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

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1 Dean's Welcome

To Graduate Students and Postdoctoral Fellows:

Welcome to Graduate and Postdoctoral Studies (GPS) at McGill. You are joining a community of world-class researchers and more than 10,000 graduate students in over 400 programs. [GPS is here to support you through the graduation process](#) We take a holistic approach to your student success; we support not only your academic development, but also your career-planning and professional development, and your well-being and student life. I invite you to consult the website [Resources for Your Success](#), which is a one-stop-shop for the many resources and support systems in place for you across the University.

I would like to wish you all the best in your studies at McGill. We are here to make sure that you have the best possible experience.

Josephine Nalbantoglu, Ph.D.

Dean, Graduate and Postdoctoral Studies

2 Graduate and Postdoctoral Studies

2.1 Administrative Officers

Administrative Officers

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

Dean (Graduate and Postdoctoral Studies)

Robin Beech; B.Sc.(Nott.), Ph.D.(Edin.)

Associate Dean (Graduate and Postdoctoral Studies)

France Bouthillier; B.Ed., C.Admin.(UQAM), M.B.S.I.(Montr.), Ph.D.(Tor.)

Associate Dean (Graduate and Postdoctoral Studies)

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

Associate Dean (Graduate and Postdoctoral Studies)

2.2 Location

James Administration Building, Room 400F1 8.1 Tf1 0 0 11 103.069 308.07 Tm(Administration Building, Room be and P)Tj1 0 0ration BuildeM) only r BuildeM)

4 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.

5 Program Requirements

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

- Master's Degrees
- Doctoral Degrees
- Coursew

8.2 Guidelines and Policy for Academic Units on Postdoctoral Education

Every unit hosting postdocs should apply institutional policies and procedures for the provision of postdoctoral education and have established means for informing postdocs of policies, procedures, and privileges (available at mcgill.ca/gps/postdocs), as well as mechanisms for addressing complaints. For their part, postdocs are responsible for informing themselves of such policies, procedures, and privileges.

1. Definition and Status

- i. Postdoctoral status will be recognized by the University in accordance with Quebec provincial regulations as may be modified from time to time. The eligibility period for postdoctoral status is up to five years from the date when the Ph.D. or equivalent degree was awarded. A : *leave of absence* for parental or health reasons may extend the eligibility period. Leaves for other reasons, including vacation, do not impact the eligibility period.
- ii. Some McGill postdocs have dual status as both students and employees (unionized or non-unionized). Consult the [Graduate and Postdoctoral Studies website](#) for definitions of Postdoctoral Fellows, Postdoctoral Scholars and Postdoctoral Researchers.
- iii. Postdocs must conduct research under the supervision of a McGill professor (including Adjunct Professors), qualified in the discipline in which training is being provided and with the ability to fulfil supervisory responsibilities and act as a mentor for career development. Postdocs are expected to engage primarily in research with minimal teaching or other responsibilities.

2. Registration

- i. Postdocs must *register* annually with the University through Enrolment Services. Registration will be limited to postdocs who fulfil the definition above, and who meet the eligibility criteria as stipulated on the [Graduate and Postdoctoral Studies website](#).
- ii. Upon registration, postdocs will be eligible for a University identity card issued by Enrolment Services.
- iii. Leav

- i. Postdocs are subject to the responsibilities outlined at www.mcgill.ca/students/srr and must abide by the policies listed at www.mcgill.ca/secretariat/policies-and-regulations.
- ii. Each academic unit hosting postdocs should clearly identify postdocs' needs and the means by which they will be met by the unit.
- iii. Each academic unit should assess the availability of research supervision facilities, office space, and research funding before recruiting postdocs.
- iv. Some examples of the responsibilities of the academic unit are:
 - to verify the postdoc's eligibility period for registration;
 - to provide postdocs with departmental policy and procedures that pertain to them;
 - to facilitate the re

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

10 Graduate Student Services and Information

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

- Service Point
- Student Rights & Responsibilities
- Student Services – Downtown & Macdonald Campuses
- Residential Facilities
- Athletics and Recreation
- Ombudsperson for Students
- Extra-Curricular and Co-Curricular Activities
- Bookstore
- Computer Store
- Day Care

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

Refer to [University Regulations & Resources](#) > [Graduate](#) >

Email: info.aos@mcgill.ca; graduate studies: graduateinfo.aos@mcgill.ca
Website: www.mcgill.ca/meteo

12.1.2 About Atmospheric and Oceanic Sciences

The Department of

12.1.3 Atmospheric and Oceanic Sciences Admission Requirements and Application Procedures

12.1.3.1 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 and oceanic science, physics, mathematics, engineering, or similar.

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 courses in atmospheric and oceanic sciences. Students entering without a master's degree or without a sufficient background in atmospheric and oceanic sciences are admitted at the Ph.D. 1 level and are required to take an additional five courses in atmospheric and oceanic science, these usually being completed in the first two semesters.

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

12.1.3.2 Application Procedures

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

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

12.1.3.2.1 Additional Requirements

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

-

Emeritus Professors

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

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

Professors

P. Ariya; B.Sc., Ph.D.(York) (*James McGill Professor*) (*joint appt. with Chemistry*)

P. Bartello; B.S.c., M.Sc., Ph.D.(McG.)

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

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

Associate Professors

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

Y. Huang; B.Sc., M.Sc.(Peking), Ph.D.(Princ.)

D. Kirshbaum; B.Sc.(Ill.-Urbana-Champaign), M.Sc.(Johns Hop.), Ph.D.(Wash.)

T. Merlis; B.Sc.(Col.), Ph.D.(Caltech)

D. Straub; B.Sc., M.Sc.(UL Lafayette), Ph.D.(Wash.)

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

A. Zuend; Ph.D.(ETH Zurich)

Assistant Professors

C. Dufour; B.Eng.(ISITV, France), M.Sc.(Toulon), Ph.D.(Grenoble)

T. Preston; B.Sc.(Tor.), M.Sc.(UWO), Ph.D.(Br. Col.) (*joint appt. with Chemistry*)

I. Tan; B.Sc. (Tor.), Ph.D. (Yale)

Adjunct Professors

L. Barrie; Ph.D.(Goethe)

P. Kollias; Ph.D.(Miami)

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

L.-P. Nadeau; Ph.D.(McG.)

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

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

Thesis Courses (24 credits)

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

Although registration is not required, students registered in M.Sc. programs are expected to regularly attend one of the student seminar series (ATOC 751D1/D2 or ATOC 752D1/D2) and the Department seminar series during the entire period of their enrolment in the program.

Complementary Courses (21 credits)

Must complete or have completed the following courses or equivalent:

ATOC 512	(3)	Atmospheric and Oceanic Dynamics
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ATOC 513	(3)	Waves and Stability
ATOC 515	(3)	Turbulence in Atmosphere and Oceans
ATOC 519*	(3)	Advances in Chemistry of Atmosphere
ATOC 521	(3)	Cloud Physics
ATOC 525	(3)	Atmospheric Radiation
ATOC 530	(3)	Paleoclimate Dynamics
ATOC 531	(3)	Dynamics of Current Climates
ATOC 540	(3)	Synoptic Meteorology 1
ATOC 541	(3)	Synoptic Meteorology 2
ATOC 548	(3)	Mesoscale Meteorology.
ATOC 568	(3)	Ocean Physics
ATOC 626	(3)	Atmospheric/Oceanic Remote Sensing
ATOC 646	(0)	
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.

