Faculty of Science, including School of Computer Science (Graduate)

Programs, Courses and University Regulations

2018-2019

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

1. McGill University reserves the right to mak

Publication Information

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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 9,000 graduate students in over 400 programs. GPS is here to support you from admissions through to graduation and beyond. We take a holistic approach to graduate student success; we support not only your academic de

8.1 Postdocs

Postdocs are recent graduates with a Ph.D. or equi

vi. Postdocs are mandatory members of the Post-Graduate Students' Society (PGSS) and an annual association fee is automatically charged. PGSS fees are mandatory. Postdocs are permitted membership in the Faculty Club; an annual fee will be charged for this membership.

vii. Postdocs are encouraged to participate in Professional Development Workshops provided by Graduate and Postdoctoral Studies and Teaching and Learning services. These sessions are usually free of charge.

viii. Postdocs have access to the services provided by the Ombudsperson.

ix. Postdocs may enrol as part-time students in the second language written and English/French courses offered by the School of Continuing Studies/French Language Centre. Postdocs will be charged tuition for these courses. International Postdocs may be required to obtain a Visa and/or a Study Permit.

x. Access to student services and athletic services available to the Postdoc on an opt-in basis. Fees are applicable.

5. Responsibilities

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/secr

8.4 Leave of Absence for Health and Parental/Familial Reasons

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

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

Students who have been granted such a leave will have to register for the term(s) in question and their registration will show as "leave of absence" on their record. No tuition fees will be charged for the duration of the authorized leave. Research supervisors are not obliged to remunerate students and Postdocs on

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

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

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

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

11 Browse Academic Units & Programs

The programs and courses in the following sections have been approved for the 2018–2019 session as listed. The Faculty/School reserves the right to introduce changes as may be deemed necessary or desirable at any time throughout the year.

11.1 Atmospheric and Oceanic Sciences

11.1.1 Location

Department of Atmospheric and Oceanic Sciences
Burnside Hall
805 Sherbrooke Street West, Room 945
Montreal QC H3A 0B9
Canada
Telephone: 514-398-3764
Fax: 514-398-6115
Email: info.aos@mcgill.ca, graduate studies: graduateinfo.aos@mcgill.ca
Website: www.mcgill.ca/meteo

11.1.2 About Atmospheric and Oceanic Sciences

The Department of Atmospheric and Oceanic Sciences offers courses and research opportunities in atmospheric sciences, physical oceanography, leading to the M.Sc. and Ph.D. degrees. Research programs bring in from fundamental fields such as mathematics, statistics, physics, chemistry, and computing to address a broad range of topics relating to weather and climate. Examples include:

- atmospheric chemistry;

- climate dynamics;
- cloud and precipitation physics;

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

11.1.3.2 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.

11.1.3.2.1 Additional Requirements

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

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

11.1.3.3 Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Department of Atmospheric and Oceanic Sciences 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 website 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)	Current McGill Students (any citizenship)
Fall Term:	Sept. 15	Feb 28	Feb 28	Feb 28
Winter Term:	Feb 15	Sept. 10	Sept. 15	Sept. 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.

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

11.1.4 Atmospheric and Oceanic Sciences Faculty

Chair

J.R. Gyakum

Emeritus Professors

J.F. Derome; B.Sc., M.Sc.(McG.), Ph.D.(Mich.), F.R.S.C.

H.G. Leighton; B.Sc., M.Sc.(McG.), Ph.D.(Alta.)

L.A. Mysak; C.M., 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.(III.), M.Sc.(Johns Hop.), Ph.D.(SUNY)

Associate Professors

D. Straub; B.Sc., M.Sc.(SW Louisiana), Ph.D.(SW.)

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

ATOC 626	(3)	Atmospheric/Oceanic Remote Sensing
ATOC 646	(3)	Mesoscale Meteorology
CHEM 519*	(3)	Advances in Chemistry of the Atmosphere

* Students may select either ATOC 519 or CHEM 519.

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

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

11.1.6 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 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

Students registered in M.Sc. programs are expected to regularly attend both 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.

Required Courses (6 credits)

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

Complementary Courses (15 credits)

12 credits of Departmental courses chosen from the following:

ATOC 512	(3)	Atmospheric and Oceanic Dynamics
ATOC 513	(3)	Waves and Stability
ATOC 515	(3)	Turbulence in Atmosphere and Oceans
ATOC 519*	(3)	Advances in Chemistry of the 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 568	(3)	Ocean Physics
ATOC 626	(3)	Atmospheric/Oceanic Remote Sensing
ATOC 646	(3)	Mesoscale Meteorology
CHEM 519*	(3)	Advances in Chemistry of the 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
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.

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

Thesis

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

Required Courses

(1 credit)

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

Complementary Courses (7 credits)

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

1 credit from:

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

And 6 credits from the Department of Atmospheric and Oceanic Sciences, at the 500 or 600 level as approved by the Graduate Program Director

11.2 Biology

11.2.1 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

section 11.2.6Master of Science (M.Sc.) Biology (Thesis): Environment (48 credits)

students who wish to use interdisciplinary approaches in their graduate research on environmental issues and who wish to bene®t from interactions that will occur as they interact with students from a wide range of disciplines.

section 11.2.7Master of Science (M.Sc.) Biology (Thesis): Neotropical Environment (48 credits)

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 strong interest in conservation because NEO courses focus on conservation issues. Students in the program have diverse backgrounds, including both Latin American and Canadian students, 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. Participation in the MSE-Panama Symposium presentation in Montreal is also required. Through this educational approach, NEO seeks to facilitate a broader understanding of tropical environmental issues and the development of skills relevant to working in the tropics.

section 11.2.8Master of Science (M.Sc.) Biology (Thesis): Bioinformatics (48 credits)

The goal of the Bioinformatics concentration is to train students to become researchers in the interdisciplinary ®eld of Bioinformatics, which lies at the intersection of biological/medical sciences and mathematics/computer science/engineering. This work 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. The Bioinformatics graduate concentration consists of a number of interdisciplinary courses, as well as a seminar designed to bring students from backgrounds together and to provide a thorough overview of research in this ®eld. The typical entering student will be af®liated with one of about fourteen different "home" departments in three different faculties, chosen based on his/her speci®c ®eld of expertise, and will therefore meet the speci®c requirements for that department. The student will additionally be evaluated according to requirements speci®c to the Bioinformatics concentration. Students in this concentration have access to several specialized courses that are open only to students within the Bioinformatics concentration. At the M.Sc. level, students successfully completing the Bioinformatics concentration will be ¯uent in the concepts, language, approaches, and limitations of the ®eld.

section 11.2.9Doctor of Philosophy (Ph.D.) Biology

The typical graduate student in this program has a strong background knowledge in cell and molecular biology, biochemistry, organismal biology, ecology, developmental biology, and statistics, often with special strengths in the area of proposed study. Given the continuing trend toward interdisciplinary work, the program also accepts some students with a high scholastic standing who have completed a program in ®elds other than biology (medicine, engineering, chemistry, physics, etc.).

