Faculty of Agricultural and Environmental Sciences, including School of Dietetics and Human Nutrition (Graduate)

Programs, Courses and University Regulations

2013-2014

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

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Note: Throughout this publication, "you" refers to students newly admitted, readmitted or returning to McGill.

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1 Dean's Welcome

To Graduate Students and Postdoctoral Fellows:

I am extremely pleased to welcome you to McGill University. Our world-class scholarly community includes over 400 doctoral and master's degree programs, and is recognized for excellence across the full range of academic disciplines and professions. Graduate and Postdoctoral Studies (GPS) collaborates with the Faculties and other administrative and academic units to provide strategic leadership and vision for graduate teaching, supervision, and research across the University. GPS also oversees quality assurance in admissions and registration, the disbursement of graduate fellowships, support for postdoctoral fellows, and facilitates graduate degree completion, including the graduation process, and examination of theses. GPS has partnered with Enrolment Services to manage the admission and registration of graduate students and postdoctoral fellows and to offer streamlined services in a one-stop location at *Service Point*.

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

McGill is ranked as one of Canada's most intensive research universities and currently ranked 18th by *QS World University Rankings 2012*. We recognize that these successes come not only from our outstanding faculty members, but also from the quality of our graduate students and postdoctoral fellows—a community into which we are very happy to welcome you.

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

Martin Kreiswirth, Ph.D.
Associate Provost (Graduate Education)
Dean, Graduate and Postdoctoral Studies

2 Graduate and Postdoctoral Studies

2.1 Administrative Officers

Administrative Officers	
Martin Kreiswirth; B.A.(Hamilton), M.A.(Chic.), Ph.D.(Tor.)	**Associate Provost (Graduate Education) and Dean (Graduate and Postdoctoral Studies)**
Heather Goad; B.A.(Br. Col.), Ph.D.(USC)	**Associate Dean (Graduate and Postdoctoral Studies)**
Jean-Jacques Lebrun; B.Sc.(France), M.Sc.(Rennes), Ph.D.(Paris)	**Associate Dean (Graduate and Postdoctoral Studies)**
Laura Nilson; B.A.(Colgate), Ph.D.(Yale)	**Associate Dean (Graduate and Postdoctoral Studies)**
Lissa B. Matyas; B.F.A., M.Sc.(C'dia)	**Director (Graduate and Postdoctoral Studies)**

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

2.3 General Statement Concerning Higher Degrees

Graduate and Postdoctoral Studies (GPS) oversees all programs leading to graduate diplomas, certificates, and higher degrees, with the exception of some programs in the School of Continuing Studies. It is responsible for admission policies, the supervision of graduate students' work, and for recommending to Senate those who may receive the degrees, diplomas, and certificates.

3 Important Dates 2013–2014

For all dates relating to the academic year, consult *www.mcgill.ca/importantdates*.

4 Graduate Studies at a Glance

4.1 Graduate and Postdoctoral Degrees Offered by Faculty

McGill University offers graduate and postdoctoral programs in the following units (organized by their administering home faculty):

Faculty of Agricultural and Environmental Sciences	Degrees Available
section 11.1: Agricultural Economics	M.Sc.
section 11.2: Animal Science	M.Sc., M.Sc.A., Ph.D.
section 11.3: Bioresource Engineering	M.Sc., M.Sc.A., Ph.D., Graduate Certificate
section 11.4: Biotechnology	M.Sc.A., Graduate Certificate
section 11.5: Dietetics and Human Nutrition	M.Sc., M.Sc.A., Ph.D., Graduate Diploma
section 11.6: Food Science and Agricultural Chemistry	M.Sc., Ph.D.
section 11.7: Natural Resource Sciences	M.Sc., Ph.D.
section 11.8: Parasitology	M.Sc., Ph.D.
section 11.9: Plant Science	M.Sc., M.Sc.A., Ph.D., Graduate Certificate

Faculty of Arts	Degrees Available
: Anthropology	M.A., Ph.D.
: Art History	M.A., Ph.D.
Classics – see *: History and Classical Studies*	N/A
: Communication Studies	M.A., Ph.D.
: East Asian Studies	M.A., Ph.D.
: Economics	M.A., Ph.D.
: English	M.A., Ph.D.
: French Language and Literature	M.A., Ph.D.
: Geography	M.A., Ph.D.
: History and Classical Studies	M.A., Ph.D.
: Institute for the Study of International Development	N/A
: Islamic Studies	M.A., Ph.D.
: Jewish Studies	M.A.
: Languages, Literatures, and Cultures	M.A., Ph.D.

Faculty of Arts	Degrees Available
: Linguistics	M.A., Ph.D.
: Mathematics and Statistics	M.A., Ph.D.
: Philosophy	M.A., Ph.D.
: Political Science	M.A., Ph.D.
: Psychology	M.A., Ph.D.
: Quebec Studies / Études sur le Québec	N/A
: Social Studies of Medicine	N/A
: Social Work	M.S.W., Ph.D.
: Sociology	M.A., Ph.D.

School of Dentistry	Degrees Available
: Dentistry	M.Sc.

Desautels Faculty of Management	Degrees Available
: Desautels Faculty of Management	M.B.A., M.B.A. with Integrated B.C.L./LL.B., M.D./M.B.A., M.B.A./Japan, E.M.B.A., M.M.M., M.M., Ph.D., Graduate Certificate, Diploma

Faculty of Education	Degrees Available
: Educational and Counselling Psychology	M.A., M.Ed., Ph.D., Graduate Diploma
: Information Studies	M.L.I.S., Ph.D., Graduate Certificate, Graduate Diploma
: Integrated Studies in Education	M.A., Ph.D., Graduate Certificate
: Kinesiology and Physical Education	M.A., M.Sc.

Faculty of Engineering	Degrees Available
: Architecture	M.Arch., Ph.D.
: Chemical Engineering	M.Eng., Ph.D.
: Civil Engineering and Applied Mechanics	M.Sc., M.Eng., Ph.D.
: Electrical and Computer Engineering	M.Eng., Ph.D.
: Mechanical Engineering	M.Sc., M.Eng., Ph.D.
: Mining and Materials Engineering	M.Sc., M.Eng., Ph.D., Graduate Diploma
: Urban Planning	M.U.P.

Faculty of Law	Degrees Available
: Law	LL.M., D.C.L., Graduate Certificate

McGill School of Environment	Degrees Available
: Environment	N/A

Faculty of Medicine	Degrees Available
: Anatomy and Cell Biology	M.Sc., Ph.D.
: Biochemistry	M.Sc., Ph.D.
: Bioethics	N/A
: Biomedical Engineering	M.Eng., Ph.D.
: Communication Sciences and Disorders	M.Sc., M.Sc.A., Ph.D.
: Epidemiology and Biostatistics	M.Sc., Ph.D.
: Human Genetics	M.Sc., Ph.D.
: Medical Physics	M.Sc.

Faculty of Medicine	Degrees Available
: Medicine, Experimental	M.Sc., Ph.D., Graduate Diploma
: Medicine, Family (Option)	N/A
: Microbiology and Immunology	M.Sc., Ph.D.
: Neuroscience (Integrated Program in)	M.Sc., Ph.D.
: Occupational Health	M.Sc.A., Ph.D.
: Otolaryngology – Head and Neck Surgery	M.Sc.
: Pathology	M.Sc., Ph.D.
: Pharmacology and Therapeutics	M.Sc., Ph.D.
: Physiology	M.Sc., Ph.D.
: Psychiatry	M.Sc.
: Surgery, Experimental	M.Sc., Ph.D.

Ingram School of Nursing	Degrees Available
: Nursing	M.Sc.A., Ph.D., Graduate Certificate, Graduate Diploma

School of Physical and Occupational Therapy	Degrees Available
: Physical and Occupational Therapy	M.Sc., M.Sc.A., Ph.D., Graduate Certificate

Faculty of Religious Studies	Degrees Available
: Religious Studies	M.A., S.T.M., Ph.D.

Schulich School of Music	Degrees Available
: Schulich School of Music	M.A., M.Mus., D.Mus., Ph.D., Graduate Diploma

Faculty of Science	Degrees Available
: Atmospheric and Oceanic Sciences	M.Sc., Ph.D.
: Biology	M.Sc., Ph.D.
: Chemistry	M.Sc., Ph.D.
: Computer Science	M.Sc., Ph.D.
: Earth and Planetary Sciences	M.Sc., Ph.D.
: Geography	M.Sc., Ph.D.
: Mathematics and Statistics	M.Sc., Ph.D.
: Physics	M.Sc., Ph.D.
: Psychology	M.Sc., Ph.D.

4.2 Master's Degrees Available at McGill

The following list shows all of the master's degrees available at McGill, along with their prerequisites. See *section 4.2.1: Master's Degree Programs and Specializations* for more information on specific programs and options.

Degree		Prerequisites
Master of Architecture	M.Arch.	Professional degree – McGill B.Sc.(Arch.) degree, or equivalent. Post-professional degree – an M.Arch. (professional degree) or equivalent professional degree.
Master of Arts	M.A.	Bachelor of Arts in the subject selected for graduate work. See appropriate unit.
Master of Business Administration	M.B.A.	An undergraduate degree from an approved university. See *: M.B.A. Program*.

Degree		Prerequisites
Master of Business Administration with integrated Bachelor of Civil Law / Bachelor of Laws	M.B.A. with B.C.L./LL.B.	See *: M.B.A. Program*.
Master of Business Administration with Doctor of Medicine / Master of Surgery	M.B.A. with M.D.,C.M.	See *: M.B.A. Program*.
Master of Education	M.Ed.	Bachelor's degree with specialization related to the subject chosen for graduate work, plus a Permanent Quebec Teaching Diploma or its equivalent for some of the above degrees. See appropriate department.
Master of Engineering	M.Eng.	Bachelor of Engineering or equivalent, with specialization appropriate for the subject selected for graduate study. See appropriate department.
Master of Laws	LL.M.	An acceptable degree in Law or equivalent qualifications. See *: Law Admission Requirements and Application Procedures*.
Master of Library and Information Studies	M.L.I.S.	At least a bachelor's degree from a recognized university. See *: Information Studies Admission Requirements and Application Procedures*.
Master of Management	M.M.	See *: Master of Management Programs Admission Requirements and Application Procedures*.
Master of Manufacturing Management	M.M.M.	See *: Master of Management Programs Admission Requirements and Application Procedures*.
Master of Music	M.Mus.	Bachelor of Music or Bachelor of Arts with concentration in the area selected for graduate study. Applicants to the Performance program are required to pass auditions in their speciality. See *: Schulich School of Music*.
Master of Sacred Theology	S.T.M.	B.A. with specialization in religious studies or theology. See *: Religious Studies Admission Requirements and Application Procedures*.
Master of Science	M.Sc.	Bachelor of Science in the subject selected for graduate work. See appropriate unit.
Master of Science, Applied	M.Sc.A.	A bachelor's degree in the subject selected for graduate work. See appropriate unit.
Master of Social Work	M.S.W.	Bachelor's degree in Social Work including courses in statistics and social science research methods. See *: Social Work Admission Requirements and Application Procedures*.
Master of Social Work with Bachelor of Civil Law and Bachelor of Laws	M.S.W. with B.C.L. and LL.B.	See *: Social Work Admission Requirements and Application Procedures*.
Master of Urban Planning	M.U.P.	Bachelor's degree in any one of the following: Anthropology, Architecture, Economics, Civil Engineering, Geography, Law, Management, Political Science, Social Work, Sociology, or Urban Planning, with adequate knowledge of quantitative techniques. See *: Urban Planning Admission Requirements and Application Procedures*.

4.2.1 Master's Degree Programs and Specializations

The following list shows all of the programs and options available for each degree at McGill.