12.1.6 Master of Science (M.Sc.) Atmospheric and Oceanic Sciences (Thesis): Environment (45 credits)

** This program is currently not offered **

Thesis Courses (24 credits)

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

Although registration is not required, students registered in M.Sc. programs are expected to regularly attend one of the student seminar series (A

ATOC 525	(3)	Atmospheric Radiation
ATOC 530	(3)	Paleoclimate Dynamics
ATOC 531	(3)	Dynamics of Current Climates
ATOC 540	(3)	Synoptic Meteorology 1
ATOC 541	(3)	Synoptic Meteorology 2
ATOC 568	(3)	Ocean Physics
ATOC 626	(3)	Atmospheric/Oceanic Remote Sensing
ATOC 646	()	
CHEM 519*	(3)	Advances in Chemistry of Atmosphere

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

* Students may select either ATOC 519 or CHEM 519.

3 credits of MSE courses chosen from the following:

ENVR 519	(3)	Global Environmental Politics
ENVR 544	(3)	Environmental Measurement and Modelling
ENVR 620	(3)	Environment and Health of Species
ENVR 622	(3)	Sustainable Landscapes

12.2 Biology

12.2.1 Location

Department of Biology
Stewart Biological Sciences Building, Room N7/18B
1205 Dr. Penfield Avenue
Montreal QC H3A 1B1
Canada
Telephone: 514-398-5478
Fax: 514-398-5069
Email: ancil.gittens@mcgill.ca
Website: biology.mcgill.ca

12.2.2 About Biology

The Department offers graduate training in many areas of biology with particular strengths in the following areas:

- Molecular Biology and Genetics
- Cell and Developmental Biology
- Ecology, Biodiversity, and Conservation
- Evolution
- Neurobiology
- Bioinformatics
- Plant Biology

In addition to the regular **M.Sc.** and **Ph.D.** programs, the Biology Department offers specialized programs, known as “concentrations”, in the areas of Neotropical Environment (NEO), Bioinformatics, and Environment.

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, usually in the form of literature-based seminar courses, is minimal and typically completed within the first year. To complement their classroom and laboratory training, students regularly attend other seminar series and journal clubs and present their own work annually in a formal seminar.

In addition to working with world-class researchers, graduate students in Biology have access to a wide range of resources and facilities, including state-of-the-art laboratories and equipment. For more information, please contact the Department of Biology at biology.mcgill.ca.

section 12.2.12: Doctor of Philosophy (Ph.D.) Biology: Bioinformatics

for that department. The student will additionally be evaluated according to requirements specific to the Bioinformatics concentration. Students in this concentration will have access to five specialized courses that are open only to students within the Bioinformatics concentration. At the Ph.D. level students will be fluent in the concepts, language, approaches, and limitations of the field and will also have the capability of developing an independent bioinformatics research program.

section 12.2.10: Doctor of Philosophy (Ph.D.) Biology: Environment

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

Coordinated and administered through the *McGill School of Environment* (MSE), the Environment concentration is aimed at students who wish to use interdisciplinary approaches in their graduate research on environmental issues and who wish to benefit from interactions that will occur as they interact with students from a wide range of different disciplines. This concentration is available from a variety of faculties and departments.

section 12.2.11: Doctor of Philosophy (Ph.D.) Biology: Neotropical Environment

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

NEO favours interdisciplinary approaches to research and learning through the participation of researchers from McGill and from STRI. Accordingly, each student will have two co-supervisors, one from McGill and one from STRI. Students will complete their research in Latin America, and the NEO's core and complementary courses will be taught in Panama.

12.2.3.3 Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Biology Department and may be revised at any time. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at www.mcgill.ca/gps/contact/graduate-program.

Application Opening Dates		Application Deadlines		
		All Applicants	Non-Canadian citizens (incl. Special, Visiting & Exchange)	Canadian citizens/Perm. residents of Canada (incl. Special, Visiting & Exchange)
Fall Term:	Sept. 15	Jan. 15	March 15	March 15
Winter Term:	Feb. 15	Aug. 15	Oct. 15	Oct. 15
Summer Term:	N/A	N/A	N/A	N/A

Admission to graduate studies is competitive; accordingly, late and/or incomplete applications are considered only as time and space permit. All inquiries pertaining to admission procedures should be directed to the [Graduate Admissions Secretary](#).



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

12.2.4 Biology Faculty

Chair

Gregor Fussmann

Graduate Program Director

Frédéric Guichard

Emeritus Professors

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

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

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

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

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

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

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

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

Barid B. Mukherjee; B.Sc., M.Sc.(Calc.), M.Sc.(Brigham Young), Ph.D.(Utah)

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

Ronald Poole; B.Sc., Ph.D.(Birm.)

Derek Roff; B.Sc.(Syd.), Ph.D.(Br. Col.), F.R.S.C.

Rolf Sattler; B.Sc.(Tübingen), Ph.D.(Munich)

Professors

Ehab

Professors

Frédéric Guichard; B.Sc.(Montr.), Ph.D.(Laval)

Siegfried Hekimi; M.Sc., Ph.D.(Geneva), F.R.S.C. (*Strathcona Chair in Zoology; Robert Archibald & Catherine Louise Campbell Chair in Developmental Biology*)

Andrew Hendry; B.Sc.(Vic., BC), M.Sc., Ph.D.(Wash.) (

Associate Members

BioEngineering: Adam Hendricks

Centre for Research in Neuroscience: Yong Rao, Donald Van Meyel

Environment: Colin Chapman

Glen site: Hugh J. Clarke, Daniel Dufort, Teruko Taketo

Medical Genetics, Chair: David Rosenblatt

MNI: Kenneth Hastings

Physics: Paul Francois

Redpath Museum: Rowan Barrett, David Green, Hans Larsson, Virginie Millien, Anthony Ricciardi

Adjunct Professors

BELLUS Health Inc.: Francesco Bellini; B.Sc.(C'dia), Ph.D.(New Br.)

Humboldt Univ., Berlin

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

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

12.2.7 Master of Science (M.Sc.) Biology (Thesis): Neotropical Environment (48 credits)

P

Doctor of Philosophy (Ph.D)

section 12.3.6: Doctor of Philosophy (Ph.D.) Chemistry

Please consult the Department for more information about this program.

12.3.3 Chemistry Admission Requirements and Application Procedures

12.3.3.1 Admission Requirements

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

Emeritus Professors

T.H. Chan; B.Sc.(Tor.), M.A., Ph.D.(Princ.), F.C.I.C., F.R.S.C.
 A. Eisenberg; B.S.(Wor. Poly.), M.A., Ph.D.(Princ.), F.C.I.C.
 B.C. Eu; B.Sc.(Seoul), Ph.D.(Brown)
 D.G. Gray; B.Sc.(Belf.), M.Sc., Ph.D.(Manit.), F.C.I.C.
 E.D. Salin; B.Sc.(Calif.), Ph.D.(Ore.), F.C.I.C.
 M.A. Whitehead; B.Sc., Ph.D., D.Sc.(Lond.), F.C.I.C.

