavioural Neuroscience program emphasizes modern, advanced theory and methodology aimed at the neurological underpinnings of behaviour in human and non-human animals. This program is intended for graduate students in any area of Psychology who wish to obtain unique, intensive training at the intersection of psychology and neuroscience, thereby enhancing their expertise, the interdisciplinary potential of their dissertation research, and enabling them to compete successfully for academic or commercial positions in either field alone, or their intersection. It requires that students complete a dissertation that addresses Behavioural Neuroscience themes.

#### ***section 11.9.7: Doctor of Philosophy (Ph.D.) Psychology: Language Acquisition***

This unique interdisciplinary program focuses on the scientific exploration of language acquisition by different kinds of learners in diverse contexts. Students in the Language Acquisition program are introduced to theoretical and methodological issues on language acquisition from the perspectives of cognitive neuroscience, theoretical linguistics, psycholinguistics, education, communication sciences and disorders, and neuropsychology.

## **11.9.3 Psychology Admission Requirements and Application Procedures**

### **11.9.3.1 Admission Requirements**

Admission to the graduate program depends on an evaluation of students' research interests and their aptitude for original contributions to knowledge and, if applicable, for professional contributions in the applied field.

The usual requirement for admission is an Honours or Major degree (B.A. or B.Sc.) in Psychology. This usually includes an introductory course plus twelve courses in psychology (each equivalent to three term hours). Courses in experimental psychology, the theoretical development of modern ideas in psychology, and statistical methods as applied to psychological problems (equivalent to an introductory course) are essential. Applicants' knowledge of relevant biological, physical, and social sciences is considered. Students applying to the clinical program are advised to complete 42 specific undergraduate credits in psychology as specified by the *Order of Psychologists of Quebec* (*Ordre des psychologues du Québec*)

### 11.9.3.3 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 Psychology 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.

### 11.9.4 Master of Science (M.Sc.) Psychology (Thesis) (45 credits)

The M.Sc. in Psychology focuses on research in the field of psychology, culminating in the submission of a thesis. The program emphasizes the skills in critical reading, data collection, and scientific communication. This program typically takes 2 years to complete.

#### Thesis Courses (27 credits)

PSYC 690	(15)	Masters Research 1
PSYC 699	(12)	Masters Research 2

#### Required Courses (18 credits)

PSYC 601	(6)	First Year Research Paper
PSYC 650	(3)	Advanced Statistics 1
PSYC 651	(3)	Advanced Statistics 2
PSYC 660D1	(3)	Psychology Theory
PSYC 660D2	(3)	Psychology Theory

### 11.9.5 Doctor of Philosophy (Ph.D.) Psychology

All candidates for the Ph.D. degree must demonstrate broad scholarship, mastery of current theoretical issues in psychology and their historical development, and a detailed knowledge of their special field. Great emphasis is placed on the development of research skills, and the dissertation forms the major part of the evaluation at the Ph.D. level.

Ph.D. students in Clinical Psychology must fulfil similar requirements to Ph.D. students in the Experimental Program and must also take a variety of specialized courses, which include practicum and internship experiences.

#### Thesis

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 Course

PSYC 701	(0)	Doctoral Comprehensive Examination
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#### Complementary Courses

12-24 credits

12 credits (one course per term in Year 2 and Year 3) chosen from the following list:

PSYC 712	(3)	Comparative and Physiological Psychology 3
PSYC 715	(3)	Comparative and Physiological Psychology 6
PSYC 722	(3)	Personality and Social Psychology
PSYC 723	(3)	Personality and Social Psychology
PSYC 724	(3)	Personality and Social Psychology
PSYC 725	(3)	Personality and Social Psychology