Program	Thesis/Non-Thesis	Options
Master of Architecture (M.Arch.)		
Professional	Non-Thesis	Design Studio, Design Studio – Directed Research
Post-professional	Non-Thesis	Architectural History and Theory, Cultural Mediations and Technology, Urban Design and Housing
Master of Arts (M.A.)		
Anthropology	Thesis, Non-Thesis	Development Studies, Environment, Gender and Women's Studies (Thesis)

Master of Arts (M.A.)		
Art History	Thesis	N/A
Classics	Thesis, Non-Thesis	N/A
Communication Studies	Thesis, Non-Thesis	Gender and Women's Studies (Thesis)
Counselling Psychology	Non-Thesis (Professional Internship), Non-Thesis (Project)	N/A
East Asian Studies	Thesis (*Ad Hoc*)	N/A
Economics	Thesis, Non-Thesis	Development Studies, Social Statistics (Non-Thesis)
Educational Psychology	Thesis	Health Professions Education, Human Development, Learning Sciences, School/Applied Psychology
Education and Society	Thesis, Non-Thesis	Gender and Women's Studies, Mathematics and Science Education (Thesis) Gender and Women's Studies, Jewish Education (Non-Thesis)
Educational Leadership	Thesis, Non-Thesis (Coursework), Non-Thesis (Project)	Gender and Women's Studies (Thesis) Gender and Women's Studies (Non-Thesis (Project))
English	Thesis, Non-Thesis	N/A
French Language and Literature	Thesis, Non-Thesis	Gender and Women's Studies (Thesis)
Geography	Thesis	Development Studies, Environment, Gender and Women's Studies, Neotropical Environment, Social Statistics (Thesis)
German	Thesis, Non-Thesis	N/A
Hispanic Studies	Thesis, Non-Thesis	N/A
History	Thesis, Non-Thesis	Development Studies, European Studies, Gender and Women's Studies (Thesis) Development Studies, European Studies, Gender and Women's Studies (Non-Thesis)
History of Medicine	Non-Thesis	N/A
Islamic Studies	Thesis	Gender and Women's Studies (Thesis)
Italian	Thesis, Non-Thesis	N/A
Jewish Studies	Thesis, Non-Thesis	N/A
Kinesiology and Physical Education	Thesis, Non-Thesis	N/A
Linguistics	Non-Thesis	N/A
Mathematics and Statistics	Thesis, Non-Thesis	N/A
Medical Anthropology	Thesis	N/A
Music – Music Education	Thesis, Non-Thesis	N/A
Music – Music Technology	Thesis, Non-Thesis	N/A
Music – Musicology	Thesis, Non-Thesis	Gender and Women's Studies (Thesis)
Music – Theory	Thesis, Non-Thesis	Gender and Women's Studies (Thesis)
Philosophy	Thesis	Bioethics
Political Science	Thesis, Non-Thesis	Development Studies, European Studies (Thesis) Development Studies, European Studies, Gender and Women's Studies, Social Statistics (Non-Thesis)
Psychology	Thesis	N/A
Religious Studies	Thesis, Non-Thesis	Bioethics, Gender and Women's Studies (Thesis)
Russian	Thesis	N/A

Master of Arts (M.A.)		
Second Language Education	Thesis, Non-Thesis	Gender and Women's Studies (Thesis)
Sociology	Thesis, Non-Thesis	Development Studies, Environment, Gender and Women's Studies, Medical Sociology, Neotropical Environment (Thesis)
		Development Studies, Gender and Women's Studies, Medical Sociology, Social Statistics (Non-Thesis)
Teaching and Learning	Non-Thesis	English or French Second Language, English Language Arts, Mathematics, Science and Technology, Social Sciences
Master of Business Administration and Management Degrees (M.B.A., M.M., M.M.M.)		
M.B.A.	Non-Thesis	Finance, General Management, Global Strategy and Leadership, Marketing, Technology and Innovation (Non-Thesis)
M.B.A. with B.C.L. and LL.B.	Non-Thesis	Finance, General Management, Global Strategy and Leadership, Marketing, Technology and Innovation (Non-Thesis)
M.D./M.B.A.	Non-Thesis	N/A
M.B.A./Japan	Non-Thesis	Finance, General Management, Global Strategy and Leadership, Marketing, Technology and Innovation (Non-Thesis)
E.M.B.A.	Non-Thesis	N/A
M.M.M.	Non-Thesis	N/A
M.M./IMPM	Non-Thesis	N/A
M.M./IMPMHL	Non-Thesis	N/A
Master of Education (M.Ed.)		
Educational Psychology	Non-Thesis	Family Life Education, General Educational Psychology, General Educational Psychology: Project, Inclusive Education, Inclusive Education: Project, Learning Sciences
Master of Engineering (M.Eng.)		
Aerospace Engineering	Non-Thesis	N/A
Biomedical Engineering	Thesis, Non-Thesis	Bioinformatics (Thesis)
Chemical Engineering	Non-Thesis	Environmental Engineering (Non-Thesis)
Civil Engineering	Thesis, Non-Thesis	Environmental Engineering (Non-Thesis)
Electrical Engineering	Thesis, Non-Thesis	Computational Science and Engineering (Thesis)
Mechanical Engineering	Thesis, Non-Thesis	Computational Science and Engineering (Thesis)
Mining and Materials Engineering	Thesis, Non-Thesis	Environmental Engineering (Non-Thesis)
Master of Laws (LL.M.)		
Law	Thesis, Non-Thesis	Bioethics, European Studies (Thesis)
		Air and Space Law, Environment, Comparative Law (Thesis and Non-Thesis)
Master of Library and Information Studies (M.L.I.S.)		
The School of Information Studies offers a postgraduate professional program in librarianship. Two years of full-time study or the equivalent are required.		
Information Studies	Non-Thesis	N/A
Master of Music (M.Mus.)		
Music – Composition	Non-Thesis	N/A
Performance	Thesis	Vocal Pedagogy, Jazz Performance, Early Music, Orchestral Instruments and Guitar, Collaborative Piano, Piano, Opera and Voice, Organ and Church Music, Conducting
Sound Recording	Non-Thesis	N/A

Master of Sacred Theology (S.T.M.)

A program leading to the degree of *Sanctae Theologiae Magister* (S.T.M.) is given in the Faculty of Religious Studies. This degree is primarily for those who intend to enter the ministry of the Christian Church or another religious institution, or to proceed to teaching in schools. A Master of Arts program (thesis and non-thesis) is also available.

Religious Studies	Non-Thesis	N/A

Master of Science (M.Sc.)

Agricultural Economics	Thesis	N/A
Animal Science	Thesis	N/A
Atmospheric and Oceanic Science	Thesis	Environment
Biochemistry	Thesis	Bioinformatics, Chemical Biology
Biology	Thesis	Bioinformatics, Environment, Neotropical Environment
Bioresource Engineering	Thesis, Non-Thesis	Environment, Neotropical Environment (Thesis) Integrated Water Resource Management (Non-Thesis)
Biostatistics	Thesis, Non-Thesis	N/A
Cell Biology	Thesis	N/A
Chemistry	Thesis	Chemical Biology
Civil Engineering	Thesis	N/A
Communication Sciences and Disorders	Thesis	N/A
Computer Science	Thesis, Non-Thesis	Bioinformatics, Computational Science and Engineering (Thesis)
Dental Science	Thesis, Non-Thesis	Oral and Maxillofacial Surgery (Thesis)
Earth and Planetary Sciences	Thesis	Environment
Entomology	Thesis	Environment, Neotropical Environment
Epidemiology	Thesis	N/A
Experimental Medicine	Thesis	Bioethics, Environment, Family Medicine
Experimental Surgery	Thesis	Surgical Research
Food Science and Agricultural Chemistry	Thesis, Non-Thesis	Food Safety (Non-Thesis)
Genetic Counselling	Non-Thesis	N/A
Geography	Thesis	Environment, Neotropical Environment
Human Genetics	Thesis	Bioethics, Bioinformatics
Human Nutrition	Thesis	N/A
Kinesiology and Physical Education	Thesis, Non-Thesis	N/A
Mathematics and Statistics	Thesis, Non-Thesis	Bioinformatics, Computational Science and Engineering (Thesis)
Mechanical Engineering	Thesis	N/A
Medical Radiation Physics	Thesis	N/A
Microbiology	Thesis	Environment
Microbiology and Immunology	Thesis	N/A
Mining and Materials Engineering	Thesis	N/A
Neuroscience	Thesis	N/A
Otolaryngology	Thesis	N/A
Parasitology	Thesis	Bioinformatics, Environment
Pathology	Thesis	N/A
Pharmacology	Thesis	Chemical Biology

Master of Science (M.Sc.)		
Physics	Thesis	N/A
Physiology	Thesis	Bioinformatics
Plant Science	Thesis	Bioinformatics, Environment, Neotropical Environment
Psychiatry	Thesis	N/A
Psychology	Thesis	N/A
Public Health	Non-Thesis	Environment
Rehabilitation Sciences	Thesis, Non-Thesis	N/A
Renewable Resources	Thesis, Non-Thesis	Environment, Neotropical Environment (Thesis) Environmental Assessment (Non-Thesis)

Master of Science, Applied (M.Sc.A.)

This degree was designed to provide postgraduate training of a professional and vocational character, with less emphasis on theoretical knowledge and research than in Master of Science programs, but with no lower standards either for admission or completion of requirements. Two years of full-time study or equivalent are normally required with an emphasis on coursework.

Animal Science	Non-Thesis	N/A
Bioresource Engineering	Non-Thesis	Environment, Environmental Engineering, Integrated Food and Bioprocessing, Neotropical Environment
Biotechnology	Non-Thesis	N/A
Communication Sciences and Disorders	Non-Thesis	Speech-Language Pathology
Human Nutrition	Non-Thesis, Non-Thesis (Project), Non-Thesis (Practicum)	Dietetics Credentialing
Nursing	Non-Thesis	N/A
Occupational Health	Non-Thesis (Resident), Non-Thesis (Distance)	N/A
Occupational Therapy	Non-Thesis	N/A
Physical Therapy	Non-Thesis	N/A
Plant Science	Non-Thesis	N/A

Master of Social Work (M.S.W.)

The M.S.W. degree represents a second level of professional study in which students build competence in a chosen field of practice.

Social Work	Thesis, Non-Thesis	N/A
Joint Master of Social Work with B.C.L. and LL.B.	Non-Thesis	N/A

Master of Urban Planning

The program requires a minimum of two years residence and a three-month internship with a member of a recognized planning association.

Urban Planning	Thesis, Non-Thesis	Transportation Planning, Urban Design (Non-Thesis)

4.3 Doctoral Degrees Available at McGill

The following section lists the doctoral degrees available at McGill, along with their prerequisites. See *section 4.3.1: Doctoral Degree Programs and Specializations* for specific programs and options for doctoral degrees.

Degree		Prerequisites
Doctor of Civil Law	D.C.L.	B.C.L. or LL.B. and usually LL.M. See *: Law*.

Degree		Prerequisites
Doctor of Music	D.Mus.	M.A. in Composition (D.Mus. in Composition) or a master's degree in Performance, and professional and teaching experience (D.Mus. in Performance). See *: Schulich School of Music*.
Doctor of Philosophy	Ph.D.	An undergraduate degree relevant to the subject chosen for graduate work. Some departments require all Ph.D. candidates to hold a master's degree in the same subject. Departments may recommend that candidates of undoubted promise should be allowed to proceed directly to the Ph.D. degree without being required to submit a master's thesis.
Joint Doctor of Philosophy	Ph.D.	Joint Ph.D.s are offered in co-operation with other universities.
Ad Hoc Doctor of Philosophy	Ph.D. (*Ad Hoc*)	Several departments offer the possibility of directly entering a Ph.D. program on an *ad hoc* basis, or, with the permission of the supervisor and the approval of the Graduate Program Director, exceptional students may transfer from the master's program to the *ad hoc* Ph.D. program.