Professors

M.P. Andrews; B.Sc., M.Sc., Ph.D.(Tor.)
 P. Ariya; B.Sc., Ph.D.(York)
 B.A. Arndtsen; B.A.(Carleton Coll.), Ph.D.(Stan.)
 K. Auclair; B.Sc.(UQAC), Ph.D.(Alta.)
 C.J. Barrett; B.Sc., M.Sc., Ph.D.(Qu.)
 D.S. Bohle; B.A.(Reed), M.Phil., Ph.D.(Auck.)
 I.S. Butler; B.Sc., Ph.D.(Brist.), F.C.I.C.
 G. Cosa; B.Sc.(UNRC, Argentina), Ph.D.(Ott.)
 M.J. Damha; B.Sc., Ph.D.(McG.), F.C.I.C.
 T. Friš i ; B.Sc.(Zagreb), Ph.D.(Iowa)
 D.N. Harpp; A.B.(Middlebury), M.A.(Wesl.), Ph.D.(N. Carolina), F.C.I.C.
 A. Kakkar; B.Sc., M.Sc.(Chan. U., India), Ph.D.(Wat.)
 R.B. Lennox; B.Sc., M.Sc., Ph.D.(Tor.), F.C.I.C., F.R.S.C.
 C.J. Li; B.Sc.(Zhengzhou), M.S.(Chin. Acad. Sci.), Ph.D.(McG.), F.R.S.C.
 N. Luedtke; B.Sc.(Wash.), M.Sc., Ph.D.(Calif. -San Diego)
 J. Mauzeroll; B.Sc.(McG.), Ph.D.(Texas-Austin)
 N. Moitessier; M.Sc., Ph.D.(Nancy)
 D. Perepichka; B.Sc.(Donetsk, Ukraine), Ph.D.(Nat. Aca. Sci., Ukraine)
 D.M. Ronis; B.Sc.(McG.), Ph.D.(MIT)
 H. Sleiman; B.Sc.(Beirut), Ph.D.(Stan.)
 Y.S. Tsantrizos; B.Sc., M.Sc., Ph.D.(McG.)
 T.G.M. van de Ven; Kand. Doc.(Utrecht), Ph.D.(McG.)
 P. Wiseman; B.Sc.(St. FX), Ph.D.(UWO)

Associate Professors

A.S. Blum; B.A.(Princ.), Ph.D.(Wash.)
 J.L. Gleason; B.Sc.(McG.), Ph.D.(Virg.)
 P. Kambhampati; B.A.(Carleton Coll.), Ph.D.(Texas-Austin)
 J.-P. Lumb; B.Sc.(Cornell), Ph.D.(Calif., Berk.)
 A. Mittermaier; B.Sc.(Guelph), Ph.D.(Tor.)
 N. Moitessier; M.Sc., Ph.D.(Nancy)
 A. Moores; B.Sc., Ph.D.(École Poly., France)
 L. Reven; B.A.(Carleton Coll.), Ph.D.(Ill.)
 B. Siwick; B.A.Sc., M.Sc., Ph.D.(Tor.)

Assistant Professors

M. Harrington; B.A.(Delaware), Ph.D.(Calif., Santa Barbara)

R. Khaliullin; B.S.(INEOS RAS, Moscow), M.S.(Mendeleev Univ., Moscow), Ph.D.(Calif., Berk.)

E. McCalla; B.Sc.(Mt. All.), M.Sc.(McG.), B.Ed.(Nfld.), Ph.D.(Dal.)

M. McKeague; B.Sc., Ph.D.(Car.)

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.

12.4 Computer Science

12.4.1 Location

School of Computer Science
McConnell Engineering, Room 318
3480 University Street
Montreal QC H3A 0E9
Canada
Telephone: 514-398-7071, ext. 00074
Fax: 514-398-3883
Email: grad.cs@mcgill.ca
Website: www.cs.mcgill.ca

12.4.2 About Computer Science

The School of Computer Science is one of the leading teaching and research centres for computer science in Canada. We offer several **M.Sc.** programs and a **Ph.D.** program; all include coursework and research. In the basic M.Sc. programs, students must choose between the thesis option, and the non-thesis option, which requires a project.

section 12.4.6: Master of Science (M.Sc.) Computer Science (Thesis): Bioinformatics (45 credits)

design, the construction of tools to analyze datasets, the application of modelling techniques, the creation of tools for manipulating bioinformatics data, the integration of biological databases, and the use of algorithms and statistics.

section 12.4.7: Master of Science (M.Sc.) Computer Science (Non-Thesis) (45 credits)

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

section 12.4.8: Doctor of Philosophy (Ph.D.) Computer Science

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

section 12.4.9: Doctor of Philosophy (Ph.D.) Computer Science: Bioinformatics

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

12.4.3 Computer Science Admission Requirements and Application Procedures**12.4.3.1 Admission Requirements****Master's (M.Sc.)**

The minimum requirement for admission is a bachelor's degree (cumulative grade point average (CGPA) of 3.2 out of 4.0 or better, or equivalent) with the coursework in Computer Science as listed on our [website](#).

The website supplements the information in this publication, and should be consulted by all graduate students.

Ph.D.

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.

12.4.3.2 Application Procedures

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

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

12.4.3.2.1 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) – required for degrees from outside Canada. Optional for Ph.D. program.

For further details, consult the [School of Computer Science's website](#)

12.4.3.3 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 www.mcgill.ca/gps/contact/graduate-program.

Associate Professors

B. Kemme; B.Sc., M.Sc.(Erlangen-Nuremberg, Germany), Ph.D.(ETH, Zurich)
J. Kienzle; Eng.Dip., Ph.D.(EPFL)
P. Kry; B.Sc.(Wat.), M.Sc., Ph.D.(Br. Col.)
M. Langer; B.Sc.(McG.), M.Sc.(Tor.), Ph.D.(McG.)
M. Maheswaran; B.Sc.(Peradeniya), M.Sc., Ph.D.(Purd.)
B. Pientka; B.Sc., M.Sc.(TU Darmstadt), Ph.D.(Carn. Mell)
J. Pineau; B.A.Sc.(Wat.), M.Sc., Ph.D.(Carn. Mell) (*William Dawson Scholar*)
D. Precup; B.Sc.(Tech. U. of Cluj-Napoca), M.Sc., Ph.D.(Mass.)
D. Ruths; B.Sc., M.Sc., Ph.D.(Rice)
C. Verbrugge; B.A.(Qu.), Ph.D.(McG.)
J. Waldispuhl; B.Sc.(Nice Sophia Antipolis), M.Sc.(Paris VII), Ph.D.(École Poly., France)

Assistant Professors

J. Cheung; B.Sc.(Br. Col.), M.Sc., Ph.D.(Tor.)
C. Dubach; M.Sc.(EPFL), Ph.D.(Edin.)
D. Meger; B.Sc.(Br. Col.), M.Sc.(McG.), Ph.D.(Br. Col.)
J. Guo; B.Sc., M.Sc.(Xian Jiaotong, China), Ph.D.(Notre Dame)
W.L. Hamilton; B.Sc., M.Sc.(McG.), Ph.D.(Stan.)
Y.Li; B.Sc.(Sask.), M.Sc., Ph.D.(Tor.)
H.C. Lin; B.Sc.(Calif. St.), M.Sc.(Alta.), Ph.D.(Edin.)
E. Patitsas; B.Sc.(Br. Col.), M.Sc., Ph.D.(Tor.)
R. Rabbany; B.Sc.(AUT, Iran), M.Sc., Ph.D.(Alta.)
M. Ravanbakhsh; B.Sc.(SUT, Tehran), M.Sc., Ph.D.(Alta.)
S. Reddy; B.Tech.(IIIT Hyderabad), M.S. by Res.(IIIT Hyderabad; York, UK), Ph.D.(Edin.)
B. Richards; B.Sc.(Tor), M.Sc., D.Phil.(Oxf.)
R. Robere; B.Sc.(Nfld.), M.Sc., Ph.D.(Tor.)