Alumni have gone on to pursue a wide range of careers. Many go on to pursue postdoctoral research and later academic faculty positions, while others work as researchers in industry, wildlife biologists, forensic technologists, or science policy advisers, to name a few.

section 11.2.10Doctor 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 ®elds, 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 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, scienti®c, 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 tackling the selected environmental problem, and to effectively communicate research ®ndings 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 bene®t 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 11.2.11Doctor 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 strong interest in conservation because NEO courses focus on conservation issues. Students in the program have diverse backgrounds, including both Latin American and Canadian students, 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

section 11.2.11 Doctor of Philosophy (Ph.D.) Biology: Neotropical Environment

and complementary courses will be taught in Panama. Through this educational approach, NEO seeks to facilitate a broader understanding of tropical environmental issues and the development of skills relevant to working in the tropics.

section 11.2.12 Doctor of Philosophy (Ph.D.) Biology: Bioinformatics

The goal of the Bioinformatics concentration is to train students to become researchers in the interdisciplinary field of Bioinformatics, which lies at the intersection of biological/medical sciences and mathematics/computer science/engineering. This work 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.

The Bioinformatics graduate concentration consists of a number of interdisciplinary courses, as well as a seminar designed to bring students from many backgrounds together and to provide a thorough overview of research in this field. The typical entering student will be affiliated with one of about fourteen different "home" departments in three different faculties, chosen based on his/her specific field of expertise, and will therefore meet the specific requirements 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 these 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 have the capability of developing an independent bioinformatics research program.

11.2.3 Biology Admission Requirements and Application Procedures

11.2.3.1 Admission Requirements

Applicants must have a B.Sc. in a discipline relevant to the proposed field of study with an overall cumulative grade point average (CGPA) of 3.0/4.0 or a CGPA of 3.2/4.0 for the last two full-time academic years. Graduate Record Examina3

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.

11.2.4 Biology Faculty

Chair

Gregor Fussmann

Graduate Program Director

Fr d ric 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.(S.W.)

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

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

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

John B. Lewis; B.Sc., M.Sc., Ph.D.(McG.)

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; F.R.S.C.

Rolf Sattler

Professors

Ehab Abouheif; M.Sc.(C©dia), Ph.D.(Duke)

Graham A.C. Bell; B.A., D.Phil.(Oxf.), F.R.S.C. (James McGill Professor) (on sabbatical)

Lauren Chapman; B.Sc.(Alta.), Ph.D.(McG.) (Canada Research Chair in Respiratory Ecology and Aquatic Conservation)

Gregor Fussmann; Dipl.(Berlin), Ph.D.(Max Planck)

Andrew Gonzalez; B.Sc.(Nott.), Ph.D.(Imperial Coll., Lond.) (Canada Research Chair in Biodiversity Science) (on sabbatical)

Fr d ric Guichard; B.Sc.(Mont.), Ph.D.(Laval)

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

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

Paul F. Lasko; A.B.(Harv.), Ph.D.(MIT) (James McGill Professor) (Associate Member in Anatomy and Cell Biology, the Goodman Cancer Centre)

Louis Lefebvre; B.Sc., M.A., Ph.D.(Mont.)

Laura Nilson; B.A.(Colgate), Ph.D.(Yale)

Catherine Potvin; B.Sc., M.Sc.(Mont.), Ph.D.(Duke)

Neil M. Price; B.Sc.(New Br.), Ph.D.(Br Col.)

Richard Roy; B.Sc.(Bishop©s), Ph.D.(Yale) (on sabbatical)

Daniel J. Schoen; B.Sc., M.Sc.(Mich.), Ph.D.(Calif.) (Macdonald Professor of Botany) (on sabbatical)

Associate Professors

Gary Brouhard; M.S.E., Ph.D.(Mich.) (Associate Member in Physics)

Thomas E. Bureau; B.Sc.(Calif.), Ph.D.(Tas.) (on sabbatical)

Melania Cristescu; B.Sc., M.Sc.(Ovidius Un. Constanta, Romania), Ph.D.(Guelph)

David Dankort; B.Sc., Ph.D.(McM.)

Joseph A. Dent; B.Sc.(Mich.), Ph.D.(Colo.)

Irene Gregory-Eaves; B.Sc.(Vic., BC), M.Sc., Ph.D.(Qu.)

Paul Harrison; B.Sc.(NUI), Ph.D.(Lond.)

Brian Leung; B.Sc.(Br.Col.), Ph.D.(Cal.)

Nam-Sung Moon; B.Sc., Ph.D.(McG.)

Simon Reader; B.A.(Colgate), Ph.D.(Yale)

Jon Sakata; B.A.(Cornell), Ph.D.(Tas-Austin, Institute for Neuroscience) (on sabbatical)

Frieder Schoeck; Dipl.(Erhangen), Ph.D.(Max Planck)

Jacalyn Vogel; M.Sc.(E. Ill.), Ph.D.(Kansas)

Alanna Watt; B.Sc.(C©dia), Ph.D.(Brandeis)

Tamara Western; B.Sc.(Dal.), Ph.D.(B.C.Col.) (Associate Dean [Academic], Faculty of Science)

Sarah Woolley; B.Sc.(Duke), Ph.D.(Texas-Austin) (on sabbatical)

Monique Zetka; B.Sc., Ph.D.(B.C.Col.)

Hugo Zheng; M.Sc.(Helsinki), Ph.D.(Oxf. Brookes)

Assistant Professors

Mélanie Guigueno; M.Sc.(Manit.), Ph.D.(Western) (beginning Jan. 2019)

Anna Hargreaves; B.Sc.(Trent), MSc.(Calg.), Ph.D.(Qu.)

Arnold Hayer; M.Sc.(ESBS, France), Ph.D.(ETH Zurich)

Michael Hendricks; B.A.(Bowdoin), Ph.D.(Sing.)

Tomoko Ohyama; B.Sc., M.Sc.(Kio), Ph.D.(Baylor)

Rodrigo Reyes Lamothe; Lic.(UNAM), M.Sc.(C©dia), D.Phil.(Oxf.)