4.3.1 Doctoral Degree Programs and Specializations

Program	Options	Offered by Faculty/School
Doctor of Civil Law (D.C.L.)		
Doctoral programs are offered in Air and Space Law and Law (Comparative Law). Both are predominantly research degrees awarded on the basis of a thesis that represents an original contribution to the development of legal science.		
Law	Air and Space Law, Comparative Law	Faculty of Law
Doctor of Music (D.Mus.)		
The Doctor of Music degree is offered in Composition. The Doctoral thesis consists of a musical composition of major dimensions together with a written analysis of the work. The composition is presented by the candidate in concert. The regulations set forth for the Ph.D. generally apply also to the D.Mus. The Doctor of Music degree is also offered in Performance. It is offered to professional musicians who wish to teach at the university level and to develop a specialization in a particular repertoire, approach, or discipline (musicology, music theory, music education and pedagogy, or music technology).		
Music	Composition, Performance Studies	Schulich School of Music
Doctor of Philosophy (Ph.D.)		
Animal Science	Bioinformatics	Faculty of Agricultural and Environmental Sciences
Anthropology	Neotropical Environment	Faculty of Arts
Architecture	N/A	Faculty of Engineering
Art History	Gender and Women's Studies	Faculty of Arts
Atmospheric and Oceanic Sciences	N/A	Faculty of Science
Biochemistry	Bioinformatics, Chemical Biology	Faculty of Medicine
Biology	Bioinformatics, Developmental Biology, Environment, Neotropical Environment	Faculty of Science
Biomedical Engineering	Bioinformatics	Faculty of Medicine
Bioresource Engineering	Environment, Neotropical Environment	Faculty of Agricultural and Environmental Sciences
Biostatistics	N/A	Faculty of Medicine
Cell Biology	N/A	Faculty of Medicine
Chemical Engineering	N/A	Faculty of Engineering
Chemistry	Chemical Biology	Faculty of Science
Civil Engineering	N/A	Faculty of Engineering
Classics	N/A	Faculty of Arts
Communication Sciences and Disorders	Language Acquisition	Faculty of Medicine

Doctor of Philosophy (Ph.D.)		
Communication Studies	Gender and Women's Studies	Faculty of Arts
Computer Science	Bioinformatics	Faculty of Science
Counselling Psychology	N/A	Faculty of Education
Earth and Planetary Sciences	Environment	Faculty of Science
Economics	N/A	Faculty of Arts
Educational Psychology	Human Development, Learning Sciences	Faculty of Education
Educational Studies	Gender and Women's Studies, Language Acquisition, Mathematics and Science Education	Faculty of Education
Electrical Engineering	N/A	Faculty of Engineering
English	N/A	Faculty of Arts
Entomology	Environment, Neotropical Environment	Faculty of Agricultural and Environmental Sciences
Epidemiology	N/A	Faculty of Medicine
Experimental Medicine	Environment	Faculty of Medicine
Experimental Surgery (Surgical Research)	N/A	Faculty of Medicine
Food Science and Agricultural Chemistry	N/A	Faculty of Agricultural and Environmental Sciences
French Language and Literature	Gender and Women's Studies	Faculty of Arts
Geography	Environment, Gender and Women's Studies, Neotropical Environment	Faculty of Arts, Faculty of Science
German	N/A	Faculty of Arts
Hispanic Studies	N/A	Faculty of Arts
History	N/A	Faculty of Arts
Human Genetics	Bioinformatics	Faculty of Medicine
Human Nutrition	N/A	Faculty of Agricultural and Environmental Sciences
Information Studies	N/A	Faculty of Education
Islamic Studies	Gender and Women's Studies	Faculty of Arts
Linguistics	Language Acquisition	Faculty of Arts
Management	N/A	Desautels Faculty of Management
Mathematics and Statistics	Bioinformatics	Faculty of Arts, Faculty of Science
Mechanical Engineering	N/A	Faculty of Engineering
Microbiology	N/A	Faculty of Agricultural and Environmental Sciences
Microbiology and Immunology	Bioinformatics, Environment	Faculty of Medicine
Mining and Materials Engineering	N/A	Faculty of Engineering
Music	Composition, Music Education, Musicology, Music Technology, Sound Recording, Theory, Gender and Women's Studies	Schulich School of Music
Neuroscience	N/A	Faculty of Medicine
Nursing	Psychosocial Oncology	Ingram School of Nursing
Occupational Health	N/A	Faculty of Medicine
Parasitology	Bioinformatics, Environment	Faculty of Agricultural and Environmental Sciences
Pathology	N/A	Faculty of Medicine
Pharmacology	Chemical Biology	Faculty of Medicine
Philosophy	Environment, Gender and Women's Studies	Faculty of Arts

Doctor of Philosophy (Ph.D.)		
Physics	N/A	Faculty of Science
Physiology	Bioinformatics	Faculty of Medicine
Plant Science	Bioinformatics, Environment, Neotropical Environment	Faculty of Agricultural and Environmental Sciences
Political Science	Gender and Women's Studies	Faculty of Arts
Psychology	Language Acquisition, Psychosocial Oncology	Faculty of Arts, Faculty of Science
Rehabilitation Science	N/A	School of Physical and Occupational Therapy
Religious Studies	Gender and Women's Studies	Faculty of Religious Studies
Renewable Resources	Environment, Neotropical Environment	Faculty of Agricultural and Environmental Sciences
Russian	N/A	Faculty of Arts
School/Applied Child Psychology	N/A	Faculty of Education
Social Work	N/A	Faculty of Arts
Sociology	Environment, Gender and Women's Studies	Faculty of Arts
Joint Doctor of Philosophy (Ph.D.)		
Nursing	N/A	McGill / Université de Montréal
Management	N/A	McGill / Concordia / H.E.C. / UQAM
Social Work	N/A	McGill / Université de Montréal
***Ad Hoc* Doctor of Philosophy (Ph.D. (*Ad Hoc*))**		
Dentistry	N/A	Faculty of Dentistry
East Asian Studies	N/A	Faculty of Arts
Italian Studies	N/A	Faculty of Arts
Jewish Studies	N/A	Faculty of Arts
Kinesiology and Physical Education	N/A	Faculty of Education
Psychiatry	N/A	Faculty of Medicine
Urban Planning	N/A	Faculty of Engineering

4.4 Postdoctoral Research

See *section 8: Postdoctoral Research* for information about postdoctoral research at McGill University.

4.5 Graduate Diplomas and Graduate Certificates

The graduate diplomas and graduate certificates listed below are programs of study under the academic supervision of Graduate and Postdoctoral Studies. The prerequisite for a diploma or certificate is an undergraduate degree in the same discipline.

The graduate diploma programs consist of at least two terms of full-time study or the equivalent.

Graduate Diplomas	
Clinical Research	Professional Performance
Library and Information Studies	Public Accountancy (Chartered Accountancy)
Mining Engineering	Registered Dietitian Credentialing (R.D.)
Neonatal Nurse Practitioner	School/Applied Child Psychology (Post-Ph.D.)
Primary Care Nurse Practitioner	

Graduate Certificates	
Assessing Driving Capabilities	Educational Leadership 1
Air and Space Law	Educational Leadership 2
Bioinformatics	Library and Information Studies
Bioresource Engineering (Integrated Water Resources Management)	Post-M.B.A.
Biotechnology	Teaching English as a Second Language
Chronic Pain Management	Theory in Primary Care
Comparative Law	Theory in Neonatology

All graduate regulations apply to graduate diploma and graduate certificate candidates.

Note: The School of Continuing Studies offers graduate diplomas and graduate certificates that are not under the academic supervision of Graduate and Postdoctoral Studies. To see a list of the programs offered, refer to the School of Continuing Studies eCalendar available at *www.mcgill.ca/study*.

5 Program Requirements

5.1 Master's Degrees

Residence Requirements – Master's Degrees

Refers to the number of terms (or years) students must be registered on a full-time basis to complete their program. Students are NOT permitted to graduate until they have fulfilled the residence requirement (or paid the corresponding fees) in their program.

- The following master's programs have a **minimum** residence requirement of **three full-time terms**: M.Arch., M.A., M.Eng., LL.M., M.Mus. (**except** M.Mus. in Sound Recording), M.Sc., M.S.W., M.Sc.A. (**except** M.Sc.A. in Communication Sciences and Disorders).
- The following master's programs have a **minimum** residence requirement of **four full-time terms**: M.L.I.S.; M.Mus. in Sound Recording; M.U.P.; M.A. (60 credits – Counselling Psychology – thesis; 78 credits – Educational Psychology); M.A. Teaching and Learning – Non-Thesis; M.Sc.A. in Communication Sciences and Disorders; S.T.M., Religious Studies.
- The residence requirement for the master's program in Education (M.Ed.); Library and Information Studies (M.L.I.S.); Management (M.B.A.); Religious Studies (S.T.M.); M.A. Counselling Psychology – Non-Thesis; M.A. Teaching and Learning – Non-Thesis; M.Sc. in Public Health – Non-Thesis; M.Sc.A. Nursing; M.Sc.A. Occupational Therapy; M.Sc.A. Physical Therapy; and students in part-time programs is determined on a per course basis. Residence requirements are fulfilled when students complete all course requirements in their respective programs.
- For master's programs structured as Course, Project or Non-Thesis options where the program is pursued on a part-time basis, residence requirements are normally fulfilled when students complete all course requirements in their respective programs (minimum 45 credits or a minimum of three full-time terms) and pay the fees accordingly.

These designated periods of residence represent minimum time requirements. There is no guarantee that the work for the degree can be completed in this time. Students must register for such additional terms as are needed to complete the program.

Coursework – Master's Degrees

Program requirements are outlined in the relevant departmental sections of the Graduate and Postdoctoral Studies *Programs, Courses and University Regulations* publication, available at *www.mcgill.ca/study*.

The department concerned will examine the student's previous training and then decide which of the available courses in the area of specialization or related fields are required to bring the candidate to the proper level for the master's degree. Due account will be taken of relevant courses passed at any recognized university.

As a rule, no more than one-third of the McGill program formal coursework (not thesis, project, stage, or internship) can be credited with courses from another university.

Non-thesis degrees normally specify the course program which the candidate must follow.

The candidate is required to pass, with a grade of B- or better, all those courses that have been designated by the department as forming a part of the program, including additional requirements.

Students taking courses at another university must obtain a minimum grade of B- (65%) if the course is to be credited toward their McGill degree. In the cases where only a letter grade is used, a B- is the minimum passing grade and no equivalent percentage will be considered. In the cases where only a percentage grade is used, 65% is the minimum passing grade.

If courses were not used for a degree, they could be **credited** toward a McGill degree, keeping in mind that a maximum of one-third of the coursework (not thesis, project, stage, internship, and practicum) can be credited. If an **exemption** is granted, it must be replaced by another graduate course at McGill toward the degree. No double counting is ever allowed. This regulation also applies to doctoral programs.

Research and Thesis – Master's Degrees

All candidates for a research degree must present a thesis based on their own research. The total number of credits allotted to the thesis in any master's program must not be less than 24. The title of the thesis and names of examiners must be forwarded on a *Nomination of Examiners* form, in accordance with the dates on *www.mcgill.ca/importantdates*, through the Chair of the department concerned at the same time as the thesis is submitted to Graduate and Postdoctoral Studies. A thesis for the master's degree, while not necessarily requiring an exhaustive review of work in the particular field of study, or a great deal of original scholarship, must show familiarity with previous work in the field and must demonstrate the ability to carry out research and to organize results, all of which must be presented in good literate style. The thesis will not normally exceed 100 pages; in some disciplines, shorter texts are preferred. Guidelines and deadlines are available at *www.mcgill.ca/gps/thesis/guidelines*.

Language Requirements – Master's Degrees

Most master's degree programs do not include language requirements, but candidates who intend to proceed to a doctoral degree should take note of any language requirements and are strongly advised to take the examinations in at least one language while working for the master's degree.

5.2 Doctoral Degrees

Residence Requirements – Doctoral

Refers to the numbers of terms (or years) students must be registered on a full-time basis to complete their program. Students are not permitted to graduate until they have fulfilled the residence requirement (or paid the corresponding fees) in their program.

Candidates entering Ph.D. 1 must follow a program of at least three years' residency at the University; this is a minimum requirement, and there is no guarantee that the work of the degree can be completed in this time, but students are expected to complete within the maximum specified period. Only exceptional candidates holding a bachelor's degree will be considered for direct admission to Ph.D. 1 level.

It is required that candidates spend the greater part of each summer working on their theses, and those who do not do so are unlikely to complete a satisfactory thesis in the prescribed minimum time (see *section 8.3: Vacation Policy for Graduate Students and Postdocs*).

A student who has obtained a master's degree at McGill University or at an approved institution, in a relevant subject and is proceeding to a Ph.D. degree will, on the recommendation of the department, be admitted to Ph.D. 2; in this case, the residency requirement for the program is two years.

In the doctoral program, students must be registered on a full-time basis for one more year after completion of the residency (i.e., Ph.D. 4 year) before continuing as Additional Session students until completion of the program.

Note: The master's degree must have been awarded before initial registration in the doctoral program; otherwise, the admission level will be at Ph.D. 1 and residency will be extended to three years. Once the level of admission is approved, it will not be changed after obtaining the master's degree if the date falls after registration in the program. If a previous awarded degree is a condition of admission, it must be fulfilled before registration in another program.

As a rule, no more than one-third of the McGill program formal coursework can be credited with courses from another university.

Comprehensive Examinations – Doctoral

A comprehensive examination or its equivalent is usually held near the end of Ph.D. 2. The results of this examination determine whether or not students will be permitted to continue in their programs. The methods adopted for examination and evaluation and the areas to be examined are specified by departmental regulations approved by the Dean of Graduate and Postdoctoral Studies. It is the responsibility of students to inform themselves of these details at the commencement of their programs. For more information, see *Programs, Courses and University Regulations > University Regulations and Resources > Graduate > Guidelines and Policies > : Ph.D. Comprehensives Policy*.

Language Requirements – Doctoral

Most graduate departments in the Faculties of Agricultural and Environmental Sciences, Education, Engineering, Management, Medicine, and Science do not require a language examination. Students should inquire in their departments if there are any such requirements or whether any other requirements have been substituted for those relating to languages.