Faculty Lecturer

Adjunct Professors

M.G. Bellemare, T. Glatard, G. Gordon, N. Le Roux, A. Louis, B. Shepherd, A.R. Soriano, D. Tarlow, A. Trischler

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

Thesis Courses (24 credits)

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.

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

COMP 567	(3)	Discrete Optimization 2
COMP 598	(3)	Topics in Computer Science 1
COMP 599	(3)	Topics in Computer Science 2
COMP 610	(4)	Information Structures 1
COMP 618	(3)	Bioinformatics: Functional Genomics
COMP 627	(4)	Theoretical Programming Languages
COMP 642	(4)	Numerical Estimation Methods
COMP 647	(4)	Advanced Cryptography
COMP 649	(4)	Quantum Cryptography
COMP 680	(4)	Mining Biological Sequences
	Algorithms	Probabilistic Analysis of Algorithms

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

12.4.9 Doctor of Philosophy (Ph.D.) Computer Science: Bioinformatics

Thesis

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

- the fate of carbon and trace metals in marine sediments;
- the nature of changes in atmospheric and oceanic chemistry during Earth's history;
- mechanisms of faulting;
- geomicrobiology
- wetland hydrogeology;
- interactions between the cryosphere, solid Earth, and climate systems;
-

Digital field mapping, microstructural characterization, and mineralogical analyses of deformation structure kinematics, geometry, and deformation processes; orogenic processes; structural controls on ore deposit genesis; fluid flow in faults, granular flow in faults, and catastrophic structural/geochemical events in faults; earthquake mechanics and processes recorded in rocks; brittle-ductile transition structures and rheology.

Volcanology

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

section 12.5.5: Master of Science (M.Sc.) Earth and Planetary Sciences (Thesis) (45 credits)

The nature of graduate research in the Department of Earth and Planetary Sciences is highly variable. As a result, students may enter the graduate program with backgrounds in earth sciences, chemistry, or physics, depending on their research interests and the supervisor with whom they wish to work. Students pursuing an M.Sc. are required to take four courses, but their major project is an M.Sc. thesis that typically results in a journal publication. Research for the thesis 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-tracked” from the M.Sc. into the Ph.D. program at the end of the first year if suitable progress has been demonstrated. Such students are required to take a minimum of 18 credits of coursework in total, and a comprehensive oral examination before the end of 18 months in the Ph.D. program.

section 12.5.6: Master of Science (M.Sc.) Earth and Planetary Sciences (Thesis): Environment (48 credits)

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

section 12.5.7: Doctor of Philosophy (Ph.D.) Earth and Planetary Sciences

The nature of graduate research in the Department of Earth and Planetary Sciences is highly variable. As a result, students may enter the graduate program with backgrounds in earth sciences, chemistry, or physics, depending on their research interests and the supervisor with whom they wish to work. Ph.D. students typically enter with an M.Sc., in which case they are required by our regulations to take only two courses, although a supervisor may require more, depending on the suitability of the student's background. In addition to courses, Ph.D. students commence work on the thesis research project, including preparation for an oral examination on their research proposal before the end of 18 months from starting the program. Conduct of the research, and preparation of the results, for thesis and publication, typically takes three additional years. Students entering the Ph.D. program without an M.Sc. are required to take a full year of courses before embarking on the processes described above.

Students graduating from our Ph.D. program pursue careers in universities and government-funded research institutes, and in the mineral-exploration and petroleum industries.

section 12.5.8: Doctor of Philosophy (Ph.D.) Earth and Planetary Sciences: Environment

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 judgments. The option also provides a forum whereby graduate students bring their disciplinary perspectives together and enrich each other's learning through structured courses, formal seminars, and informal discussions and networking. Students that have been admitted through their home department or faculty may apply for admission to the option. Option requirements are consistent across academic units. The option is coordinated by the *McGill School of Environment* (MSE), in partnership with participating academic units.

12.5.3 Earth and Planetary Sciences Admission Requirements and Application Procedures

12.5.3.1 Admission Requirements

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

12.5.3.2 Application Procedures

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

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

See *University Regulations & Resources* > Graduate > Graduate Admissions and Application Procedures > : *Application Procedures* for detailed application procedures.

12.5.3.3 Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Department of Earth and Planetary Sciences and may be revised at any time. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at www.mcgill.ca/gps/contact/graduate-progr

Assistant Professors

Natalya Gomez; B.Sc., M.Sc.(Tor.), Ph.D.(Harv.)

James Kirkpatrick; B.Sc., M.Sc.(Leeds), Ph.D.(Glas.)

Nagissa Mahmoudi; B.Sc.(Tor.), Ph.D.(McM.)

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

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

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

* Students are required to take 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.

12.5.8 Doctor of Philosophy (Ph.D.) Earth and Planetary Sciences: Environment

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 (12 credits) in the Ph.D. 1 year, and two courses (6 credits) plus a comprehensive oral examination in the Ph.D. 2 year, as well as the Required Courses listed below.

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

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

Complementary Courses

* Two to six courses (6-18 credits)

One course chosen from the following courses:

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

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

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

12.6 Geography

12.6.1 Location

Department of Geography
Burnside Hall
805 Sherbrooke Street West, Room 705
Montreal QC H3A 0B9
Canada
Telephone: 514-398-4111
Fax: 514-398-7437
Email: grad.geog@mcgill.ca
Website: www.mcgill.ca/geography

12.6.2 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 Hitschfield Geographic Information Centre, maintains the [McGill Arctic Research Station](#) (Axel Heibur

: Master of Arts (M.A.) Geography (Thesis): Development Studies (45 credits)

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

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

The Environment option is offered in association with the *McGill School of Environment* (MSE) and is composed of a thesis component, required, 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 judgments. Students who have been admitted through their home department or Faculty may apply for admission to the option. Option requirements are consistent across academic units. The option is coordinated by the MSE, in partnership with participating academic units.