Jennifer Sunday; B.Sc.(B.C.Col.), Ph.D.(Simon Fraser)

Stephanie C. Weber; B.Sc.(Duke), Ph.D.(Stan.)

Associate Members

Biochemistry: Maxime Bouchard

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

Environment: Colin Chapman

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

MCH: Rima Rozen

Medical Genetics, Chair: David Rosenblatt

MNI: Kenneth Hastings

Physics: Paul Francois

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

Adjunct Pr

Vol 70.52 7p.52 107.2271 0 0 1 70.52 1 RG ET 67.52 ,4 0 1 70.52 1 RG E0Tm 68a r1 291 0 1 70.52 :SBS, Frsco Bee Mus Uniol 70.52 7p.52

Adjunct Professors
NRC Lab Malcolm S.Whiteway
STRI Andr

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

Required Courses (6 credits)

BIOL 640	(3)	Tropical Biology and Conservation
ENVR 610	(3)	Foundations of Environmental Policy

Elective Courses (3 credits)

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

11.2.8 Master of Science (M.Sc.) Biology (Thesis): Bioinformatics (48 credits)

Thesis Courses (39 credits)

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

Required Courses (3 credits)

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

Complementary Courses (6 credits)

6 credits from the following courses:

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

11.2.9 Doctor of Philosophy (Ph.D.) Biology

Thesis

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

Required Courses (6 credits)

BIOL 700	(0)	Doctoral Qualifying Examination
BIOL 702	(6)	Ph.D. Seminar

Complementary Courses (6 credits)

Two 3-credit courses, or equivalent, at the 500, 600, or 700 level in Biology or other departments, and approved by the Supervisory Committee.

11.2.10 Doctor of Philosophy (Ph.D.) Biology: Environment

Thesis

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

Required Courses (12 credits)

BIOL 700	(0)	Doctoral Qualifying Examination
BIOL 702	(6)	Ph.D. Seminar
ENVR 610	(3)	Foundations of Environmental Policy
ENVR 650	(1)	Environmental Seminar 1
ENVR 651	(1)	Environmental Seminar 2
ENVR 652	(1)	Environmental Seminar 3

Complementary Course (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 graduate course at the 500, 600, or 700 level recommended by the Advisory Committee and approved by the Environment Option Committee.

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

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

Thesis

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

Required Courses (12 credits)

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

Elective Courses (3 credits)

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

11.2.12 Doctor of Philosophy (Ph.D.) Biology: 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 ®eld and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate that the research advances knowledge in the ®eld. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Required Courses (9 credits)

BIOL 700	(0)	Doctoral Qualifying Examination
BIOL 702	(6)	Ph.D. Seminar
COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar

Complementary Courses (6 credits)

Tw

Professors

D.S. Bohle; B.A.(Reed), M.Phil., Ph.D.(Auck.)

I.S. Butler; B.Sc., Ph.D.(Bristol), F.C.I.C.

G. Cosa; B.Sc.(Argentina), Ph.D.(Ott.)

M.J. Damha; B.Sc., Ph.D.(McG.), F.C.I.C.

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.(UW)

R.B. Lennox; B.Sc., M.Sc., Ph.D.(IIT), 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.

D. Perepichka; B.Sc.(Donetsk St. U, Ukraine), Ph.D.(Nat. Acad. Sci., Ukraine)

D.M. Ronis; B.Sc.(McG.), Ph.D.(MIT)

B.C. Sanctuary; B.Sc., Ph.D.(UBC)

H. Sleiman; B.Sc.(A.U.B.), 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.(WOnt.)

Associate Professors

C.J. Barrett; B.Sc., M.Sc., Ph.D.(Qu.)

A.S. Blum; B.A.(Princ.), Ph.D.(Wash.)

T. Friščić; B.Sc.(Zagreb), Ph.D.(Iowa)

J.L. Gleason; B.Sc.(McG.), Ph.D.(Cal.)

P. Kambhampati; B.A.(Carl. Coll.), Ph.D.(Texas)

J. P. Lumb; B.Sc.(Cornell), Ph.D.(Calif., Berk.)

J. Mauzeroll; B.Sc.(McG.), Ph.D.(Texas-Austin)

11.3.5 Master of Science (M.Sc.) Chemistry (Thesis) (45 credits)

Thesis Courses

(24-31 credits)

At least 24 credits chosen from the following:

CHEM 691	(3)	M.Sc. Thesis Research 1
CHEM 692	(6)	M.Sc. Thesis Research 2
CHEM 693	(9)	M.Sc. Thesis Research 3
CHEM 694	(12)	M.Sc. Thesis Research 4
CHEM 695	(15)	M.Sc. Thesis Research 5
CHEM 697	(9)	M.Sc. Thesis Research 7
CHEM 698	(12)	M.Sc. Thesis Research 8

Required Courses

(5 credits)

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

Complementary Courses

(9-16 credits)

Students will normally take 9-16 credits. Students will normally take

11.4 Computer Science

11.4.1 Location

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

11.4.2 About Computer Science

The School of Computer Science is one of the leading teaching and research centres for computer science in Canada. 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. The Ph.D. program includes an option in bioinformatics, and the thesis M.Sc. program includes options in bioinformatics and in Computational Science and Engineering. Students are normally funded by their adviser's research grants; in the case of scholarship students, this typically takes the form of a "top-up" to the scholarship. Research in the School covers a broad range of areas, including:

- Theory: algorithms, combinatorial optimization, computational geometry, cryptography, graph theory, logic and computation, programming languages, quantum computing, theory of computation, and scientific computing;
- Systems: compilers, computer games, distributed systems, embedded and real-time systems, modelling and simulation, networks, and software engineering;
- Applications: bioinformatics, machine learning, robotics, computer animation, graphics, and vision.

All students must consult the graduate program website, where up-to-date information about the graduate programs is posted. Any questions concerning programs should be addressed to the Graduate Program Coordinator.

section 11.4.5 Master of Science (M.Sc.) Computer Science (Thesis) (45 credits)

This program is designed for students with a strong interest in research in computer science who hold at least the equivalent of an undergraduate minor in CS. This program combines a strong course component with a research thesis. It is the usual (but not mandatory) entry point for students who wish to do a Ph.D., but is also the program of choice for students who want to find challenging and exciting jobs after their master's.

section 11.4.6 Master of Science (M.Sc.) Computer Science (Thesis): Bioinformatics (45 credits)

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.

section 11.4.7 Master of Science (M.Sc.) Computer Science (Thesis): Computational Science & Engineering (45 credits)

This program option is to train graduates in state-of-the-art applications of numerical and modelling methods and computer technology to scientific and
45 credits)152 249.38914j 39.48 307.12914j 39.48 307.129125 (152 0 1 rg 0 0 1 RG BT /F4 8.1 Tf 1 0 0 1 70.52 239.64213m (and in 11.4.7)Tj 1 9 0 1 1

section 11.4.10 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.