Graduate departments in the Faculties of Arts, Music, and Religious Studies usually require proficiency in one or two languages other than English. In all cases, **students should consult departmental regulations concerning language requirements**.

Language requirements for the Ph.D. degree are met through demonstrated reading knowledge. The usual languages are French, German, or Russian, but in particular instances another language may be necessary.

All language requirements must be fulfilled and the grades reported **before** submission of the thesis to GPS (Thesis section).

Students must contact their departments to make arrangements to take the Language Reading Proficiency Examinations. Students may, however, demonstrate competence by a pass standing in two undergraduate language courses taken at McGill (see departmental regulations).

Candidates are advised to discharge their language requirements as early in their program as possible.

Students expecting to enrol in Professional Corporations in the province of Quebec are advised to become fluent in both spoken and written French.

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

Thesis – Doctoral

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

Seven copies of the thesis must be provided by the candidate. Of these, two copies will be retained by the University and five copies returned to the candidate. Some departments may require one or more additional copies. The final corrected copy is submitted electronically.

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

Thesis Oral Examination – Doctoral

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

5.3 Ad Personam Programs (Thesis Option Only)

In very rare circumstances, an applicant who wishes to engage in Master's (thesis option only) or Ph.D. studies of an interdisciplinary nature involving joint supervision by two departments, each of which is authorized by the Government of Quebec to offer its own graduate programs, may be admitted to an *Ad Personam* program. For more information, see *www.mcgill.ca/gradapplicants/apply/prepare#program* and contact the relevant department.

5.4 Coursework for Graduate Programs, Diplomas, and Certificates

Upper-level undergraduate courses (excluding 500 level) may not be considered for degrees, diplomas, and certificates unless they are already listed as required courses in the approved program description. If an upper-level undergraduate course (excluding 500 level) is taken by a graduate student, it must come as a recommendation from the Graduate Program Director in the department. The recommendation must state if the undergraduate course is an additional requirement for the program (must obtain B- or better) or if the course is extra to the program (will be flagged as such on the record and fees will be charged). See document at *www.mcgill.ca/gps/students/registration#coursereg*.

English and French language courses offered by the French Language Centre (Faculty of Arts) or the School of Continuing Studies may not be taken for coursework credits toward a graduate program.

All substitutions for coursework in graduate programs, diplomas, and certificates must be approved by GPS.

Courses taken at other institutions to be part of the requirements of a program of studies must be approved by GPS before registration. Double counting is not permitted.

6 Graduate Admissions and Application Procedures

Website: *www.mcgill.ca/gradapplicants*
Email: *servicepoint@mcgill.ca*

Deadline: Admission to graduate studies at McGill is competitive; accordingly, late and/or incomplete applications are considered only as time and space permits. Meeting minimum admission standards does not guarantee admission. Admission decisions are not normally subject to appeal or reconsideration and are subject to change. To be considered for entrance fellowships, where available, applicants must verify the deadlines with individual departments.

6.1 Application for Admission

Application information and the online application form are available at *www.mcgill.ca/gradapplicants/apply*. Applicants (with some exceptions) are required to provide the names and email addresses of two instructors familiar with their academic work and who are willing to provide letters of reference in support of the application. McGill will request the reference letters on behalf of the applicant. All applicants must themselves upload an unofficial copy of their complete academic record from each university-level institution attended to date. Admitted applicants will be required to send, or ask the appropriate university authorities to send, an official or certified copy of their complete, final academic record from each university-level institution attended to date. McGill graduates are not required to submit McGill transcripts. See *www.mcgill.ca/gradapplicants/apply/ready#docs* for instructions on mailing official documents to McGill. Please note that all documents submitted to McGill University in support of an application to be admitted, including, but not limited to, transcripts,

diplomas, letters of reference, and test scores, become the property of McGill University and will not be returned to the applicant or issuing institution under any circumstance.

A **non-refundable** fee of $102.60 paid by credit card in Canadian funds **must** accompany the online application. The fee of $102.60 covers up to two program choices per term. Candidates for Special, Visiting, and Qualifying status must also apply online and pay the application fee. Please note that application fees are subject to change.

It is recommended that applicants submit a list of the course titles in the major subject, since transcripts often give code numbers only. **Transcripts written in a language other than English or French must be accompanied by a translation prepared by a licensed translator.** An explanation of the grading system used by the applicant's university is essential. The applicant should also indicate the major subject area in which further study is desired.

Applications and uploaded supporting documents must be submitted according to individual department specifications and deadlines; see *www.mcgill.ca/gradapplicants/programs*. International students are advised to apply well in advance of the application deadlines as immigration procedures may be lengthy. Admission to graduate studies at McGill is highly competitive; accordingly, late and/or incomplete applications are considered only as time and space permits.

The admission decision is based on the recommendation of the graduate department, verification by the Graduate Admissions Unit in Enrolment Services, as well as final approval from Graduate and Postdoctoral Studies. In some cases, the Graduate Admissions Committee may also contribute to the final admission decision. Official letters of admission are sent to applicants electronically by Enrolment Services.

6.2 Admission Requirements (Minimum Requirements to be Considered for Admission)

Note: The following admission requirements denote the minimum standard for applicants. Some graduate departments may require additional qualifications or a higher minimum CGPA; applicants are strongly urged to consult the department concerned regarding specific requirements.

Applicants should be graduates of a recognized university and hold a recognized bachelor's degree or its equivalent, as determined by McGill, in a subject closely related to the one selected for graduate work.

The applicant must present evidence of academic achievement: a minimum standing equivalent to a cumulative grade point average (CGPA) of 3.0 out of a possible 4.0 or a CGPA of 3.2/4.0 for the last two full-time academic years. High grades are expected in courses considered by the department to be preparatory to the graduate program. Some departments impose additional or higher requirements.

See *www.mcgill.ca/gradapplicants/apply/prepare/international/equivalency* for information on grade equivalencies and degree requirements from countries in Europe and around the world. These equivalencies and requirements are provided for information only and are subject to change without notice.

6.3 Application Procedures

Application Checklist

All supporting application documents and required supplemental materials must be uploaded directly to the McGill admissions processing system. See *www.mcgill.ca/gradapplicants/apply/ready#docs* for information and instructions.

1. **Online Application for Admission form:** *www.mcgill.ca/gradapplicants/apply/ready*.
2. **Application fee:** $102.60 non-refundable Canadian funds payable by credit card covers up to two program choices per term. Some programs may charge additional fees. If applicable, these will be automatically charged when you submit the application form. Please note that application fees are subject to change.
3. **Transcripts:** your complete record of study from each university-level institution you have attended to date. Uploaded copies are considered unofficial; final, official copies will be required of admitted applicants.
4. **Reference letters:** on the application form you must provide the names and email addresses of at least two professors who are familiar with your academic work. McGill will contact these referees and invite them to upload references on your behalf. N.B. some departments require more than two referees; please consult *Admission Requirements and Application Procedures* for each department at *www.mcgill.ca/gradapplicants/programs*.
5. **TOEFL/IELTS, GRE, GMAT results:** when registering for the test, please ensure that you request that results be sent directly to McGill University. McGill will then receive the results electronically, directly from the testing agency.

For detailed information regarding additional documents that may be required by certain departments, please consult *Admission Requirements and Application Procedures* for each department at *www.mcgill.ca/gradapplicants/programs*.

6.3.1 Document Checklist Terms

The following terms appear on the Document Checklist and are items or documents that you may be required to upload as part of your application for admission. Please ensure that your use of certain terms conforms to the following definitions:

Audition: a trial performance where a performer demonstrates their suitability or skill.

Curriculum Vitae: an overview of the applicant's experience and other qualifications, including employment, academic credentials, publications, contributions, and significant achievements.

GMAT: Graduate Management Aptitude Test (see *section 6.4: Admission Tests*)

GRE: Graduate Records Examination (see *section 6.4: Admission Tests*)

Interview: a conversation between the applicant and a McGill representative, using a structured, standardized approach to allow for comparison and analysis of responses from all applicants interviewed; in person, via telephone, *Skype*, etc.

Personal Statement: an essay in which the applicant describes their reasons for applying to graduate studies and indicating qualifications, qualities, or circumstances the applicant feels to be significant; usually provides information about educational and professional goals and discusses the applicant's interest in the desired field of study.

Portfolio: a collection of the applicant's best work to date, selected by them, and intended to show their mastery of a given style or variety of styles; different samples of their artistic work.

Recording: an unedited recording (audio or video) of the applicant performing at least two contrasting pieces; minimum 20 minutes.

Research Proposal: a detailed description of the proposed program of research, including proposed Thesis Supervisor(s); describes the research background, significance, methodology, and references; may include expected results; may include a detailed curriculum vitae.

TOEFL: Test of English as a Foreign Language (see *section 6.5: Competency in English*)

Writing Sample: a recent sample of the applicant's written work, on any topic (not necessarily within the desired field of graduate study) and not necessarily previously submitted for evaluation or publication.

Written Work: a sample of the applicant's written work, drawn from essays, papers or other work previously submitted for academic evaluation or publication, and falling within the desired field of graduate study.

6.4 Admission Tests

Graduate Record Examination (GRE)

The Graduate Record Examination (GRE) (Educational Testing Service, Princeton, NJ 08540) consists of a relatively advanced test in the candidates' specialty, and a general test of their attainments in several basic fields of knowledge for which no special preparation is required or recommended. It is offered at many centres, including Montreal, several times a year; the entire examination takes about eight hours, and there is a registration fee. Refer to *www.ets.org/gre* for further information. Only some departments require applicants to write the GRE examination, but all applicants who have written either the general aptitude or the advanced test are advised to ensure that official test results are sent to McGill directly by the testing service.

This credential is of special importance in the case of applicants whose education has been interrupted, or has not led directly toward graduate study in the subject selected. In such cases, the department has the right to insist on a report from the Graduate Record Examination or some similar test. High standing in this examination will not by itself guarantee admission. The Miller Analogies Test may be used similarly. Some departments of the Faculty of Education also require the taking of various tests.

Graduate Management Admissions Test (GMAT)

Applicants to graduate programs in Management must ensure that official results are released to McGill by the Graduate Management Admission Council (GMAC). The test is a standardized assessment offered by the GMAC to help business schools assess candidates for admission. For further information, see *www.mba.com/the-gmat*.

6.5 Competency in English

Applicants to graduate studies must demonstrate an adequate level of proficiency in English **prior to admission**, regardless of citizenship status or country of origin.

Normally, applicants meeting any one of the following conditions are NOT required to submit proof of proficiency in English:

1. Mother tongue (language first learned and still used on a daily basis) is English.
2. Has obtained (or is about to obtain) an undergraduate or graduate degree from a recognized foreign institution where English is the language of instruction.
3. Has obtained (or is about to obtain) an undergraduate or graduate degree from a recognized institution in Canada or the United States of America (anglophone or francophone).
4. Has lived and attended university, or been employed, for at least four consecutive years, in a country where English is the acknowledged primary language.

Applicants who do not meet any of the above-listed conditions must demonstrate proficiency in English using ***one*** of the following options:

1. TOEFL (Test of English as a Foreign Language): minimum acceptable scores are:

Competency in English		
iBT (Internet-based test)	PBT (paper-based test)	CBT (computer-based test)*
86 overall (no less than 20 in each of the four component scores)	550	* The CBT is no longer being offered and CBT results are no longer considered valid, or being reported by ETS.

Competency in English

N.B. an institutional version of the TOEFL is not acceptable.

2. IELTS (International English Language Testing System): a band score of 6.5 or greater.
3. MELAB (Michigan English Language Assessment Battery): a grade of 85% or higher.
4. University of Cambridge ESOL Certificate in Advanced English (CAE): a grade of “B” (Good) or higher.
5. University of Cambridge ESOL Certificate of Proficiency in English (CPE): a grade of “C” (Pass) or higher.
6. Edexcel London Test of English – Level 5 – with an overall grade of at least “Pass.”
7. McGill Certificate of Proficiency in English or McGill Certificate of Proficiency – English for Professional Communication: Certificate of Proficiency awarded.

In each case, applicants must ensure that official test results are sent to McGill directly by the testing service. Applications cannot be considered if test results are not available. These scores are general minima; some departments may set higher requirements.

Revised – July 2008

6.6 Admission to a Qualifying Program

Some applicants whose academic degrees and Standing entitle them to serious consideration for admission to graduate studies, but who are considered inadequately prepared in the subject selected may be admitted to a Qualifying program for a master’s. The undergraduate-level courses to be taken in a Qualifying program will be prescribed by the department concerned.

Qualifying students are registered in graduate studies, **but not as candidates for a degree**. Only one Qualifying year (i.e., two full-time terms) is permitted.