PSYC 727	(3)	Personality and Social Psychology
PSYC 728	(3)	Ethics and Professional Issues
PSYC 729	(3)	Theory of Assessment
PSYC 730	(3)	Clinical Neuroscience Methods
PSYC 732	(3)	Clinical Psychology 1
PSYC 733	(3)	Clinical Psychology 2
PSYC 734	(3)	Developmental Psychology and Language
PSYC 735	(3)	Developmental Psychology and Language
PSYC 736	(3)	Developmental Psychology and Language
PSYC 740	(3)	Perception and Cognition
PSYC 741	(3)	Perception and Cognition
PSYC 742	(3)	Perception and Cognition
PSYC 743	(3)	Perception and Cognition
PSYC 744	(3)	Perception and Cognition
PSYC 746	(3)	Quantitative and Individual Differences
PSYC 747	(3)	Quantitative and Individual Differences
PSYC 748	(3)	Quantitative and Individual Differences
PSYC 749	(3)	Quantitative and Individual Differences
PSYC 750	(3)	Applied Bayesian Statistics
PSYC 752D1	(3)	Psychotherapy and Behaviour Change
PSYC 752D2	(3)	Psychotherapy and Behaviour Change
PSYC 753	(3)	Health Psychology Seminar 1

0-12 credits from the following (students without a master's degree from McGill need to take all 12 credits):

PSYC 650	(3)	Advanced Statistics 1
PSYC 651	(3)	Advanced Statistics 2
PSYC 660D1	(3)	Psychology Theory
PSYC 660D2	(3)	Psychology Theory

Note: The Department of Psychology does not ordinarily require an examination in a foreign language however, all students planning on practicing clinical psychology in the province of Quebec will be examined based on their proficiency in French before being admitted to the professional association.

### 11.9.6 Doctor of Philosophy (Ph.D.) Psychology: Behavioural Neuroscience

The Ph.D. in Psychology: Behavioural Neuroscience program emphasizes modern, advanced theory and methodology aimed at the neurobiological underpinnings of behaviour in human and non-human animals. This program is intended for graduate students in any area of Psychology who wish to obtain unique, intensive training at the intersection of psychology and neuroscience, thereby enhancing their expertise; the interdisciplinary potential of their dissertation research, and enabling them to compete successfully for academic or commercial positions in either field alone, or their intersection. It requires that students complete a dissertation that addresses Behavioural Neuroscience themes as determined by the graduate program director.

#### 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 of Behavioural Neuroscience 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

PSYC 701	(0)	Doctoral Comprehensive Examination
PSYC 781	(3)	Behavioural Neuroscience Special Topics
PSYC 782	(3)	Behavioural Neuroscience Advanced Seminar

### Complementary Courses

6-18 credits

6 credits (one course per term in Year 2 and Year 3) chosen from relevant 700-level courses in consultation with the supervisor and graduate program director.

0-12 credits from the following (students without a master's degree from McGill need to take all 12 credits):

PSYC 650	(3)	Advanced Statistics 1
PSYC 651	(3)	Advanced Statistics 2
PSYC 660D1	(3)	Psychology Theory
PSYC 660D2	(3)	Psychology Theory

Note: The Department of Psychology does not ordinarily require an examination in a foreign language however, all students planning on practicing clinical psychology in the province of Quebec will be examined based on their proficiency in French before being admitted to the professional association.

### 11.9.7 Doctor of Philosophy (Ph.D.) Psychology: Language Acquisition

Students must satisfy all program requirements for the Ph.D. in Psychology. The Ph.D. thesis must be on a topic relating to language acquisition.

#### 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)

LING 710	(2)	Language Acquisition Issues 2
PSYC 701	(0)	Doctoral Comprehensive Examination
PSYC 709	(2)	Language Acquisition Issues 1
SCSD 712	(2)	Language Acquisition Issues 4

#### Complementary Courses

15-32 credits

12 credits (one course per term in Year 2 and Year 3) chosen from the following list:

PSYC 712	(3)	Comparative and Physiological Psychology 3
PSYC 715	(3)	Comparative and Physiological Psychology 6
PSYC 722	(3)	Personality and Social Psychology
PSYC 723	(3)	Personality and Social Psychology
PSYC 724	(3)	Personality and Social Psychology
PSYC 725	(3)	Personality and Social Psychology
PSYC 727	(3)	Personality and Social Psychology
PSYC 728	(3)	Ethics and Professional Issues
PSYC 729	(3)	Theory of Assessment
PSYC 730	(3)	Clinical Neuroscience Methods
PSYC 732D1	(1.5)	Clinical Psychology 1

PSYC 732D2	(1.5)	Clinical Psychology 1
PSYC 733D1	(1.5)	Clinical Psychology 2
PSYC 733D2	(1.5)	Clinical Psychology 2
PSYC 734	(3)	Developmental Psychology and Language
PSYC 735	(3)	Developmental Psychology and Language
PSYC 736	(3)	Developmental Psychology and Language
PSYC 740	(3)	Perception and Cognition
PSYC 741	(3)	Perception and Cognition
PSYC 742	(3)	Perception and Cognition
PSYC 743	(3)	Perception and Cognition
PSYC 744	(3)	Perception and Cognition
PSYC 746	(3)	Quantitative and Individual Differences
PSYC 747	(3)	Quantitative and Individual Differences
PSYC 748	(3)	Quantitative and Individual Differences
PSYC 749	(3)	Quantitative and Individual Differences
PSYC 750	(3)	Applied Bayesian Statistics
PSYC 752D1	(3)	Psychotherapy and Behaviour Change
PSYC 752D2	(3)	Psychotherapy and Behaviour Change
PSYC 753	(3)	Health Psychology Seminar 1

At least 3 credits selected from the following list:

EDSL 620	(3)	Social Justice Issues in Second Language Education
EDSL 623	(3)	Second Language Learning
EDSL 624	(3)	Educational Sociolinguistics
EDSL 627	(3)	Instructed Second Language Acquisition Research
EDSL 632	(3)	Second Language Literacy Development
LING 651	(3)	Topics in Acquisition of Phonology
LING 655	(3)	Theory of L2 Acquisition
LING 751	(3)	Advanced Seminar: Experimental 1
LING 752	(3)	Advanced Seminar: Experimental 2
PSYC 545	(3)	Topics in Language Acquisition
PSYC 735	(3)	Developmental Psychology and Language
SCSD 619	(3)	Phonological Development
SCSD 632	(3)	Phonological Disorders: Children
SCSD 637	(3)	Developmental Language Disorders 1
SCSD 643	(3)	Developmental Language Disorders 2
SCSD 652	(3)	Advanced Research Seminar 1
SCSD 653	(3)	Advanced Research Seminar 2
SCSD 654	(3)	Advanced Research Seminar 3

0-2 from the following:

EDPE 713	(2)	Language Acquisition Issues 5
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EDSL 711 (2) Language Acquisition Issues 3

0-3 credits of statistics from the following list:

EDPE 676	(3)	Intermediate Statistics
EDPE 682	(3)	Univariate/Multivariate Analysis
LING 620	(3)	Experimental Linguistics: Methods
PSYC 650	(3)	Advanced Statistics 1
PSYC 651	(3)	Advanced Statistics 2

Students who have taken an equivalent course in statistics will be deemed to have satisfied this requirement for the Language Acquisition Option.

These 3 credits are only required for students who have not previously taken an equivalent course in statistics.

0-12 credits from the following (students without a McGill master's degree need to take all 12 credits):

PSYC 650	(3)	Advanced Statistics 1
PSYC 651	(3)	Advanced Statistics 2
		Psychology choi

### **11.10.3.2 Application Procedures**

Students in the Redpath Museum may enrol in McGill's Department of [section 11.2: Biology](#) or other units, including the Department of [section 11.5: Earth and Planetary Sciences](#), the Department of [Anthropology](#), the Department of [Natural Resource Sciences](#), or the [Faculty of Education](#). Anyone interested should contact the unit concerned.

### **11.10.3.3 Application Dates and Deadlines**

For more information, please contact the Graduate Program Coordinator in the department you are interested in.