11.4.3 Computer Science Admission Requirements and Application Procedures

11.4.3.1 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 and have an exceptionally strong academic record may be admitted directly to the Ph.D. program, but they must initially apply to the M.Sc. program. Students who are in the M.Sc. program have the option to be fast-tracked into the Ph.D. program at the end of their first academic year, contingent on excellent performance as judged by the Ph.D. committee.

11.4.3.2 Application Procedures

11.4.4 Computer Science Faculty

Director
B. Kemme

Emeritus Professors
D. Avis; B.Sc.(Wat.), Ph.D.(Stan.)
R. De Mori; Ph.D.(Politecnico Torino)
T.H. Merrett; B.Sc.(Qu.), D.Phil.(Oxf.)
M.M. Newborn; B.E.E.(Rensselaer Poly), Ph.D.(Ohio St.), A.C.M.
C. P

Associate Pofessors

J.W

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

Required Course

COMP 601	(2)	Thesis Literature Review

Complementary Courses (18 credits)

6 credits chosen from the following courses:

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

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

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

11.4.7 Master of Science (M.Sc.) Computer Science (Thesis): Computational Science & Engineering (45 credits)

Thesis Courses (24 credits)

24 credits selected from:

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

Required Courses

One credit selected as follows:

COMP 669D1	(.5)	Computational Science Engineering Seminar
COMP 669D2	(.5)	Computational Science Engineering Seminar

and

COMP 601	(2)	Thesis Literature Review

Complementary Courses

(minimum 20 credits)

At least 6 courses whereby at least two courses must be from List A, at least two courses from List B, and the remaining credits to be chosen from graduate (500-, 600-, or 700-level) courses in the School of Computer Science. Two complementary courses must be taken outside the School of Computer Science.

Note: Students with an appropriate background can substitute 3 credits by COMP 696 and 4 credits by COMP 697 and will be required to take 6-8 credits from List A and 6-8 credits from List B.

List A: Scientific Computing Courses:

CIVE 602	(4)	Finite Element Analysis

COMP 522	(4)	Modelling and Simulation
COMP 540	(3)	Matrix Computations
COMP 566	(3)	Discrete Optimization 1
MATH 578	(4)	Numerical Analysis 1
MATH 579	(4)	Numerical Differential Equations

List B: Application and Specialized Methods Courses:

ATOC 512	(3)	Atmospheric and Oceanic Dynamics
ATOC 513	(3)	Waves and Stability
ATOC 515	(3)	Turbulence in Atmosphere and Oceans
CIVE 572	(3)	Computational Hydraulics
CIVE 603	(4)	Structural Dynamics
COMP 557	(3)	Fundamentals of Computer Graphics
COMP 558	(3)	Fundamentals of Computer Vision
COMP 567	(3)	Discrete Optimization 2
COMP 621	(4)	Program Analysis and Transformations
COMP 642	(4)	Numerical Estimation Methods
COMP 767	(4)	Advanced Topics: Applications 2
ECSE 507	(3)	Optimization and Optimal Control
ECSE 532	(3)	Computer Graphics
ECSE 547	(3)	Finite Elements in Electrical Engineering
ECSE 549	(3)	Expert Systems in Electrical Design
MATH 555	(4)	Fluid Dynamics
MATH 560	(4)	Optimization
MATH 761	(4)	Advanced Topics in Applied Mathematics 1
MECH 533	(3)	Subsonic Aerodynamics
MECH 537	(3)	High-Speed Aerodynamics
MECH 538	(3)	Unsteady Aerodynamics
MECH 539	(3)	Computational Aerodynamics
MECH 541	(3)	Kinematic Synthesis
MECH 572	(3)	Introduction to Robotics
MECH 573	(3)	Mechanics of Robotic Systems
MECH 577	(3)	Optimum Design
MECH 610	(4)	Fundamentals of Fluid Dynamics
MECH 620	(4)	Advanced Computational Aerodynamics
MECH 632	(4)	Advanced Mechanics of Materials

.864 171.841 Tm((4))Tj 0.864 171.841 T.841 Tm ((4-rM3.340949 533.401 Tm (FundamentHeatsis and)Tj 1 0 0 68.340949 533 Advanced Dynamics

15 credits selected as follows:

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

COMP 649	(4)	Quantum Cryptography
COMP 680	(4)	Mining Biological Sequences
COMP 690	(4)	Probabilistic Analysis of Algorithms
COMP 760	(4)	Advanced Topics Theory 1
COMP 761	(4)	Advanced Topics Theory 2

Category B: Systems and Applications

COMP 512	(4)	Distributed Systems
COMP 520	(4)	Compiler Design
COMP 521	(4)	Modern Computer Games
COMP 522	(4)	Modelling and Simulation
COMP 526	(3)	Probabilistic Reasoning and AI
COMP 529	(4)	Software Architecture
COMP 533	(3)	Model-Driven Software Development
COMP 535	(3)	Computer Networks 1
COMP 546	(4)	Computational Perception
COMP 557	(3)	Fundamentals of Computer Graphics
COMP 558	(3)	Fundamentals of Computer Vision
COMP 575	(3)	Fundamentals of Distributed Algorithms
COMP 598	(3)	Topics in Computer Science 1
COMP 599	(3)	Topics in Computer Science 2
COMP 612	(4)	Database Programming Principles
COMP 614	(4)	Distributed Data Management
COMP 621	(4)	Program Analysis and Transformations
COMP 652	(4)	Machine Learning
COMP 655	(4)	Distributed Simulation
COMP 667	(4)	Software Fault Tolerance
COMP 762	(4)	Advanced Topics Programming 1
COMP 763	(4)	Advanced Topics Programming 2
COMP 764	(4)	Advanced Topics Systems 1
COMP 765	(4)	Advanced Topics Systems 2
COMP 766	(4)	Advanced Topics Applications 1
COMP 767	(4)	Advanced Topics: Applications 2

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.