In all cases, after the completion of a Qualifying year or term, an applicant interested in commencing a degree program must apply for admission by the application deadlines. Successful completion of the work in the Qualifying program (B- in all courses) does not automatically entitle the student to proceed toward a degree. Qualifying year students must apply for admission to the program for which they seek qualification.

In cases where a department recommends a change of registration from Qualifying program (Fall) to Master's Degree First Year (Winter), **students must apply to the degree program by the Winter departmental application deadlines**. A Qualifying year applicant admitted to a Winter term as a first term of studies must apply for admission for a Fall term as his/her second term of studies.

Students who are ineligible for a Qualifying program may apply to the appropriate undergraduate faculty for admission as regular or Special Students, and seek admission to graduate studies at a later date. The normal admission requirements must be met and the usual procedures followed.

6.7 Admission to a Second Degree Program

A candidate with a given higher degree may apply for admission to a second degree program at the same level but **in a different subject**. The normal admission requirements must be met and all the usual procedures followed.

6.8 Admission to Two Degree Programs

Students may, with special permission granted by the Graduate Admissions Committee (composed of the Dean and Associate Deans of Graduate and Postdoctoral Studies) and in consultation with the Graduate Admissions Unit of Enrolment Services, be admitted to two degree programs or to two departments or faculties. Students are **never** permitted to pursue two **full-time** degree programs concurrently.

6.9 Admission to an Ad Personam Joint Program

Ad Personam joint graduate programs are restricted to Master's thesis option and Ph.D. programs. Approval for the joint program must be obtained from Graduate and Postdoctoral Studies. The request shall be signed by the Chairs of both departments involved and shall explicitly list the conditions imposed. The student shall undertake research under the joint supervision of both departments.

This program is described in more detail at *www.mcgill.ca/gradapplicants/apply/prepare#program*.

6.10 Reinstatement and Admission of Former Students

Students who have not been registered for a period of less than two years and who have not officially withdrawn from the University by submitting a signed Withdrawal Form to Service Point are eligible to be considered for reinstatement into their program. The student's department must recommend, in writing, that the student be reinstated, stipulating any conditions for reinstatement that it deems appropriate. If the student's department chooses not to recommend reinstatement, the student may appeal to the Associate Dean (Graduate and Postdoctoral Studies). The decision of the Associate Dean (Graduate and Postdoctoral Studies) shall be final and not subject to further appeal.

Reinstatement fees will be charged in addition to the fees due for the academic session into which the student has been reinstated. The amount of the reinstatement fees is the tuition portion of fees owed for all unregistered terms, up to a maximum of two years just prior to the term of reinstatement.

If an individual has not registered for a period of more than two years, their student file will be closed. These individuals and those who have formally withdrawn may be considered for admission. Applicants' admission applications will be considered as part of the current admission cycle, in competition with other people applying during that cycle and in accordance with current graduate admission procedures and policies.

Procedure: Requirements for completion of the program will be evaluated. Some of these requirements may need to be redone or new ones may be added. Applicants must inquire about the fees that will be charged.

Revised – Council of February 9, 2004.

6.11 Deferral of Admission

Under exceptional circumstances, an admission for a particular semester can be considered for a deferral. This can be considered only if the student has not registered. If the student has already registered, no deferral can be granted. The student must withdraw from the University and apply for admission to a later term.

7 Fellowships, Awards, and Assistantships

Graduate and Postdoctoral Studies
(Fellowships and Awards Section)
James Administration Building, Room 400
845 Sherbrooke Street West
Montreal, QC H3A 0G4
Telephone: 514-398-3990
Fax: 514-398-2626
Website: *www.mcgill.ca/gps/funding*

The Fellowships and Awards section of Graduate and Postdoctoral Studies provides processing services for many sources of support for Canadian and non-Canadian students, both new to McGill and continuing. Further information on these and other sources of funding can be found on the Graduate and Postdoctoral Studies website.

Entrance Fellowships are awarded on the basis of the application for admission, upon nomination by academic departments. Most internal fellowships are awarded in this manner—please contact the proposed academic department directly for further information.

Research assistantships, teaching assistantships, and stipends from professors' research grants are handled by individual academic departments at McGill. Fellowships, assistantships, and stipends are used to make funding packages for graduate students. All assistantship and stipend inquiries should be directed to departments.

A small number of citizens from countries whose governments have entered into agreements on tuition fees with Quebec may be exempted from the supplemental tuition fees normally required of international students. All French citizens and a limited number of citizens of countries in the list, which can be found at *www.mels.gouv.qc.ca/sections/publications/index.asp*, are eligible for such exemptions. For more information and the necessary application materials, see *www.mels.gouv.qc.ca/international/index_en.asp?page=progExemp*. The list of organizations where students should apply can be accessed from this website.

Differential Fee Waivers (DFWs) for international students provide eligible non-Canadian graduate students with waivers of the international tuition fee supplement. There are no application forms for differential fee waivers, since these are awarded on the basis of departmental nominations made to the Fellowships and Awards section. Eligible students should contact their McGill department.

8 Postdoctoral Research

Students must inform themselves of University rules and regulations and keep abreast of any changes that may occur. The *Postdoctoral Research* section of this publication contains important details required by postdoctoral scholars during their studies at McGill and should be periodically consulted, along with other sections and related publications.

8.1 Postdocs

Postdocs are recent graduates with a Ph.D. or equivalent (i.e., Medical Specialist Diploma) engaged by a member of the University's academic staff, including Adjunct Professors, to assist him/her in research.

Postdocs must be appointed by their department and registered with Enrolment Services in order to have access to University facilities (library, computer, etc.).

8.2 Guidelines and Policy for Academic Units on Postdoctoral Education

The general guidelines listed below are meant to encourage units to examine their policies and procedures to support postdoctoral education. Every unit hosting Postdocs should have explicitly stated policies and procedures for the provision of postdoctoral education as well as established means for informing Postdocs of policies, procedures, and privileges (e.g., orientation sessions, handbooks, etc.), as well as mechanisms for addressing complaints. Academic units should ensure that their policies, procedures and privileges are consistent with these guidelines and the Charter of Students' Rights. For their part, Postdocs are responsible for informing themselves of policies, procedures, and privileges.

1. **Definition and Status**

   i. Postdoctoral status will be recognized by the University in accordance with Quebec provincial regulations. Persons may only be registered with postdoctoral status for a period of up to five years from the date they were awarded a Ph.D. or equivalent degree. Time allocated to parental or health leave is added to this period of time. Leaves for other reasons, including vacation leave, do not extend the term. Postdocs must do research under the supervision of a McGill professor, including Adjunct Professors, who is a member of McGill's academic staff qualified in the discipline in which training is being provided and with the abilities to fulfil responsibilities as a supervisor of the research and as a mentor for career development. They are expected to be engaged primarily in research with minimal teaching or other responsibilities.

2. **Registration**

   i. Postdocs must be registered annually with the University through Enrolment Services. Initial registration will require an original or notarized copy of the Ph.D. diploma. Registration will be limited to persons who fulfil the definition above and for whom there is an assurance of appropriate funding and where the unit can provide assurance of the necessary resources to permit postdoctoral education.

   ii. Upon registration, the Postdoc will be eligible for a University identity card issued by Enrolment Services.

3. **Appointment, Pay, Agreement of Conditions**

   i. Appointments may not exceed your registration eligibility status.

   ii. In order to be registered as a Postdoc, you must be assured of financial support other than from personal means during your stay at McGill University, equivalent to the minimal stipend requirement set by the University in accordance with guidelines issued by federal and provincial research granting agencies. There are no provisions for paid parental leave unless this is stipulated in the regulations of a funding agency outside the University.

   iii. At the outset of a postdoctoral appointment, a written Letter of Agreement for Postdoctoral Education should be drawn up and signed by the Postdoc, the supervisor, and the department head or delegate (see template Letter of Agreement and supporting document—*Commitments of Postdoctoral Scholars and Supervisors*—on the web at *www.mcgill.ca/gps/postdocs/fellows/letter*). This should stipulate, for example, the purpose of the postdoctoral appointment (research training and the advancement of knowledge), the duration of the fellowship/financial support, the modality of pay, the work space, travel funds, and expectations and compensation for teaching and student research supervision. Leaves from postdoctoral education must comply with the Graduate and Postdoctoral Studies Policies for Vacation, Parental/Familial, and Health Leave (see *section 8.3: Vacation Policy for Graduate Students and Postdocs* and *Programs, Courses and University Regulations > University Regulations and Resources > Graduate > Regulations > Categories of Students > : Leave of Absence Status*). Any breach of these conditions may result in grievance procedures or the termination of the postdoctoral appointment.

   iv. Postdocs with full responsibility for teaching a course should be compensated over and above their fellowship at the standard rate paid to lecturers by their department.

   v. The amount of research, teaching, or other tasks that Postdocs engage in over and above postdoctoral activities should conform to the regulations for Postdocs specified by the Canadian research council of their discipline. This applies to all Postdocs, including those whose funding does not come from the Canadian research councils.

4. **Privileges**

i. Postdocs have the same pertinent rights as the ones granted to McGill students in the *Handbook on Student Rights and Responsibilities* ("Green Book"), available at *www.mcgill.ca/secretariat/policies/students*.

ii. Postdocs have full graduate student borrowing privileges in McGill libraries through their identity card.

iii. As a rule, Postdocs who are Canadian citizens or who have Permanent Resident status may take courses for credit. Admission to such courses should be sought by submitting application documents directly to the appropriate program by the Postdoc. They must be admitted by the department offering the courses as Special Students. These Postdocs may only be enrolled as part-time students in non-degree granting programs. They will be charged fees for these courses.

iv. Postdocs may be listed in the McGill directory. The Computing Centre will grant Postdocs email privileges on the same basis as graduate students upon presentation of a valid identity card.

v. The Department of Athletics will grant Postdocs access to sports facilities upon presentation of their identity card. A fee will be charged on an annual or term basis.

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 spoken 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 CAQ and a Study Permit.

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

5. Responsibilities

i. Postdocs are subject to the responsibilities outlined in the *Handbook on Student Rights and Responsibilities* ("Green Book"), available at *www.mcgill.ca/secretariat/policies/students*.

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 responsibilities of the department are:

– to verify the Postdoc's eligibility period for registration;

– to provide Postdocs with departmental policy and procedures that pertain to them;

– to oversee the registration and appointment of Postdocs;

– to assign departmental personnel (e.g., Postdoc coordinator and Graduate Program Director) the responsibility for Postdocs;

– to oversee and sign off on the Letter of Agreement for Postdoctoral Education;

– to ensure that each Postdoc has a supervisor, lab and/or office space, access to research operating costs and necessary equipment;

– to include Postdocs in departmental career and placement opportunities;

– to refer Postdocs to the appropriate University policies and personnel for the resolution of conflict that may arise between a Postdoc and a supervisor.

v. Some examples of responsibilities of the supervisor are:

– to uphold and transmit to their Postdocs the highest professional standards of research and/or scholarship;

– to provide research guidance;

– to meet regularly with their Postdocs;

– to provide feedback on research submitted by the Postdocs;

– to clarify expectations regarding intellectual property rights in accordance with the University's policy;

– to provide mentorship for career development;

– to prepare, sign, and adhere to a Letter of Agreement for Postdoctoral Education.

vi. Some examples of responsibilities of Postdocs are:

– to inform themselves of and adhere to the University's policies and/or regulations for Postdocs for leaves, for research, and for student conduct as outlined in the *Handbook on Student Rights and Responsibilities* and the Graduate and Postdoctoral Studies *University Regulations and Resources*;

– to submit a complete file for registration to Enrolment Services;

– to sign and adhere to their Letter of Agreement for Postdoctoral Education;

– to communicate regularly with their supervisor;

– to inform their supervisor of their absences.

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

– to register Postdocs;

– to provide an appeal mechanism in cases of conflict;

– to provide documented policies and procedures to Postdocs;

– to provide Postdocs with the necessary information on McGill University student services.

Approved by Senate, April 2000

8.3 Vacation Policy for Graduate Students and Postdocs

Graduate students and Postdocs should normally be entitled to vacation leave equivalent to university holidays and an additional total of fifteen (15) working days in the year. Funded students and Postdocs with fellowships and research grant stipends taking additional vacation leave may have their funding reduced accordingly.