: Master of Arts (M.A.) Geography (Thesis): Gender and Women's Studies (45 credits)

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

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

The McGill-STRI Neotropical Environment Option (NEO) is a research-based option for master's or Ph.D. students offered in association with several University departments, the *McGill School of En*

: Doctor of Philosophy (Ph.D.) Geography

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

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

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

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

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

: Doctor of Philosophy (Ph.D.) Geography: Neotropical Environment

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

12.6.3 Geography Admission Requirements and Application Procedures

12.6.3.1 Admission Requirements

M.A. and M.Sc. Degrees

Applicants not satisfying the conditions in [University Regulations & Resources](#) > *Graduate* > *Graduate Admissions and Application Procedures*, but with primary under

Associate Professors

R. Sengupta; M.Sc., Ph.D.(Ill.) (*joint appt. with McGill School of Environment*)

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

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

J. Unruh; B.A.(Kansas), M.S.(Wisc. Madison), Ph.D.(Ariz.)

Assistant Professors

Y. le Polain de Waroux; Ph.D.(Louvain)

G. MacDonald; M.Sc., Ph.D.(McG.)

G. McKenzie; B.A.(Br. Col.), M.Sc.A.(Melb.), Ph.D.(Calif., Santa Barbara)

M. Riva; M.Sc., Ph.D.(Montr.) (*joint appt. with the Institute for Health and Social Policy*)

C. von Sperber; Ph.D.(ETH Zurich)

Adjunct Professor

G. Leblat 0 36 s2r.Tj606 579.08 Tm2b

Complementary Courses (12 credits)

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

3 credits, one course chosen from the following:

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

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

12.6.7 Master of Science (M.Sc.) Geography (Thesis): Neotropical Environment (45 credits)

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

Thesis Courses (30 credits)

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

Required Courses (9 credits)

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

Complementary Course (3 credits)

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

Elective Course (3 credits)

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

12.6.8 Doctor of Philosophy (Ph.D.) Geography

The doctoral degree in Geography includes the successful completion of the comprehensive e

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.

12.6.9 Doctor of Philosophy (Ph.D.) Geography: Environment

The Ph.D. in Geography Environment is a research program offered in collaboration with the 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.

Thesis (A thesis 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, and defend the approach and conclusions in the field. Finally, the thesis must be written in compliance with norms for academic publication in the main.

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, and defend the approach and conclusions in the field. Finally, the thesis must be written in compliance with norms for academic publication in the main.

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

Complementary Courses

Two substantive courses.

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

12.6.11 Doctor of Philosophy (Ph.D.) Geography: Neotropical Environment

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

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

Thesis

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

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

Elective Courses

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

12.7 Mathematics and Statistics

12.7.1 Location

Department of Mathematics and Statistics
 Burnside Hall, Room 1005
 805 Sherbrooke Street West
 Montreal QC H3A 0B9
 Canada
 Telephone: 514-398-3800
 Fax: 514-398-3899
 Email: grad.mathstat@mcgill.ca
 Website: www.mcgill.ca/mathstat/

12.7.2 About Mathematics and Statistics

The Department of Mathematics and Statistics offers programs that can be focused on applied mathematics, pure mathematics, and statistics leading to master's degrees (**M.A.** or **M.Sc.**), with program options in Bioinformatics. The research groups are:

- Algebra;
- Algebraic Geometry;
- Analysis;
- Applied Mathematics;
- Differential Equations;
- Differential Geometry;
- Discrete Mathematics;
- Geometric Group Theory;
- Logic;
- Mathematical Biology;
- Mathematical Physics;
- Number Theory;
- Probability;
- Statistics.

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

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](#)

section 12.7.7: Master of Science (M.Sc.) Mathematics and Statistics (Non-Thesis) (45 credits)

The Department of Mathematics and Statistics offers programs with concentrations in applied mathematics, pure mathematics, and statistics leading to the master's degree (M.Sc.). The non-thesis option requires a project and eight approved courses.

Ph.D. Programs in Mathematics and Statistics

: Doctor of Philosophy (Ph.D.) Mathematics and Statistics

The Department offers a course of studies leading to the Ph.D. degree. It differs substantially from the master's programs in that the student must write a thesis that makes an original contribution to know

12.7.3.3 Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Department of Mathematics and Statistics and may be revised at any time. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at www.mcgill.ca/gps/contact/graduate-program.

A

Application Deadlines

12.7.5 Master of Science (M.Sc.) Mathematics and Statistics (Thesis) (45 credits)**Thesis Courses (24 credits)**

MATH 600	(6)	Master's Thesis Research 1
MATH 601	(6)	Master's Thesis Research 2
MATH 604	(6)	Master's Thesis Research 3
MATH 605	(6)	Master's Thesis Research 4

Complementary Courses (21 credits)

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

12.7.6 Master of Science (M.Sc.) Mathematics and Statistics (Thesis): Bioinformatics (48 credits)**Thesis Courses (24 credits)**

MATH 600	(6)	Master's Thesis Research 1
MATH 601	(6)	Master's Thesis Research 2
MATH 604	(6)	Master's Thesis Research 3
MATH 605	(6)	Master's Thesis Research 4

Required Course (3 credits)

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

Complementary Courses (21 credits)

6 credits from the following:

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

15 credits of approved courses at the 500 or 600 level. Additional courses may be required at the discretion of the candidate's supervisory committee.

12.7.7 Master of Science (M.Sc.) Mathematics and Statistics (Non-Thesis) (45 credits)**Research Project (16 credits)**

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

Complementary Courses (29 credits)

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

12.7.8 Doctor of Philosophy (Ph.D.) Mathematics and Statistics

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 700	(0)	Ph.D. Comprehensive Examination Part A
MATH 701	(0)	Ph.D. Comprehensive Examination Part B

Complementary Courses (21 credits)

Minimum 21 credits of approved graduate courses, with at least two courses at the 600-level or above.

12.7.9 Doctor of Philosophy (Ph.D.) Mathematics and Statistics: Bioinformatics

Thesis

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

Required Courses (3 credits)

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
MATH 700	(0)	Ph.D. Comprehensive Examination Part A
MATH 701	(0)	Ph.D. Comprehensive Examination Part B

Complementary Courses (6 credits)

(3-6 credits)

The twelve one-semester complementary courses for the Ph.D. degree must include at least two from the list below, unless a student has completed the M.Sc.-leM.Sc.-leM.Sc.-leM.Sc.-le

Telephone: 514-398-6485 (Graduate Information)

Fax: 514-398-8434

Email: graduate.physics@mcgill.ca

Website: www.physics.mcgill.ca

12.8.2 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. The 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 sev

- High-energy particle astrophysics: ground-based gamma-ray astronomy using the VERITAS telescope array and development of the next-generation detector.
- Underground physics: A group carries out experimental R&D with the aim of measuring, for the first time, the neutrinoless double-beta decay process with the EXO experiment.

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 [Brookhaven National Laboratory](#), and at the Large Hadron Collider facility at [CERN](#).
- The study of ground state properties of unstable nuclei using laser spectroscopy techniques and ion traps. This work is being carried out using the Canadian Penning trap facility at the [Argonne National Laboratory](#), at the accelerator ISOLDE ([CERN](#)), and the ISAC facility at [TRIUMF](#).

Furthermore, the Nuclear Physics Group has an active in-house research program that applies the ion trap and laser techniques to the detection of trace quantities of material and contaminants, and to ion spectroscopy.

Condensed Matter Physics and Biophysics

Theoretical: Current research programs involve the nonequilibrium, ab-initio modelling of molecular and nanoelectronic systems and devices; the study of quantum effects in interacting mesoscopic electron systems; nonequilibrium phenomena in extended systems; and applications of statistical mechanics to problems in biophysics.