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

Required Courses

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
COMP 700	(0)	Ph.D. Comprehensive Examination
COMP 701	(3)	Thesis Proposal and Area Examination

Complementary Courses

Two courses chosen from the following:

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

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

11.5 Earth and Planetary Sciences

11.5.1 Location

Department of Earth and Planetary Sciences
Frank Dawson Adams Building
3450 University Street
Montreal QC H3A 0E8
Canada
Telephone: 514-398-6767
Fax: 514-398-4680
Email: grad.eps@mcgill.ca
Website: www.mcgill.ca/eps

11.5.2 About Earth and Planetary Sciences

The Department of Earth and Planetary Sciences is one of both

Financial assistance is available in the form of teaching assistantships, research assistantships, and scholarships.

Areas of Research:

Aquatic Geochemistry

Application of chemical thermodynamics, kinetics, and surface chemistry to the characterization of mineral-solution interactions in aquatic environments; carbonate geochemistry; early diagenesis of marine and coastal sediments; trace metal and natural radioactivity in freshwater and marine systems.

Biogeochemistry

Response of the marine ecosystem to climate change and anthropogenic stresses through observations of the modern ocean, and experimental and numerical simulations of ocean biogeochemistry

section 11.5.6Master of Science (M.Sc.) Earth and Planetary Sciences (Thesis):vironment (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. This 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. Students that have been admitted through their home department/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 11.5.7Doctor of Philosophy (Ph.D.) Earth and Planetary Sciences

The nature of graduate research in the Department of Earth and Planetary Sciences is highly 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. Aside from courses, the first year is occupied by early work on the thesis project that constitutes the bulk of the Ph.D., with preparation for an oral examination on their research proposal at the end of the first year. Completion 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 11.5.8Doctor of Philosophy (Ph.D.) Earth and Planetary Sciences:vironment

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. This 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. Students that have been admitted through their home department/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.

11.5.3 Earth and Planetary Sciences Admission Requirements and Application Procedures

11.5.3.1 Admission Requirements

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

11.5.3.2 Application Procedures

Students should first contact potential supervisors within the Department of Earth and Planetary Sciences and assess their interest in accepting students before starting the formal application procedure. General inquiries concerning the Department should be addressed to Graduate Admissions, Department of Earth and Planetary Sciences, 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.

11.5.3.3 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 website 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)	Current McGill Students (any citizenship)
Fall Term:	Sept. 15	Feb. 1	Feb. 1	Feb. 1
Winter Term:	Feb. 15	Sept. 1	Sept. 1	Sept. 1
Summer Term:	N/A	N/A	N/A	N/A

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

11.5.4 Earth and Planetary Sciences Faculty

Chair
Jeffrey McKenzie

Emeritus Professors
Jafar Arkani-Hamed; B.Eng.(Tehran), Ph.D.(MIT)
Donald Francis; B.Sc.(McG.), M.Sc.(Col.), Ph.D.(MIT)
Andrew J. Hynes; B.Sc.(Tr.), Ph.D.(Cant.)
Robert F. Martin; B.Sc.(Ott.), M.S.(Penn. St.), Ph.D.(Stan.)
Colin W. Stearn; B.Sc.(McM.), M.S., Ph.D.(Yale), F.R.S.C.

Professors
Don Baker; A.B.(Chic.), Ph.D.(Penn. St.)
Olivia G. Jensen; B.Sc., M.Sc., Ph.D.(Col.)
Alfonso Mucci; B.Sc., M.Sc.(Mont.), Ph.D.(Miami)
John Stix; A.B.(,ix;

EPSC 698	(12)	Thesis Preparation 2
EPSC 699	(12)	Thesis Preparation 3

Complementary Courses (12 credits)

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

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

Thesis Courses (33 credits)

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

Required Courses (9 credits)

ENVR 610	(3)	Foundations of Environmental Policy
ENVR 650	(1)	Environmental Seminar 1
ENVR 651	(1)	Environmental Seminar 2
ENVR 652	(1)	Environmental Seminar 3
EPSC 666	(3)	Current Issues in Geosciences

Complementary Courses (6 credits)

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.

11.5.8 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 de

11.6.2 About Geography

The Department of Geography offers research and thesis-based graduate programs leading to a Master of Arts (M.A.), a Master of Science (M.Sc.), or a doctorate (Ph.D.). In its scope, our program includes the opportunity to conduct field-based studies in both the natural (physical) 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 Hitschfeld Geographic Information Centre, maintains the McGill Arctic Research Station (Axel Heiberg Island, Nunavut Territory) and the McGill Sub-Arctic Research Station (Schefferville, Quebec), and has strong ties with McGill's School of Environment. Faculty and students conduct research in fields as di

: Master ofArts (M.A.) Geography (Thesis): Gender anWomen©s Studies (45 credits)

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

: Master ofArts (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 in association with several University departments, the McGill School of Environment, and the Smithsonian Tropical Research Institute (STRI-Panama). The option includes a thesis; 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 en

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

This doctoral option is an interdisciplinary program for students who meet the 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 Panama and NEO©s core and complementary courses will be taught in Panama. NEO©s educational approach seeks to facilitate a broader understanding of tropical en

	Application Opening Dates		Application Deadlines	
Winter Term:	N/A	N/A	N/A	N/A
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.

11.6.4 Geography Faculty

Chair
N.T. Roulet
Graduate Program Director
O.T. Coomes
Post-Retirement
S.H. Olson; M.A., Ph.D.(Johns Hop.)

Assistant Professors

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

B. Robinson; Ph.D.(Wisc. Mad.)

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.

11.6.7 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 approved by the student's supervisor AND the Neotropical Environment Options Director

11.6.8 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 (3 credits), and a minimum of two complementary courses (6 credits). The Ph.D. in Geography also includes several options.

Thesis

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

Required Courses

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

Complementary Courses

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

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

The option consists of the thesis and comprehensive examination, required courses (9 credits) from Geography and Environment and complementary courses (9 credits) in Environment or other fields recommended by the research committee and approved by the Environment Option Committee.

Thesis

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

Required Courses

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
GEOG 631	(3)	Methods of Geographical Research

Complementary Courses

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

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.

Comprehensives

GEOG 700	(0)	Comprehensive Examination 1
GEOG 701	(0)	Comprehensive Examination 2
GEOG 702	(0)	Comprehensive Examination 3

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

The graduate option in Gender and Women©s Studies is an interdisciplinary program for students who meet the degree requirements in Geography, and who wish to earn 9 credits of approved coursework focusing on gender and women©s studies, and issues in feminist research and methods. The student©s doctoral thesis must be on a topic centrally relating to issues of gender and/or women©s studies.