Council of FGSR April 23, 1999

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 *Programs, Courses and University Regulations > University Regulations and 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. Students and Postdocs must make a request for such a leave in writing to their department and submit a medical certificate. The department shall forward the request to Enrolment Services. See procedure under *Programs, Courses and University Regulations > University Regulations and Resources > Graduate > : Leave of Absence Status*. Students who have been granted such a leave will have to register for the term(s) in question and their registration will show as “leave of absence” on their record. No tuition fees will be charged for the duration of the authorized leave. Research supervisors are not obligated to remunerate students and Postdocs on leave. GPS has prepared a summary table of various leave policies (paid or unpaid) for students and Postdocs paid from the Federal and Quebec Councils through fellowships or research grants. The document is available at *www.mcgill.ca/gps/students/progress/leave-vacation* under “Information on the Funding Council Leave Policies for Graduate Students and Postdoctoral Fellows.”

8.5 Postdoctoral Research Trainees

Eligibility

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

The category of Postdoctoral Research Trainee is for:

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

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

Category 3: An individual who holds a professional degree (or equivalent) in a regulated health profession (as defined under CIHR-eligible health profession) and is enrolled in a program of postgraduate medical education at another institution. The individual wishes to conduct the research stage or elective component of his/her program of study at McGill University under the supervision of a McGill professor. The individual will be engaged in full-time research with well-defined objectives, responsibilities, and methods of reporting. The application must be accompanied by a letter of permission from the home institution (signed by the Department Chair, Dean or equivalent) confirming registration in their program and stating the expected duration of the research stage. Individuals who are expecting to spend more than one year are encouraged to obtain formal training (master’s or Ph.D.) through application to a relevant graduate program.

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

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

General Conditions

- The maximum duration is three years;

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

9 Graduate Studies Guidelines and Policies

Refer to *Programs, Courses and University Regulations > University Regulations and Resources > Graduate > : Guidelines and Policies* for information on the following:

- Guidelines and Regulations for Academic Units on Graduate Student Advising and Supervision
- Policy on Graduate Student Research Progress Tracking
- Ph.D. Comprehensives 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 *Programs, Courses and University Regulations > University Regulations and Resources > Graduate > : Research Policy and Guidelines, Patents, Postdocs, Associates, Trainees* for information on the following:

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

11 Academic Programs

The programs and courses in the following sections have been approved for the 2013–2014 session as listed, but the Faculty/School reserves the right to introduce changes as may be deemed necessary or desirable.

11.1 Agricultural Economics

11.1.1 Location

Department of Agricultural Economics
Macdonald Campus
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue, QC H9X 3V9
Canada

Telephone: 514-398-7820
Email: *gradstudies.macdonald@mcgill.ca*
Website: *http://agrecon.mcgill.ca*

11.1.2 About Agricultural Economics

The goal of graduate training in Agricultural Economics is to provide students with the applied concepts and tools to identify, define, and analyze economic problems affecting the performance of the agri-food sector and the environment. Attention is given to the development of analytical skills in the broad areas of agricultural, environmental and ecological economics, development, and resource allocation in production and marketing in agriculture. The program prepares graduates for rewarding careers in research, analysis and decision-making in academia, private and NGO sectors, and government. For more information, visit *http://agrecon.mcgill.ca/grad.htm*.

11.1.3 Agricultural Economics Admission Requirements and Application Procedures

11.1.3.1 Admission Requirements

To be considered eligible for direct admission to the M.Sc. program, the applicant must have an undergraduate degree with a Cumulative Grade Point Average (CGPA) of **at least** 3.0 out of a possible 4.0 (Second Class - Upper Division or equivalent) or a CGPA of 3.2/4.0 for the last two full-time academic years.

The ideal preparation is an undergraduate degree in Agricultural Economics or Economics, including undergraduate courses in intermediate economic theory (micro and macro), calculus, algebra, statistics and econometrics. Candidates considered to have insufficient preparation in economics will be asked to take up to two additional undergraduate courses as part of their M.Sc. program.

When an applicant does not have sufficient background in economics for admission to the M.Sc., they may be admitted to a *Qualifying program* of one year of undergraduate courses. The CGPA requirement is the same as for the M.Sc. An application to the Qualifying program makes use of the same electronic application form as for the M.Sc. program.

More information is found at *http://agrecon.mcgill.ca/grad.htm*.

11.1.3.2 Application Procedures

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

See *section 6.3: 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:

- Curriculum Vitae
- Research Proposal – not required, but highly recommended
- Letters of Reference (2) **must** be printed on the letterhead of the referee's university or organization, and uploaded to the McGill application system
- The GRE is not required, but it is highly recommended

11.1.3.3 Application Deadlines

Canadian	International	Special/Exchange/Visiting
Fall: June 30	Fall: March 31	Fall: Same as Canadian/International
Winter: N/A	Winter: N/A	Winter: N/A
Summer: N/A	Summer: N/A	Summer: N/A

11.1.4 Agricultural Economics Faculty

Program Director

J.C. Henning

Associate Professors

J.C. Henning; B.Sc., Ph.D.(Guelph)

P.J. Thomassin; B.Sc.(Agr.)(McG.), M.S., Ph.D.(Hawaii Pac.)

Assistant Professors

N. Kosoy; B.Sc.(Univ. Simon Bolivar), M.Sc.(Kent), M.Sc., Ph.D.(Univ. Autonoma de Barcelona)

A. Naseem; B.Sc.(McG.), M.Sc.(Penn.), M.A., Ph.D.(Mich.)

11.2 Animal Science

11.2.1 Location

Department of Animal Science
Macdonald Campus
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue, QC H9X 3V9
Canada

Telephone: 514-398-7794
Fax: 514-398-7964
Email: *gradstudies.macdonald@mcgill.ca*
Website: *www.mcgill.ca/animal*

11.2.2 About Animal Science

The Department of Animal Science provides exciting challenges to graduate students in the areas of Biotechnology and Molecular Biology, Breeding and Genetics, Nutrition, and Reproductive Physiology as they relate, not only to livestock production but also leading into the fields of human nutrition and medicine via animal models for human disease, infertility, and obesity. Official options in Biotechnology are also available. Departmental researchers have excellent wet-lab facilities at their disposal; large-animal studies can be carried out at the Large Animal Research Unit on the Macdonald campus farm, where other livestock species are available for research trials as well. Research can make use of the Small Animal Research Unit for studies involving rodent animal models, guinea pigs, neonatal piglets, and rabbits. Expertise is also available in applied information systems, management-software development, and large-scale data analyses. Close collaboration with the Quebec Centre for Expertise in Dairy Production (Valacta) allows for large-scale data-mining projects, software development, and the production of advising tools for the industry. The Department also has significant expertise in food safety, environmental studies related to animal production, and global food security. Our staff's many connections via research networks allow for rich learning environments for our graduate students.

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

Two one-semester courses and three seminar courses at the postgraduate level complement an area of research (resulting in a thesis) under the supervision of one of our staff—many of whom are leaders in their respective fields. Entrance to this program is highly competitive, requiring an excellent B.Sc. and letters of reference. Graduates of this program are well prepared for careers in the animal industry, the pharmaceutical sector, and many varied fields in biotechnology.

section 11.2.6: Master of Science, Applied (M.Sc.A.); Animal Science (Non-Thesis) (45 credits)

This non-thesis degree is oriented to animal scientists already working in industry or government, to undergraduate students inspired by concepts in sustainable and integrated animal agriculture, to project leaders interested in animal resource management, and to veterinarians. The program provides graduate training in applied areas of animal production with a view toward integrating technology and management in animal production with allied areas of agricultural resource utilization.

section 11.2.7: Doctor of Philosophy (Ph.D.); Animal Science

Since the Ph.D. is primarily a research degree, the amount of coursework required will normally be considerably less than is the case for the M.Sc. It depends on the background of the individual student and must be approved by the student's Advisory Committee. At a minimum, it includes two seminar

section 11.2.7: Doctor of Philosophy (Ph.D.); Animal Science

courses at the graduate level and the Ph.D. Comprehensive Examination as an admission to candidacy for the Ph.D. As with the M.Sc. (Thesis), admission is based on an excellent track record. Suitable candidates are encouraged to contact potential supervisors within their chosen area of interest. Applicants should, however, be aware that no professor is in a position to accept students without formal approval of the application by the Graduate Admissions Committee.

section 11.2.8: Doctor of Philosophy (Ph.D.); Animal 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.

11.2.3 Animal Science Admission Requirements and Application Procedures

11.2.3.1 Admission Requirements

M.Sc. (Thesis)

Candidates are required to have either a bachelor's degree in Agriculture or a B.Sc. degree in an appropriate, related discipline with an equivalent cumulative grade point average of 3.0/4.0 (second class – upper division) or 3.2/4.0 during the last two years of full-time university study. High grades are expected in courses considered by the academic unit to be preparatory to the graduate program.

M.Sc. (Applied)

All candidates are required to have a B.Sc. degree or equivalent.

Ph.D.

Candidates are normally required to have an M.Sc. degree in an area related to the chosen field of specialization for the Ph.D. program.

Qualifying Students

Some applicants whose academic degrees and standing entitle them to serious consideration for admission to graduate studies, but who are considered inadequately prepared in the subject selected may be admitted to a Qualifying program if they have met the Graduate and Postdoctoral Studies minimum CGPA of 3.0/4.0. The course(s) to be taken in a Qualifying program will be prescribed by the academic unit concerned. Qualifying students are registered in graduate studies, **but not as candidates for a degree**. Only one Qualifying year is permitted. **Successful completion of a Qualifying program does not guarantee admission to a degree program.**

Financial Aid – **Financial aid is very limited and highly competitive. It is suggested that students give serious consideration to their financial planning before submitting an application.** Normally, a student will not be accepted unless adequate financial support can be provided by the student and/or the student's supervisor. Academic units cannot guarantee financial support via teaching assistantships or other funds.

11.2.3.2 Application Procedures

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

See *section 6.3: Application Procedures* for detailed application procedures.

11.2.3.2.1 Additional Requirements

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

- Acceptance to all programs depends on a staff member agreeing to serve as the student's supervisor and the student obtaining financial support.
- The GRE is not required, but it is highly recommended.

11.2.3.3 Application Deadlines

Canadian	International	Special/Exchange/Visiting
Fall: June 30	Fall: March 15	Same as Canadian/International
Winter: Sept. 15	Winter: Sept. 15	Same as Canadian/International
Summer: N/A	Summer: N/A	N/A

It may be necessary to delay review of the applicant's file until the following admittance period if application materials including supporting documents are received after the application deadlines. International applicants are advised to apply well in advance of these dates because immigration procedures may be lengthy.

11.2.4 Animal Science Faculty

Chair

Kevin M. Wade

Emeritus Professors

R.B. Buckland; B.Sc.(Agr.), M.Sc.(McG.), Ph.D.(Md.)

E.R. Chavez; Ing.Agr.(Chile), M.Sc., Ph.D.(Davis)

E. Donefer; B.Sc., M.Sc.(C'nell), Ph.D.(McG.)

B.R. Downey; D.V.M.(Tor.), Ph.D.(McG.)

U. Kühnlein; B.Sc.(Fed. Inst. of Tech., Zurich), Ph.D.(Geneva)

J.E. Moxley; B.Sc.(Agr.), M.Sc.(McG.), Ph.D.(C'nell)

S. Touchburn; M.S.A.(Br. Col.), Ph.D.(Ohio St.)

Professors

J.F. Hayes; B.Agr.Sc., M.Agr.Sc.(Dublin), Ph.D.(N. Carolina St.)

X. Zhao; B.Sc., M.Sc.(Nanjing), Ph.D.(C'nell) (*James McGill Professor*)

Associate Professors

V. Bordignon; D.V.M.(URCAMP, Brazil), M.Sc.(UFPel, Brazil), Ph.D.(Montr.)

R.I. Cue; B.Sc.(Newcastle, UK), Ph.D.(Edin.)

S. Kimmins; B.Sc.(Dal.), M.Sc.(Nova Scotia Ag.), Ph.D.(Dal.) (*CRC Chair, Tier 2*)

H. Monardes; Ing.Agr.(Concepcion, Chile), M.Sc., Ph.D.(McG.)

A.F. Mustafa; B.Sc., M.Sc.(Khartoum), Ph.D.(Sask.)

L.E. Phillip; B.Sc.(Agr.), M.Sc.(Agr.)(McG.), Ph.D.(Guelph)

K.M. Wade; B.Sc.(Agr.), M.Sc.(Agr.)(Dublin), Ph.D.(C’nell)

D. Zadworny; B.Sc., Ph.D.(Guelph)

Assistant Professors

M. Chénier; B.Sc.(Laval), M.Sc.(Queb.), Ph.D.(McG.)

R. Duggavathi; B.V.Sc., M.V.Sc.(Bangalore), Ph.D.(Sask.)

Adjunct Professors

H. Baldassarre, E. Ibeagha-Awemu, P. Lacasse, D. Lefebvre, B. Murphy

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

Thesis Courses (36 credits)

ANSC 680	(9)	M.Sc. Thesis 1
ANSC 681	(9)	M.Sc. Thesis 2
ANSC 682	(9)	M.Sc. Thesis 3
ANSC 683	(9)	M.Sc. Thesis 4

Required Courses (9 credits)

6 credits of coursework at the 500 level or higher approved by the student's advisory committee, and three 1-credit seminars.