Experimental: Current research programs involve:

- the study of the time evolution of non-equilibrium systems via x-ray diffraction;
- fundamental quantum properties of strongly correlated systems at temperatures very near absolute zero;
- macromolecular interactions in living cells using single-photon and two-photon imaging;
- molecular electronics and nanoelectronic systems by scanning probe microscopy;
- dynamics and mechanical properties of soft matter systems and spatial organization and dynamics in living cells;
- mechanical behaviour of very small systems by high-resolution force microscopy;
- electronic properties that emerge at the limits of miniaturization and quantum computing;
- nuclear methods to study interactions in magnetic materials that lead to exotic magnetic ordering behaviour. This includes studies of novel materials such as carbon nanotubes, graphene, unconventional superconductors, quantum dots, heterostructures, amorphous systems, and spin glasses.

Astrophysics

Research in the astrophysics group covers a wide range of topics including cosmology, galaxy formation, high-energy astrophysics, and extrasolar planets. This involves observations at all wavelengths, from gamma rays and X-rays to sub-mm, infrared, and radio, using international observatories in space and on the ground. Experimental groups at McGill are involved in development and operation of ground-based high-energy gamma-ray observatories, and cosmic microwave background experiments. Theoretical work includes studies of how astrophysics and observational cosmology can experimentally determine the most important properties of dark matter and dark energy, studies of the diverse physics of neutron stars, and extrasolar planet formation.

Nonlinear Variability and Atmospheric Physics

This group studies nonlinear dynamical processes in the atmosphere and other geophysical systems, especially those associated with turbulent, chaotic, and extremely variable behaviour. Emphasis is placed on multifractal analysis and modelling as well as the development of new theories and techniques covering wide ranges of scale in time and space. Data from a variety of in situ and remotely sensed sources are used. This includes satellite data of the Earth's atmosphere and surface as well as high-quality precipitation data from the [McGill Radar Weather Observatory](#).

Medical Radiation Physics

The Medical Physics Unit is a teaching and research unit concerned with the application of physics and related sciences in medicine, especially (but not exclusively) in radiation medicine; i.e., radiation oncology, medical imaging, and nuclear medicine. The Unit's facilities are available for students to undertake a Ph.D. in Physics administered through the Department of Physics with a research emphasis on medical physics supervised, funded, and hosted by Medical Physics Unit PIs (principal investigators).

The research interests of Unit members include various aspects of medical imaging, including:

- 3D imaging;
- the development of new imaging modalities;
- applications of imaging in radiation therapy such as radiation dosimetry and solid state;
- nuclear cardiology; and
- applications of radiation biology to therapy.

section 12.8.5: Master of Science (M.Sc.) Physics (Thesis) (45 credits)

This program provides a comprehensive introduction to the academic, research, and practical aspects of physics. The primary goal of this program is to provide students with unique opportunities to learn fundamental research techniques in experimental and/or theoretical research, and objectively synthesize 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 12.8.6: Doctor of Philosophy (Ph.D.) Physics

The doctoral program pro

Application Opening Dates		Application Deadlines	
All Applicants	Non-Canadian citizens (incl. Special, Visiting & Exchange)	Canadian citizens/Perm. residents of Canada (incl. Special, Visiting & Exchange)	Current McGill Students (any citizenship)
	Dec. 15	Dec. 15	Dec. 15

Professors

V. Kaspi; B.Sc.(McG.), M.A., Ph.D.(Princ.), F.R.S.C. (*Canada Research Chair*) (*Lorne Trottier Chair in Astrophysics and Cosmology*)
 S. Lovejoy; B.A., M.A.(Camb.), Ph.D.(McG.)
 A. Maloney; B.S., M.S.(Stan.), Ph.D.(Harv.)
 N. Provatias; Ph.D.(McG.) (*Canada Research Chair*)
 K. Ragan; B.Sc.(Alta.), Ph.D.(Geneva) (*Macdonald Professor of Physics*)
 D.H. Ryan; B.A., Ph.D.(Dub.)
 P. Wiseman; B.Sc.(St. FX), Ph.D.(UWO) (*joint appt. with Chemistry*)

Associate Professors

H. Cynthia Chiang; B.Sc.(Ill.-Urbana-Champaign), Ph.D.(Caltech)
 L. Childress; B.A., Ph.D.(Harv.) (*Canada Research Chair*)
 B. Coish; B.Sc.(Manit.), M.Sc.(McM.), Ph.D.(Basel)
 D. Cooke; B.Sc.(St. FX), Ph.D.(Alta.)
 N. Cowan; B.Sc.(McG.), Ph.D.(Wash.) (*joint appt. with Earth and Planetary Sciences*)
 A. Cumming; B.A.(Camb.), Ph.D.(Calif., Berk.)
 K. Dasgupta; M.Sc.(IIT Delhi), Ph.D.(TIFR, India)
 P. Francois; Ph.D.(Paris VII)
 M. Hilke; B.Sc., M.Sc., Ph.D.(Geneva)
 S. Leslie; B.Sc.(Br. Col.), Ph.D.(Calif., Berk.)
 T. Pereg-Barnea; B.Sc.(Jerus.), M.Sc, Ph.D.(Br. Col.)
 W. Reisner; B.A.(Reed), Ph.D.(Princ.)
 S. Robertson; B.Sc.(Calg.), M.Sc., Ph.D.(Vic., BC) (*Affiliated I.P.P. Scientist*)
 R. Rutledge; B.Sc.(USC), Ph.D.(MIT)
 J. Sankey; Ph.D.(Cornell) (*Canada Research Chair*)
 J. Sievers; Ph.D.(Caltech)
 B. Siwick; B.A.Sc., M.Sc., Ph.D.(Tor.) (*Canada Research Chair*) (*joint appt. with Chemistry*)
 B. Vachon; B.Sc.(McG.), Ph.D.(Vic., BC)
 A. Warburton; B.Sc.(Vic., BC), M.Sc., Ph.D.(Tor.)
 T. Webb; B.Sc.(Tor.), M.Sc.(McM.), Ph.D.(Tor.)

Assistant Professors

K. Agarwal; B.Tech(IIT Kanpur), Ph.D.(Harv.)
 T. Brunner; Dip., Ph.D.(TUM)
 S. Caron-Huot; B.Sc.(Laval), M.Sc., Ph.D.(McG.)
 D. Haggard; B.A.(St. John's), M.Sc.(SF State), Ph.D.(Wash.)
 E. Lee; B.Sc., M.Sc.(Tor.), M.A., Ph.D.(Calif., Berk.)
 A. Liu; B.A.(Princ.), Ph.D.(MIT)

Associate Members

G. Bub (*Physiology*)
 M. Chacron (*Physiology*)
 S. Devic (*Oncology*)
 S. Enger (*Oncology*)
 K. Gehring (*Biochemistry*)

Associate Members

P. Kambhampati (*Chemistry*)

A. Khadra (*Physiology*)

J. Kildea (*Medical Physics*)

D. Rassier (*Kinesiology*)

D. Ronis (*Chemistry*)

J. Seuntjens (*Medical Physics*)

T. Szkopek (*Electrical and Computer Engineering*)

Adjunct Professors

O. Hernandez, A. Najafi-Y

12.9 Psychology

12.9.1 Location

Department of Psychology
2001 McGill College Avenue, 7th Floor
Montreal QC H3A 1G1
Canada
Telephone: 514-398-6127/514-398-6100
Fax: 514-398-4896
Email: chantale.bousquet@mcgill.ca
Website: www.mcgill.ca/psychology

12.9.2 About Psychology

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

M.A. and **M.Sc.** degrees may be awarded in Experimental Psychology, but only as a step to the **Ph.D.**—students undergo formal evaluation beginning with the submission of their master's requirements (thesis or fast-track paper) to enter Ph.D. 2.