Thesis

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

Required Courses

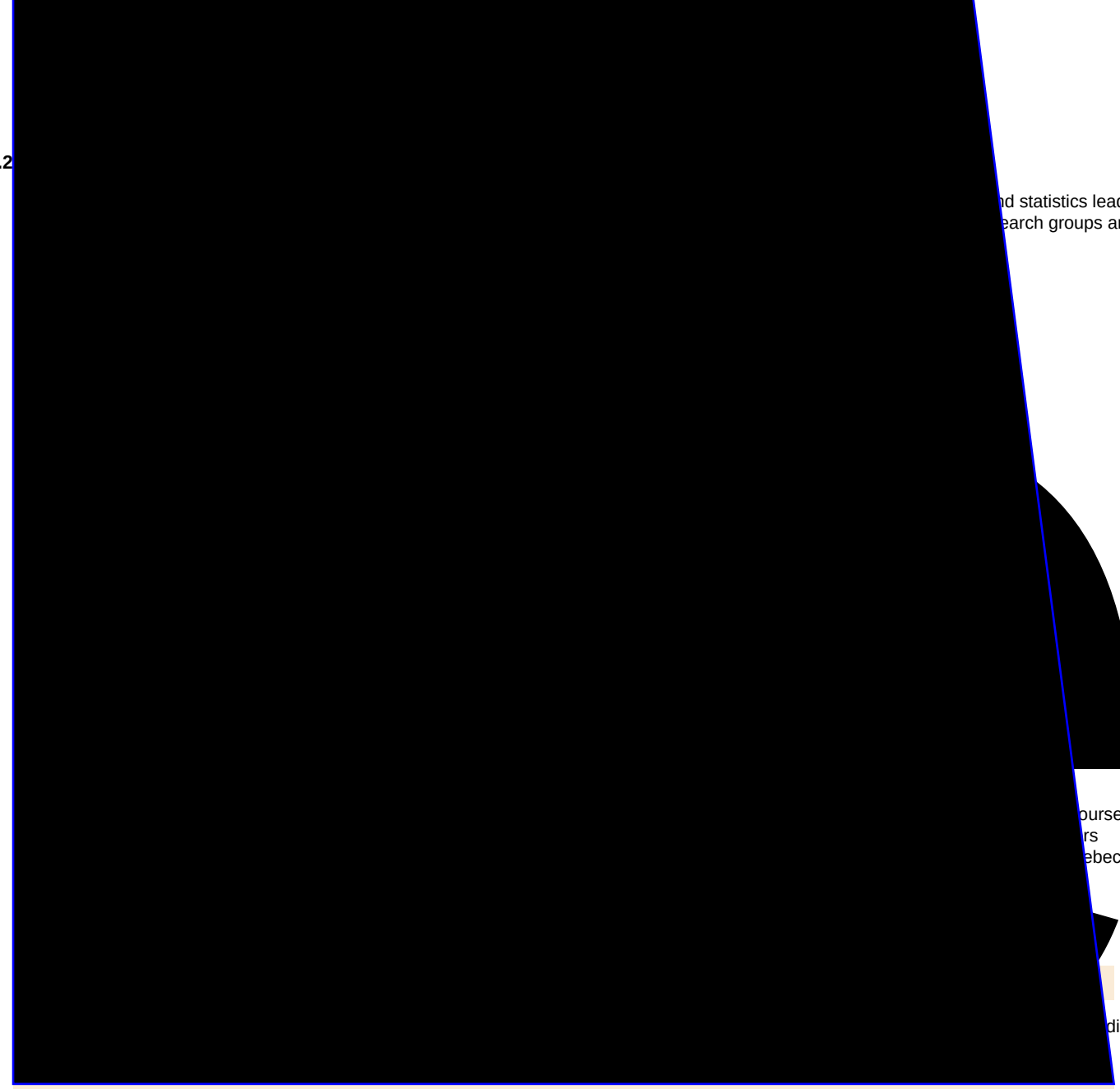
GEOG 631	(3)	Methods of Geographical Research
GEOG 700	(0)	Comprehensive Examination 1
GEOG 701	(0)	Comprehensive Examination 2

GEOG 702	(0)	Comprehensive Examination 3
WMST 601	(3)	FeministTheories and Methods
WMST 602	(3)	Feminist Research Symposium

Complementary Courses

Two substanti

11.7.2



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: Master ofArts (M.A.) 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.A.).The non-thesis option requires a project and eight approved courses.

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

Detailed program requirements for the following M.Sc. programs are found in Science > Graduate > Browse Academic Units & Pr

section 11.7.7 Master of Science (M.Sc.) Mathematics and Statistics (Thesis): Computational Science & Engineering (47 credits)

CSE is a rapidly growing multidisciplinary area with connections to the sciences, engineering, mathematics, and computer science. CSE focuses on the dev

Professors

Peter Bartello; B.Sc.(U.T.), M.Sc., Ph.D.(McG.) (joint appt. with Atmospheric and Oceanic Sciences)

Rustum Choksi; B.Sc.(U.T.), M.Sc., Ph.D.(Brown)

Henri Darmon; B.Sc.(McG.), Ph.D.(Harv.), F.R.S.C. (James McGill Professor)

Stephen W. Drury; M.A., Ph.D.(Cant.)

Christian Genest; B.Sp.Sc.(UQAC), M.Sc.(UQAM), Ph.D.(BrCol.) (Canada Research Chair)

Eyal Z. Goren; B.A., M.S., Ph.D.(Hebrew)

Pengfei Guan; B.Sc.(Zhejiang), M.Sc., Ph.D.(Princ.) (Canada Research Chair)

Jacques C. Hurtubise; B.Sc.(Montr.), D.Phil.(Oxf.) F.R.S.C.

Dmitry Jakobson; B.Sc.(MIT), Ph.D.(Princ.) (Peter Redpath Professor)

Vojkan Jaksic; B.S.(Belgrade), Ph.D.(Caltech.)

Niky Kamran; B.Sc., M.Sc.(Bruxelles), Ph.D.(Wat.), F.R.S.C. (James McGill Professor)

Adam Oberman; B.S.(U.T.), M.S., Ph.D.(Chic.)