ANSC 695	(1)	MSc General Topic Seminar

ANSC 696	(1)	MSc Research Proposal Seminar
ANSC 697	(1)	MSc Research Results Seminar

Depending on the needs and competencies of the student, additional coursework may be assigned by the supervisory committee.

11.2.6 Master of Science, Applied (M.Sc.A.); Animal Science (Non-Thesis) (45 credits)

The program aims to provide graduate training in applied areas of animal production with a view toward integrating technology and management in animal production with allied areas of agricultural resource utilization.

Research Project (15 credits)

ANSC 643	(3)	Project 1
ANSC 644	(3)	Project 2
ANSC 645	(3)	Project 3
ANSC 646	(3)	Project 4
ANSC 647	(3)	Project 5

Complementary Courses (30 credits)

15-30 credits from the following:

AEMA 610	(3)	Statistical Methods 2
ANSC 504	(3)	Population Genetics
ANSC 530	(3)	Experimental Techniques in Nutrition
ANSC 551	(3)	Carbohydrate and Lipid Metabolism
ANSC 552	(3)	Protein Metabolism and Nutrition
ANSC 560	(3)	Biology of Lactation
ANSC 565	(3)	Applied Information Systems
ANSC 600	(3)	Advanced Eukaryotic Cells and Viruses
ANSC 604	(3)	Advanced Animal Biotechnology
ANSC 605	(3)	Estimation: Genetic Parameters
ANSC 606	(3)	Selection Index and Animal Improvement
ANSC 622	(3)	Selected Topics in Molecular Biology
ANSC 635	(3)	Vitamins and Minerals in Nutrition
ANSC 636	(3)	Analysis - Animal Breeding Research Data
ANSC 691	(3)	Special Topic: Animal Sciences
ANSC 692	(3)	Topic in Animal Sciences 1

0-15 credits selected from 500- and 600-level courses from across the Faculty (with the possibility of up to 9 credits from outside the Faculty if deemed appropriate by the supervisor).

11.2.7 Doctor of Philosophy (Ph.D.); Animal Science

Since the Ph.D. is primarily a research degree, the amount of coursework required will depend on the background of the individual student, and must be approved by the student's advisory 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

ANSC 701	(0)	Doctoral Comprehensive Examination

Two seminar courses at the 500, 600, or 700 level.

11.2.8 Doctor of Philosophy (Ph.D.); Animal 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 expression and for publication in the public domain.

Required Courses (5 credits)

ANSC 701	(0)	Doctoral Comprehensive Examination
ANSC 797	(1)	Animal Science Seminar 3
ANSC 798	(1)	Animal Science Seminar 4
COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar

Complementary Courses (6 credits)

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.

11.3 Bioresource Engineering

11.3.1 Location

Department of Bioresource Engineering
Macdonald Campus
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue, QC H9X 3V9
Canada

Telephone: 514-398-7774
Fax: 514-398-8387
Email: *gradstudies.macdonald@mcgill.ca*
Website: *www.mcgill.ca/bioeng*

11.3.2 About Bioresource Engineering

The Department offers M.Sc. and Ph.D. research programs in various areas of bioresource engineering including: plant and animal environments; ecological engineering (ecosystem modelling, design, management, and remediation); water resources management (hydrology, irrigation, drainage, water quality); agricultural machinery, mechatronics, and robotics; food engineering and bio-processing; post-harvest technology; waste management and protection of the environment; bio-energy; and artificial intelligence. The Department also offers a Graduate Certificate in Bioresource Engineering (Integrated Water Resources Management). The Department has well equipped laboratories for conducting research in all these areas.

The interdisciplinary nature of bioresource engineering often requires candidates for higher degrees to work in association with, or attend courses given by, a number of other departments at both the McGill University Macdonald campus and the Downtown campus.

section 11.3.5: Master of Science (M.Sc.); Bioresource Engineering (Thesis) (46 credits)

This option for the M.Sc. degree is oriented toward individuals who intend to develop a career in bioresource engineering research.

section 11.3.6: Master of Science (M.Sc.); Bioresource Engineering (Thesis) — Environment (46 credits)

The Environmental option is coordinated through the McGill School of Environment (MSE). This option is intended for students who want to take an interdisciplinary approach in their graduate research on environmental issues. Students will learn how to transfer knowledge into action and develop an appreciation for the roles of science, politics, economics, and ethics with regard to the environment.

section 11.3.7: Master of Science (M.Sc.); Bioresource Engineering (Thesis) — Neotropical Environment (46 credits)

This option is a joint offering between McGill University and the Smithsonian Tropical Research Institute (STRI) in Panama. This interdisciplinary option encourages and promotes ethically sound and socially significant learning in the global context of environmental problems. Participation in the MSE-Panama Symposium presentation in Montreal is a requirement of this program. This program trains students in the socio-political aspects of the Tropical Environment.

section 11.3.8: Master of Science (M.Sc.); Bioresource Engineering (Non-Thesis) — Integrated Water Resources Management (45 credits)

Integrated Water Resource Management is a one-year program providing an essential approach for sustainable management of our natural watershed resources. The 13-credit internship is a central feature of this master's program. The degree gives students the unique opportunity to study the biophysical, environmental, legal, institutional, and socio-economic aspects of water use and management, in an integrated context. The degree is directed at practising professionals who wish to upgrade and/or focus their skill set to address water management issues. As a graduate from this program, you will be well suited to opportunities in diverse fields of employment, such as water resources consulting, international development project management, research with governments or universities, public policy and governance development, and climate change impact assessment.

section 11.3.9: Master of Science, Applied (M.Sc.A.); Bioresource Engineering (Non-Thesis) (45 credits)

The non-thesis option is aimed at individuals already employed in industry or seeking to improve their skills in specific areas (soil and water, structures and environment, waste management, environment protection, post-harvest technology, food process engineering, environmental engineering) in order to attain a higher level of engineering qualification. Candidates must be qualified to be members of a Canadian professional engineering association such as the *Ordre des ingénieurs du Québec* (OIQ) and must maintain contact with their academic adviser in the Department of Bioresource Engineering before registration to clarify objectives, investigate project possibilities, and plan a program of study.

section 11.3.10: Master of Science, Applied (M.Sc.A.); Bioresource Engineering (Non-Thesis) — Environment (45 credits)

The non-thesis Environment option is aimed at individuals already employed in industry or seeking to improve their skills in specific areas with the coordination of the McGill School of Environment.

section 11.3.11: Master of Science, Applied (M.Sc.A.); Bioresource Engineering (Non-Thesis) — Environmental Engineering (45 credits)

The Environmental Engineering program emphasizes interdisciplinary fundamental knowledge, practical perspective, and awareness of environmental issues through a wide range of technical and non-technical courses offered by collaborating departments and faculties at the University.

The primary objective of the program is to train environmental professionals at the advanced level. The program is thus designed for individuals with a university undergraduate degree in engineering. Through this program, students will master specialized skills in their home disciplines and acquire a broader perspective and awareness of environmental issues.

section 11.3.12: Master of Science, Applied (M.Sc.A.); Bioresource Engineering (Non-Thesis) - Integrated Food and Bioprocessing (45 credits)

This graduate program will provide students with the tools to understand how food and agricultural production interact to better manage agricultural, food, and biomass systems for the adequate supply of wholesome food, feed, fiber, biofuel, and any other bio-based material. This course-based program will present students with the skills needed to assess existing production, delivery, and quality management systems; introduce improvements; and communicate effectively with policy makers and with colleagues in multi-disciplinary teams. The goals of this program are to provide up-to-date world class knowledge on techniques for adequate process design and management of biomass production strategies for the delivery of quality food, natural fiber, biochemicals, biomaterials, and biofuels, in a sustainable and environment-friendly way that benefits all. Training activities will include laboratory research and/or industrial/government internships.

section 11.3.13: Master of Science, Applied (M.Sc.A.); Bioresource Engineering (Non-Thesis) — Neotropical Environment (45 credits)

The non-thesis option is aimed at individuals already employed in industry or seeking to improve their skills in specific areas of the Tropical Environment. Participation in the MSE-Panama Symposium presentation in Montreal is a requirement of this program.

section 11.3.14: Doctor of Philosophy (Ph.D.); Bioresource Engineering

Please contact the Department for more information about this program.

section 11.3.15: Doctor of Philosophy (Ph.D.); Bioresource Engineering — Environment

The Ph.D. Bioresource Engineering: Environment – MSE Option is coordinated through the McGill School of Environment (MSE). This option is intended for students who want to take an interdisciplinary approach in their graduate research on environmental issues. Students will learn how to transfer knowledge into action and develop an appreciation for the roles of science, politics, economics, and ethics with regard to the environment.

section 11.3.16: Doctor of Philosophy (Ph.D.); Bioresource Engineering — Neotropical Environment

This is a research-based degree with a team of co-advisers from McGill and Latin America with the requirements of a one-year residency in Panama or tropical Latin America, three interdisciplinary courses, at least two of them focusing on North-South issues, proficiency in Spanish or Portuguese, one-time off-campus (Panama) fees, and the possibility of NEO-specific fellowships. Only the accredited professors listed on the NEO website can accept students in the option.

section 11.3.17: Graduate Certificate in Bioresource Engineering — Integrated Water Resources Management (15 credits)

The Graduate Certificate in Integrated Water Resources Management is for practising professionals who wish to upgrade or focus their skill set to address water management issues. Students are trained in Water Ethics, Law and Policy of Water Management, Freshwater Ecosystems, Health, and Sanitation.

11.3.3 Bioresource Engineering Admission Requirements and Application Procedures

11.3.3.1 Admission Requirements

Candidates for M.Sc. and Ph.D. degrees and Graduate Certificates should indicate in some detail their fields of special interest when applying for admission. An equivalent cumulative grade point average of 3.0/4.0 (second class – upper division) or 3.2/4.0 during the last two years of full-time university study is required at the bachelor's level. High grades are expected in courses considered by the academic unit to be preparatory to the graduate program. Experience after the undergraduate degree is an additional asset.

Qualifying Students

Some applicants whose academic degrees and standing entitle them to serious consideration for admission to graduate studies, but who are considered inadequately prepared in the subject selected may be admitted to a Qualifying program if they have met the Graduate and Postdoctoral Studies minimum CGPA of 3.0/4.0. The course(s) to be taken in a Qualifying program will be prescribed by the academic unit concerned. Qualifying students are registered in graduate studies, **but not as candidates for a degree**. Only one Qualifying year is permitted. **Successful completion of a Qualifying program does not guarantee admission to a degree program.**

Financial Aid – **Financial aid is very limited and highly competitive. It is suggested that students give serious consideration to their financial planning before submitting an application.** Normally, a student will not be accepted unless adequate financial support can be provided by the student and/or the student's supervisor. Academic units cannot guarantee financial support via teaching assistantships or other funds.

11.3.3.2 Application Procedures

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

See *section 6.3: Application Procedures* for detailed application procedures.

11.3.3.2.1 Additional Requirements

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

- Acceptance to all programs depends on a staff member agreeing to serve as the student's supervisor and the student obtaining financial support.
- The GRE is not required, but it is highly recommended.

11.3.3.3 Application Deadlines

Canadian	International	Special/Exchange/Visiting
Fall: June 30	Fall: April 30	Fall: Open
Winter: Nov. 15	Winter: Sept. 30	Winter: Open
Summer: March 30	Summer: Feb. 28	Summer: Open

It may be necessary to delay review of the applicant's file until the following admittance period if application materials including supporting documents are received after the application deadlines. International applicants are advised to apply well in advance of these dates because immigration procedures may be lengthy.

11.3.4 Bioresource Engineering Faculty

Chair

V. Orsat

Graduate Program Director

G.S.V. Raghavan

Associate Graduate Program Director

V. Orsat

Emeritus Professor

R.S. Broughton; B.S.A., B.A.Sc.(Tor.), S.M.(MIT), Ph.D.(McG.), LL.D.(Dal.)