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 & cognitive neuroscience;
- developmental science;
- health psychology;
- quantitative psychology & modelling;
- social & 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 www.mcgill.ca/psychology/graduate/program-tracks.

Ph.D. Option in Language Acquisition (LAP)

Information about this option is available from the Department and at www.psych.mcgill.ca/lap.html and www.mcgill.ca/psychology/graduate/program-tracks/experimental/additional-program-opportunities.

Ph.D. Option in Psychosocial Oncology (PSO)

A cross-disciplinary option in Psychosocial Oncology is offered within the existing Ph.D. program in Psychology. Information about this option is available from the Department and at www.medicine.mcgill.ca/oncology/programs/programs_psychosocialoncology.asp and www.mcgill.ca/psychology/graduate/program-tracks/clinical/additional-progr

[Arts](#) > [Graduate](#) > [Browse Academic Units & Programs](#) > [Psychology](#) > : [Master of Arts \(M.A.\) Psychology \(Thesis\) \(45 credits\)](#)

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

[Science](#) > [Graduate](#) > [Browse Academic Units & Programs](#) > [Psychology](#) > [section 12.9.5: Master of Science \(M.Sc.\) Psychology \(Thesis\) \(45 credits\)](#)

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

: [Doctor of Philosophy \(Ph.D.\) Psychology](#)

Please contact the Department for more information about this program.

[section 12.9.7: 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 12.9.8: Doctor of Philosophy \(Ph.D.\) Psychology: Language Acquisition](#)

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

[section 12.9.9: Doctor of Philosophy \(Ph.D.\) Psychology: Psychosocial Oncology](#)

The Department of Oncology, in conjunction with the Ingram School of Nursing, the Department of Psychology, and the School of Social Work, has developed the cross-disciplinary Psychosocial Oncology Option (PSOO). This option is open to doctoral students in the Ingram School of Nursing and in the Department of Psychology who are interested in broadening their knowledge of psychosocial issues in oncology.

12.9.3 Psychology Admission Requirements and Application Procedures

12.9.3.1 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 contrib

12.9.3.2 Application Procedures

McGill'

Emeritus Professors

A.A.J. Marley; B.Sc.(Birm.), Ph.D.(Penn.)
 R. Melzack; B.Sc., M.Sc., Ph.D.(McG.) (*E.P. Taylor Emeritus Professor of Psychology*)
 D.S. Moskowitz; B.S.(Kirkland), M.A., Ph.D.(Conn.)
 Y. Oshima-Takane; B.A.(TWCU.), M.A.(Tokyo), Ph.D.(McG.)
 R.O. Pihl; B.A.(Lawrence), Ph.D.(Ariz.)
 J.O. Ramsay; B.Ed.(Alta.), Ph.D.(Princ.)
 B. Sherwin; B.A., M.A., Ph.D.(C'dia) (*Canada Research Chair in Hormones, Brain and Cognition*)
 Y. Takane; B.L., M.A.(Tokyo), Ph.D.(N. Carolina)
 D.M. Taylor; M.A., Ph.D.(UWO)
 N. White; B.A.(McG.), M.A., Ph.D.(Pitt.)

Retired

Andrew G. Baker; B.A.(Br. Col.), M.A., Ph.D.(Dal.)
 M.J. Mendelson; B.Sc.(McG.), M.A., Ph.D.(Harv.)

Professors

M. Baldwin; B.A.(Tor.), M.A., Ph.D.(Wat.)
 I.M. Binik; B.A.(NYU), M.A., Ph.D.(Penn.)
 B. Ditto; B.S.(Iowa St.), Ph.D.(Ind.)
 H. Hwang; B.A.(Chung-Ang), Ph.D.(McG.)
 B. Knäuper; D.Phil.(Mannheim)
 R. Koestner; B.A., Ph.D.(Roch.)
 J. Lydon; B.A.(Notre Dame), M.A., Ph.D.(Wat.)
 J. Mogil; B.Sc.(Tor.), Ph.D.(Calif.-LA) (*E.P. Taylor Professor of Psychology*) (*Canada Research Chair in Genetics of Pain*)
 K. Nader; B.Sc., Ph.D.(Tor.) (*James McGill Professor*)
 D.J. Ostry; B.A.Sc., M.A.Sc., Ph.D.(Tor.)
 C. Palmer; B.Sc.(Mich.), M.Sc.(Rutg.), Ph.D.(Cornell) (*Canada Research Chair in Cognitive Neuropsychology Performance*)
 M. Petrides; B.Sc., M.Sc.(Lond.), Ph.D.(Cant.)
 T.R. Shultz; B.A.(Minn.), Ph.D.(Yale)
 M. Sullivan; B.A.(McG.), M.A., Ph.D.(C'dia)
 D. Titone; B.A.(NYU), M.A., Ph.D.(SUNY, Binghamton)
 D.C. Zuroff; B.A.(Harv.), M.A., Ph.D.(Conn.)

Associate Professors

J. Bartz; B.A.(C'dia), M.A., Ph.D.(McG.)
 M. Dirks; B.A.(McM.), M.S., M.Phil., Ph.D.(Yale)
 G. O'Driscoll; B.A.(Welles.), Ph.D.(Harv.) (*William Dawson Scholar*)
 K. Onishi; B.A.(Brown), M.A., Ph.D.(Ill.)
 J. Ristic; B.A., M.A., Ph.D.(Br. Col.) (*William Dawson Scholar*)

Assistant Professors

J. Axt; B.A.(Duke), M.A., Ph.D.(Virg.)
 R. Bagot; B.Sc.(UNSW), Ph.D.(McG.)
 J. Britt; B.A.(Colo.), Ph.D.(Balt.)

Assistant Professors

C. Falk; B.Sc.(Wisc. Madison), M.A., Ph.D.(Br. Col)
 J. Flake; B.Sc.(NKU), M.A.(JMU), Ph.D.(Conn.)
 O. Hardt; B.Sc., M.Sc.(Trier), Ph.D.(Ariz.)
 E. Hehman; B.A.(Mass.), Ph.D.(Delaware)
 L. Human; B.A., M.A., Ph.D.(Br. Col.)
 B. Johns; BCP(Qu.), Ph.D.(Ind.)
 M. Miocevic; B.A., M.A., Ph.D.(Ariz. St.)
 R. Otto; B.Sc.(Calif.-LA), Ph.D.(Texas-Austin)
 S. Racine; B.Sc.(McG.), M.A., Ph.D.(Mich. St.)
 M. Roy; B.Sc., Ph.D.(Montr.)
 S. Sheldon; B.Sc.(Alta.), M.A., Ph.D.(Tor.)
 D. Vachon; B.Sc.(Tor.), M.Sc., Ph.D.(Purd.)
 A. Weinberg; B.A.(Wesl.), M.A., Ph.D.(SUNY, Stony Brook) (*Canada Research Chair*)