Charles Roth; M.Sc.(McG.), Ph.D.(Hebrew)

David A. Stephens; B.Sc., Ph.D.(Nott.) (James McGill Professor)

John A. Toth; B.Sc., M.Sc.(McM.), Ph.D.(MIT) (William Dawson Scholar)

Adrian Vetta; B.Sc., M.Sc.(LSE), Ph.D.(MIT) (joint appt. with Computer Science)

Daniel T. Wise; B.A.(Yeshiva), Ph.D.(Princ.) (James McGill Professor)

David Wolfson; B.Sc., M.Sc.(Natal), Ph.D.(Purd.)

Associate Professors

Louigi Addario-Berry; B.Sc., M.Sc., Ph.D.(McG.)

Antony R. Humphries; B.A., M.A.(Camb.), Ph.D.(Bath)

Abbas Khalili; B.S., M.S.(Isfahan Univ. of Tech), Ph.D.(Wat.)

Jean-Philippe Lessard; B.Sc.(Sher.), M.Sc.(Montr.), Ph.D.(Georgia Tech.)

Jean-Christophe Nave; B.Sc., Ph.D.(Calif., Santa Barbara)

Johanna Neslehova; B.Sc., M.Sc.(Hamburg), Ph.D.(Oldenburg)

Sergey Norin; M.S.(Saint Petersburg St.), Ph.D.(Georgia Tech.)

Mikael Pichot; B.Sc.(Lyon), M.S., Ph.D.(ENS Lyon)

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

Gantumur Tsogtgerel; B.Sc.(Nat. Univ. Mongolia), M.Sc., Ph.D.(Utrecht)

Assistant Professors

Linan Chen; B.S.(Tsinghua), Ph.D.(MIT)

Sarah Harrison; B.Sc.(MIT), Ph.D.(Stan.)

Tim Hoheisel; Dipl., Ph.D.(Würzburg)

Jessica Lin; B.A.(NYU), Ph.D.(Chic.)

Piotr Przytycki; M.Sc., Ph.D.(Warsaw)

Maksym Radziwill; B.Sc.(McG.), Ph.D.(Stan.) (Canada Research Chair)

Marcin Sabok; M.Sc., Ph.D.(Warsaw)

Jérôme Vétois; Ph.D.(Cergy-Pontoise)

Yi Yang; B.S.(Sichuan), M.S., Ph.D.(Minn.)

Associate Members

Xiao-Wen Chang (Computer Science)

Associate Members

Luc P. Devroye (Computer Science)

Pierre R.L. Dutilleul (Plant Science)

Leon Glass (Physiology)

James A. Hanley (Epidemiology and Biostatistics)

Hamed Hatami (Computer Science

MATH 669D1	(.5)	CSE Seminar
MATH 669D2	(.5)	CSE Seminar

Complementary Courses (22 credits)

(minimum 22 credits)

Two courses from List A, two courses from List B, and the remaining credits to be chosen from graduate (500- or 600-level) courses in the Department of Mathematics and Statistics.

MECH 610	(4)	Fundamentals of Fluid Dynamics
MECH 620	(4)	Advanced Computational Aerodynamics
MECH 632	(4)	Advanced Mechanics of Materials
MECH 642	(4)	Advanced Dynamics
MECH 650	(4)	Fundamentals of Heat Transfer
MECH 654	(4)	Compt. Fluid Flow and Heat Transfer

The twelve one-semester complementary courses for the PhD degree must include at least two from the list below, unless a student has completed the M.Sc.-level option in Bioinformatics, in which case only one course from the list below must be chosen:

(3) Bioinformatics: Molecular Biology

The Department of Physics offers a competitive funding package for both local and international students. For more information about financial support, please see www.physics.mcgill.ca/grads/financial.html.

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

Fields of Research:

High-Energy Physics

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

microwave background experiments. Theoretical work includes studies of inflationary astrophysics and observational cosmology can experimentally determine the most important properties of dark matter and dark energy, and studies of the diverse physics of neutron stars, and the origin of solar 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. Students are 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 11.8.5 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 (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. The supervisor 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. program, waiving the M.Sc. thesis submission.

section 11.8.6 Doctor of Philosophy (Ph.D.) Physics

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

11.8.3 Physics Admission Requirements and Application Procedures

11.8.3.1 Admission Requirements

M.Sc.

We normally require a background that is equivalent to our Bachelor of Science (B.Sc.) - Major Physics (60 credits).

Ph.D.

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

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

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

11.8.3.2 Application Procedures

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

See University Regulations & Resources > Graduate > Graduate Admissions and Application Procedures >

11.8.3.2.1 Additional Requirements

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

- 2 Letters of Reference
- Physics CV
- Personal Statement
- Thesis Abstract or Summary ± optional
- GRE ± recommended but not required

A list of supporting documentation required by the University can be found at www884 622.38 Ttdd

Professors

R. Brandenberger; Dip.(ETH), A.M., Ph.D.(Harv.) (Canada Research Chair)

A. Clerk; B.Sc.(Tor.), Ph.D.(Cornell) (Canada Research Chair)

J. Cline; B.S.(Harvey Mudd), M.Sc., Ph.D.(CalTech.)

F. Corriveau; B.Sc.(Laval), M.Sc.(Br Col.), Ph.D.(ETH) (Affiliated I.P. Scientist)

C. Gale; B.Sc.(Ott.), M.Sc., Ph.D.(McG.) (James McGill Professor)

G. Gervais; B.Sc.(Sher), M.Sc.(McM.), Ph.D.(N'we 0.PdDn

Assistant Professors

T. Pereg-Barnea; Ph.D.(British Col.)

J. Sankey; Ph.D.(Cornell) (Canada Research Chair)

Associate Members

M. Chacron (Physiology)

S. Devic (Oncology)

S. Enger (Oncology)

K. Gehring (Biochemistry)

P. Kambhampati (Chemistry)

A. Khadra (Physiology)

J. Kildea (Medical Physics)

I. Levesque (Medical Physics)

M. Mackey (Physiology)

J. Nadeau (Biomedical Engineering)

G.B. Pike (MNI and Biomedical Engineering)

E. Podgorsak (Radiation Oncology)

D. Rassier (Kinesiology)

D. Ronis (Chemistry)

J. Seuntjens (Medical Physics)

T. Szkopek (Electrical and Computer Engineering)

Adjunct Professors

F. Drolet, M. Dubé, O. Hernandez, G. Holder, P. Palmieri, G.B. Pike, V. Tabard Cossa

Curator (Rutherford Museum and McPherson Collection)

J. Barrette

11.8.5 Master of Science (M.Sc.) Physics (Thesis) (45 credits)

Thesis Courses (30 credits)

PHYS 690	(24)	M.Sc. Thesis
PHYS 692	(6)	Thesis Project

Complementary Courses (15 credits)

12 credits at the 500, 600, or 700 level

3 credits at the 600 or 700 level:

Students with an appropriate background may request Departmental permission to substitute up to 6 credits chosen from the following:

PHYS 691	(3)	Thesis Preparation
PHYS 693	(3)	M.Sc. Research

Students must also successfully complete all the other normal requirements of Graduate and Postdoctoral Studies.