Lecturer

P. Carvajal

Professionals

Rhonda Amsel; B.Sc., M.Sc.(McG.) (*Associate*)
 Ian F. Bradley; B.Sc., M.Sc.(Tor.), Ph.D.(Wat.) (*Assistant*)
 Judith LeGallais; B.A., M.A., Ph.D.(McG.) (*Faculty Lecturer*)
 James MacDougall; M.Sc. (*Associate Post-Retirement*)
 Jennifer Russell; B.A., Ph.D.(McG.) (*Assistant*)

Associate Members

Anesthesia: T. Coderre
Douglas Mental Health University Institute Research Centre: S. King, N. Rajah, H. Steiger
Educational Counselling Psychology: V Talwar Jewish General Hospital: B Thombs, P. Zolkowitz
McGill Vision Research Centre: C. Baker, R. Hess, F.A.A. Kingdom, K. Mullen
Montreal Neurological Institute and Hospital: J. Armony, L.K. Fellows, D. Guitton, M. Jones-Gotman, M. Lepage, B. Milner, E. Ruthazer, W. Sossin, R. N. Spreng, V. Sziklas, R. Zatorre
Schulich School of Music: S. MacAdams
Psychiatry: D. Dunkley, F. Elgar, M. Leyton

Adjunct Professors

S. Harnad, P. Zelazo

12.9.5 Master of Science (M.Sc.) Psychology (Thesis) (45 credits)**Thesis Courses (27 credits)**

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

Required Courses (18 credits)

PSYC 601	(6)	Master's Comprehensive
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PSYC 650	(3)	Advanced Statistics 1
PSYC 651	(3)	Advanced Statistics 2
PSYC 660D1	(3)	Psychology Theory
PSYC 660D2	(3)	Psychology Theory

12.9.6 Doctor of Philosophy (Ph.D.) Psychology

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

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

Thesis

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 Cour

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 752D1	(3)	Psychotherapy and Behaviour Change
PSYC 752D2	(3)	Psychotherapy and Behaviour Change
PSYC 753	(3)	Health Psychology Seminar 1
PSYC 754	(3)	Health Psychology Seminar 2
PSYC 755	(3)	Health Psychology Seminar 3
PSYC 756	(3)	Health Psychology Seminar 4

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.

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

** NEW PROGRAM **

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.

12.9.8 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 710	(3)	Comparative and Physiological Psychology 1
PSYC 711	(3)	Comparative and Physiological Psychology 2
PSYC 712	(3)	Comparative and Physiological Psychology 3
PSYC 713	(3)	Comparative and Physiological Psychology 4
PSYC 714	(3)	Comparative and Physiological Psychology 5
PSYC 715	(3)	Comparative and Physiological Psychology 6
		Learning and Moti

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 752D1	(3)	Psychotherapy and Behaviour Change
PSYC 752D2	(3)	Psychotherapy and Behaviour Change
PSYC 753	(3)	Health Psychology Seminar 1
PSYC 754	(3)	Health Psychology Seminar 2
PSYC 755	(3)	Health Psychology Seminar 3
PSYC 756	(3)	Health Psychology Seminar 4

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 629	(3)	Second Language Assessment
EDSL 632	(3)	Second Language Literacy Development
LING 555	(3)	Language Acquisition 2
LING 590	(3)	Language Acquisition and Breakdown
LING 651	(3)	Topics in Acquisition of Phonology
LING 655	(3)	Theory of L2 Acquisition
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 633	(3)	Language Development
SCSD 637	(3)	Developmental Language Disorders 1
SCSD 643	(3)	Developmental Language Disorders 2
SCSD 652	(3)	Advanced Research Seminar 1
SCSD 653	(3)	Advanced Research Seminar 2
SCSD 654	(3)	Advanced Research Seminar 3

0-2 from the following:

EDSL 711	(2)	Language Acquisition Issues 3
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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
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.

12.9.9 Doctor of Philosophy (Ph.D.) Psychology: Psychosocial Oncology

The Ph.D. thesis topic must be germane to psychosocial oncology and approved by the PSO coordinating committee.

Thesis

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)

NUR2 705	(3)	Palliative Care
NUR2 783	(3)	Psychosocial Oncology Research
PSYC 701	(0)	Doctoral Comprehensive Examination

One graduate seminar each term during Year 2 and Year 3 chosen from seminar courses PSYC 710 to PSYC 758.

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

Note: If the student has a non-McGill master's then the following coforeignsc professionalai1e2 0 0 1 4m65.8hIcd9e

PSYC 660D2 (3) Psychology Theory

Complementary Course (3 credits)

One of the following courses:

PSYC 507	(3)	Emotions, Stress, and Illness
PSYC 753	(3)	Health Psychology Seminar 1
SWRK 609	(3)	Understanding Social Care
SWRK 668	(3)	Living with Illness, Loss and Bereavement

12.10 Redpath Museum

12.10.1 Location

Redpath Museum
859 Sherbrooke Street West
Montreal QC H3A 0C4
Canada
Telephone: 514-398-4086
Email: redpath.museum@mcgill.ca
Website: www.mcgill.ca/redpath

12.10.2 About Redpath Museum

The Redpath Museum is a unique interdisciplinary unit within the Faculty of Science offering graduate training in research devoted to biodiversity, ecology, conservation biology, and evolutionary biology, leading to **M.Sc.** and **Ph.D.** degrees. It is an institution with extensive collections of ancient and modern organisms, minerals, and cultural artifacts. Research and teaching are centred on collections-based study, object-oriented investigation, and fieldwork. The Museum has a unique public engagement mission with large exhibit galleries and a vibrant outreach program.

12.10.3 Redpath Museum Admission Requirements and Application Procedures

12.10.3.1 Admission Requirements

The Redpath Museum does not have its own graduate programs. All graduate students of the professors in the Redpath Museum have affiliations with either **Biology, Earth and Planetary Sciences, Anthropology, Natural Resource Sciences, or Education**. Admission requirements are subject to those home departments' regulations.

12.10.3.2 Application Procedures

Students in the Redpath Museum may enrol in McGill's Department of [section 12.2: Biology](#) or other units, including the Department of [section 12.5: 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.

12.10.3.3 Application Dates and Deadlines

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

12.10.4 Redpath Museum Faculty

Director

Hans C.E. Larsson

Emeritus Professor

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

Professors

David M. Green; B.Sc.(Br. Col.), M.Sc., Ph.D.(Guelph), F.L.S.

Andrew Hendry; B.Sc.(Vic., BC), M.Sc., Ph.D.(Wash.) (*joint appt. with Biology*)

Anthony Ricciardi; B.Sc.(Agr.), M.Sc., Ph.D.(McG.) (*joint appt. with McGill School of Environment*)

Associate Professors

Hans C.E. Larsson; B.Sc.(McG.), Ph.D.(Chic.)

Virginie Millien; Maîtrise(Paris VI), DEA, Ph.D.(Montp.)

Assistant Professor

Rowan Barrett; B.Sc.(Guelph), M.Sc.(McG.), Ph.D.(Br. Col.) (*CRC Tier 2 Chair in Biodiversity Science*)

Associate Members

Biology: Graham A.C. Bell, Lauren Chapman

Chemistry: David N. Harpp (*Tomlinson Chair in Univer*)