11.8.6 Doctor of Philosophy (Ph.D.) Physics

Thesis

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

Required Courses

Candidates must successfully complete 36 credit graduate courses at the 600 level or above; one of these courses should be in the candidate's area of specialization. If the candidate completed two more courses at the 600 level as part of the McGill completed two

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 the Montreal General Hospital, to permit graduate students to undertak

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

Applicants who hold a bachelor's degree but who have not met these usual requirements should consult the Graduate Program Director to determine which (if any) courses must be completed before an application can be considered. Students with insufficient preparation for graduate work may register as Special Students (undergraduate level) in the Faculty of Arts or the Faculty of Science, and follow an appropriate course of study. Such registration requires the permission of the Department but carries no advantage with respect to a student's eventual admission to graduate studies.

Applicants should note that the deadline for most scholarships and fellowships is about four months earlier than the application deadlines and that applications for scholarships and fellowships should be submitted through their home university.

All applicants must take the GRE General Test if they have studied in an English-speaking university. For those who have a psychology background, it is recommended to take the Subject component of the GRE. Applicants with little or no background in psychology are not required to submit scores on the Subject component of the GRE. Canadians who have not studied in an English-speaking university are not required to submit the GRE General Test and Subject component.

Note: Official transcripts need not be included as part of an application, but will only be requested once applicants are formally accepted into the program.

11.9.3.2 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.

11.9.3.2.1 Additional Requirements

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

- Three letters of reference
- Personal Statement
- Curriculum Vitae
- Graduate Record Examination (GRE) ± See above for details.

11.9.3.3 Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Department of Psychology and may be revised at any time. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at mcgill.ca/gps/contact/graduate-program. The items and clari®catioduate- rg 222 64532

Clinical Program Director

B. Ditto

Undergraduate Program Director

G. O©Driscoll

Emeritus Professors

F.E. Aboud; B.A.(Tor.), M.A., Ph.D.(McG.)

A.S. Bregman; M.A.(Tor.), Ph.D.(Yale)

D. Donderi; B.A., B.Sc.(Chic.), Ph.D.(Cornell)

K.B.J. Franklin; B.A., M.A.(Auck.), Ph.D.(Lond.)

F.H. Genesee; B.A.(W.Ont.), M.A., Ph.D.(McG.)

D.J. Levitin; A.B.(Stan.), M.S., Ph.D.(Ore.) (James McGill Professor)

A.A.J. Marley; B.Sc.(Birm.), Ph.D.(Penn.)

Professors

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.(W

11.9.5 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

PSYC 729	(3)	Theory of Assessment
PSYC 730	(3)	Clinical Neuroscience Methods
PSYC 732	(3)	Clinical Psychology 1
PSYC 733	(3)	Clinical Psychology 2
PSYC 734	(3)	Developmental Psychology and Language
PSYC 735	(3)	Developmental Psychology and Language
PSYC 736	(3)	Developmental Psychology and Language
PSYC 740	(3)	Perception and Cognition
PSYC 741	(3)	Perception and Cognition
PSYC 742	(3)	Perception and Cognition
PSYC 743	(3)	Perception and Cognition
PSYC 744	(3)	Perception and Cognition
PSYC 746	(3)	Quantitative and Individual Differences
PSYC 747	(3)	Quantitative and Individual Differences
PSYC 748	(3)	Quantitative and Individual Differences
PSYC 749	(3)	Quantitative and Individual Differences
PSYC 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 examination in a foreign language. However, all students planning on practicing clinical psychology in the province of Quebec will be examined based on their proficiency in French before being admitted to the professional association.

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

** NEW PROGRAM **

The Ph.D. in Psychology; Behavioural Neuroscience program emphasizes modern and advanced theory and methodology aimed at the neurobiological underpinnings of behaviour in human and non-human animals. This program is intended for graduate students primarily in area of Psychology who wish to obtain unique, intensive training at the intersection of psychology and neuroscience, thereby enhancing the breadth, 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 a 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 examination in a foreign language. However, all students planning on practicing clinical psychology in the province of Quebec will be examined based on their proficiency in French before being admitted to the professional association.

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

Required Courses (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
PSYC 718	(3)	Learning and Motivation
PSYC 722	(3)	Personality and Social Psychology
PSYC 723	(3)	Personality and Social Psychology
PSYC 724	(3)	Personality and Social Psychology
PSYC 725	(3)	Personality and Social Psychology

PSYC 727	(3)	Personality and Social Psychology
PSYC 728	(3)	Ethics and Professional Issues
PSYC 729	(3)	Theory of Assessment
PSYC 730	(3)	Clinical Neuroscience Methods
PSYC 732D1	(1.5)	Clinical Psychology 1
PSYC 732D2	(1.5)	Clinical Psychology 1
PSYC 733D1	(1.5)	Clinical Psychology 2
PSYC 733D2	(1.5)	Clinical Psychology 2
PSYC 734	(3)	Developmental Psychology and Language
PSYC 735	(3)	Developmental Psychology and Language
PSYC 736	(3)	Developmental Psychology and Language
PSYC 740	(3)	Perception and Cognition
PSYC 741	(3)	Perception and Cognition
PSYC 742	(3)	Perception and Cognition
PSYC 743	(3)	Perception and Cognition
PSYC 744	(3)	Perception and Cognition
PSYC 746	(3)	Quantitative and Individual Differences
PSYC 747	(3)	Quantitative and Individual Differences
PSYC 748	(3)	Quantitative and Individual Differences
PSYC 749	(3)	Quantitative and Individual Differences
PSYC 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
	(3)	Phonological Disorders: Children

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 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 courses are also required: (3)

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

11.10.3.3 Application Dates and Deadlines

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

11.10.4 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.(Brit.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.(Montpellier II)

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

Associate Members

Biology: Graham A.C. Bell, Lauren Chapman

Chemistry: David N. Harpp (Tomlinson Chair in University Science Teaching)

Earth & Planetary Sciences: Jeanne Paquette

McGill School of Environment: Colin Chapman

Adjunct Professors

Robert Holmes, Henry M. Reiswig, Michael Wysoki