Professor (Post-Retirement)

R. Kok; B.E.Sc., Ph.D.(W. Ont.)

Professors

C.A. Madramootoo; B.Sc.(Agr.Eng.), M.Sc., Ph.D.(McG.) (*James McGill Professor*)

E. McKyes; B.Eng., M.Eng., Ph.D.(McG.)

M.O. Ngadi; B.Eng.(Agr.Eng.), M.A.Sc., Ph.D.(Dal.Tech.) (*William Dawson Scholar*)

S.O. Prasher; B.Tech., M.Tech.(Punj.), Ph.D.(Br. Col.), LL.D.(Dal.) (*James McGill Professor*)

G.S.V. Raghavan; B.Eng.(B'lore), M.Sc.(Guelph), Ph.D.(Colo. St.), D.Sc.(TNAU) (*James McGill Professor*)

Associate Professors

V.I. Adamchuk; B.Sc.(Kyiv, Ukraine), M.Sc., Ph.D.(Purd.)

V. Orsat; B.Sc., M.Sc., Ph.D.(McG.)

Assistant Professors

J. Adamowski; B.Eng.(RMC), M.Phil.(Camb.), M.B.A.(WUT, LBS, HEC, NHH), Ph.D.(Warsaw)

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

M.-J. Dumont; B.Eng, M.Sc.(Laval), Ph.D.(Alta.)

M. Lefsrud; B.Sc.(Sask.), M.Sc.(Rutg.), Ph.D.(Tenn.)

Z. Qi; B.Sc., M.Sc.(China Agr.), Ph.D.(Iowa)

Adjunct Professors

M. Clamen; B.Eng., Ph.D.(McG.)

F. Daneshmand; B.Sc., M.Sc., Ph.D.(Shiraz Univ.)

S. Dev; B.Sc.(TNAU), M.Sc., Ph.D.(McG.)

P. Jutras; B.Sc.(McG.), M.Sc.(Montr.), Ph.D.(McG.)

A. Madani; B.Sc., M.Sc.(Br. Col.), Ph.D.(WSU)

J. Martinez; M.Sc.(Polytechnic Inst. of Toulouse), Ph.D.(Univ. of Perpignan)

A. Mujumdar; B.Eng.(Bom.), M.Eng., Ph.D.(McG.)

B. Tartakovsky; M.Sc., Ph.D.(Moscow State Univ.)

C. Vigneault; B.Sc., M.Sc.(Laval), Ph.D.(McG.)

Faculty Lecturers

A. Cherestes; B.Sc., M.Sc.(Queens College), Ph.D.(CUNY)

M. Knutt; M.B.Sc.(W. Ont.), M.A., Ph.D.(Brandeis)

Research/Professional Associates

Y. Gariepy; B.Sc., M.Sc.(McG.)

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

S. Sotocinal; B.Sc.(Phil.), M.Sc., Ph.D.(McG.)

Technical

S. Manktelow

11.3.5 Master of Science (M.Sc.); Bioresource Engineering (Thesis) (46 credits)

This option for the M.Sc. degree is oriented toward individuals who intend to develop a career in bioresource engineering research.

Thesis Courses (32 credits)

BREE 691	(4)	M.Sc. Thesis 1
BREE 692	(4)	M.Sc. Thesis 2
BREE 693	(4)	M.Sc. Thesis 3
BREE 694	(4)	M.Sc. Thesis 4
BREE 695	(4)	M.Sc. Thesis 5
BREE 696	(4)	M.Sc. Thesis 6
BREE 697	(4)	M.Sc. Thesis 7
BREE 698	(4)	M.Sc. Thesis 8

Required Courses (5 credits)

BREE 651	(1)	Departmental Seminar M.Sc. 1
BREE 652	(1)	Departmental Seminar M.Sc. 2
BREE 699	(3)	Scientific Publication

Complementary Courses (9 credits)

500-, 600-, or 700-level courses in bioresource engineering and other fields to be determined in consultation with the Research Director.

11.3.6 Master of Science (M.Sc.); Bioresource Engineering (Thesis) — Environment (46 credits)

Thesis Courses (32 credits)

BREE 691	(4)	M.Sc. Thesis 1
BREE 692	(4)	M.Sc. Thesis 2
BREE 693	(4)	M.Sc. Thesis 3
BREE 694	(4)	M.Sc. Thesis 4
BREE 695	(4)	M.Sc. Thesis 5
BREE 696	(4)	M.Sc. Thesis 6
BREE 697	(4)	M.Sc. Thesis 7
BREE 698	(4)	M.Sc. Thesis 8

Required Courses (11 credits)

BREE 651	(1)	Departmental Seminar M.Sc. 1
BREE 652	(1)	Departmental Seminar M.Sc. 2
BREE 699	(3)	Scientific Publication
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 (3 credits)

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

11.3.7 Master of Science (M.Sc.); Bioresource Engineering (Thesis) — Neotropical Environment (46 credits)

Thesis (32 credits)

BREE 691	(4)	M.Sc. Thesis 1
BREE 692	(4)	M.Sc. Thesis 2
BREE 693	(4)	M.Sc. Thesis 3
BREE 694	(4)	M.Sc. Thesis 4
BREE 695	(4)	M.Sc. Thesis 5
BREE 696	(4)	M.Sc. Thesis 6
BREE 697	(4)	M.Sc. Thesis 7
BREE 698	(4)	M.Sc. Thesis 8

Required Courses (11 credits)

BIOL 640	(3)	Tropical Biology and Conservation
BREE 651	(1)	Departmental Seminar M.Sc. 1
BREE 652	(1)	Departmental Seminar M.Sc. 2
BREE 699	(3)	Scientific Publication
ENVR 610	(3)	Foundations of Environmental Policy

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

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.

11.3.8 Master of Science (M.Sc.); Bioresource Engineering (Non-Thesis) — Integrated Water Resources Management (45 credits)

Research Project (6 credits)

BREE 631	(6)	Integrated Water Resources Management Project

Required Courses (27 credits)

BREE 503	(3)	Water: Society, Law and Policy
BREE 510	(3)	Watershed Systems Management
BREE 630	(13)	Integrated Water Resources Management Internship
BREE 651	(1)	Departmental Seminar M.Sc. 1
BREE 652	(1)	Departmental Seminar M.Sc. 2
BREE 655	(3)	Integrated Water Resources Management Research Visits
PARA 515	(3)	Water, Health and Sanitation

Elective Courses (12 credits)

12 credits, at the 500 level or higher, of any relevant course(s) chosen in consultation with the Program Director.

11.3.9 Master of Science, Applied (M.Sc.A.); Bioresource Engineering (Non-Thesis) (45 credits)

The non-thesis option is aimed toward individuals already employed in industry or seeking to improve their skills in specific areas (soil and water/structures and environment/waste management/environment protection/post-harvest technology/food process engineering/environmental engineering) in order to enter the engineering profession at a higher level.

Candidates must meet the qualifications of a professional engineer either before or during their M.Sc. Applied program.

Each candidate for this option is expected to establish and maintain contact with his/her academic adviser in the Department of Bioresource Engineering some time before registration in order to clarify objectives, investigate project possibilities and plan a program of study.

Research Project (12 credits)

BREE 671	(6)	Project 1
BREE 672	(6)	Project 2

Required Courses (2 credits)

BREE 651	(1)	Departmental Seminar M.Sc. 1
BREE 652	(1)	Departmental Seminar M.Sc. 2

Complementary Courses (31 credits)

31 credits of 500-, 600-, or 700-level courses in bioresource engineering and other fields* to be determined in consultation with the Project Director.

* Note: 12 of the 31 credits are expected to be from collaborative departments, e.g., food process engineering: 12 credits divided between Food Science and Chemical Engineering.

11.3.10 Master of Science, Applied (M.Sc.A.); Bioresource Engineering (Non-Thesis) — Environment (45 credits)

Candidates must meet the qualifications of a professional engineer either before or during their M.Sc. Applied program.

Research Project (12 credits)

BREE 671	(6)	Project 1
BREE 672	(6)	Project 2

Required Courses (8 credits)

BREE 651	(1)	Departmental Seminar M.Sc. 1
BREE 652	(1)	Departmental Seminar M.Sc. 2
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 (25 credits)

3 credits from the following courses below:

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 and approved by the Environment Option Committee.

22 additional credits of 500-, 600-, or 700-level courses chosen in consultation with the academic adviser.

11.3.11 Master of Science, Applied (M.Sc.A.); Bioresource Engineering (Non-Thesis) — Environmental Engineering (45 credits)

This inter-departmental graduate program leads to a master's degree in Environmental Engineering. The objective of the program is to train environmental professionals at an advanced level. The program is designed for individuals with an undergraduate degree in engineering. This non-thesis degree falls within the M.Eng. and M.Sc. programs which are offered in the Departments of Bioresource, Chemical, Civil, and Mining, Metals, and Materials Engineering.

Research Project (6 credits)

BREE 671*	(6)	Project 1
BREE 672	(6)	Project 2

* BREE 671 may also be taken as part of this requirement.

Required Courses (9 credits)

BREE 533	(3)	Water Quality Management
CHEE 591	(3)	Environmental Bioremediation
CIVE 615	(3)	Environmental Engineering Seminar

Complementary Courses (19 credits)

Data Analysis Course

3 credits from the following:

AEMA 611	(3)	Experimental Designs 1
CIVE 555	(3)	Environmental Data Analysis
PSYC 650	(3)	Advanced Statistics 1

Toxicology Course

3 credits from the following:

OCCH 612	(3)	Principles of Toxicology
OCCH 616	(3)	Occupational Hygiene

Water Pollution Engineering Course

4 credits from the following:

CIVE 651	(4)	Theory: Water / Wastewater Treatment
CIVE 652	(4)	Biological Treatment: Wastewaters
CIVE 660	(4)	Chemical and Physical Treatment of Waters

Air Pollution Engineering Course

3 credits from the following:

CHEE 592	(3)	Industrial Air Pollution Control
MECH 534	(3)	Air Pollution Engineering

or an approved 500-, 600-, or 700-level alternative course.

Environmental Impact Course

3 credits from the following:

GEOG 501	(3)	Modelling Environmental Systems
GEOG 551	(3)	Environmental Decisions

or an approved 500-, 600-, or 700-level alternative course.

Environmental Policy Course

3 credits from the following:

URBP 506	(3)	Environmental Policy and Planning

or an approved 500-, 600-, or 700-level alternative course.

Further complementary courses (balance of coursework to meet the 45-credit program requirement):

Remaining Engineering or Non-Engineering courses from an approved list of courses, at the 500, 600, or 700 level, from the Faculty of Engineering, Faculty of Agricultural and Environmental Sciences, Faculty of Law, Faculty of Religious Studies, Desautels Faculty of Management, and Departments of Atmospheric and Oceanic Sciences, Biology, Chemistry, Earth and Planetary Sciences, Economics, Epidemiology and Biostatistics, Geography, Occupational Health, Political Science, Sociology, and the McGill School of Environment.

11.3.12 Master of Science, Applied (M.Sc.A.); Bioresource Engineering (Non-Thesis) - Integrated Food and Bioprocessing (45 credits)

Required Courses (6 credits)

BREE 600	(1)	Project/Internship Proposal
BREE 651	(1)	Departmental Seminar M.Sc. 1
BREE 652	(1)	Departmental Seminar M.Sc. 2
BREE 699	(3)	Scientific Publication

Complementary Courses (39 credits)

Minimum of 3 credits of graduate-level Statistics in any department

Minimum of 9 credits from courses selected from the following:

BREE 518	(3)	Bio-Treatment of Wastes
BREE 519	(3)	Advanced Food Engineering
BREE 520	(3)	Food, Fibre and Fuel Elements
BREE 530	(3)	Fermentation Engineering
BREE 531	(3)	Post-Harvest Drying
BREE 532	(3)	Post-Harvest Storage
BREE 535	(3)	Food Safety Engineering
BREE 603	(3)	Advanced Properties: Food and Plant Materials

Minimum of 12 credits selected from the following:

BREE 601	(6)	Integrated Food and Bioprocessing Internship 1
BREE 602	(6)	Integrated Food and Bioprocessing Internship 2
BREE 671	(6)	Project 1
BREE 672	(6)	Project 2

Minimum of 3 credits selected from the following:

AGEC 630	(3)	Food and Agricultural Policy
AGEC 633	(3)	Environmental and Natural Resource Economics
AGEC 642	(3)	Economics of Agricultural Development
AGRI 510	(3)	Professional Practice

Minimum of 3 credits selected from the following:

BTEC 502	(3)	Biotechnology Ethics and Society
FDSC 519	(3)	Advanced Food Processing
FDSC 535	(3)	Food Biotechnology
FDSC 538	(3)	Food Science in Perspective
GEOG 515	(3)	Contemporary Dilemmas of Development
NUTR 501	(3)	Nutrition in Developing Countries

9 credits of any relevant graduate-level course chosen in consultation with the Program Director.

11.3.13 Master of Science, Applied (M.Sc.A.); Bioresource Engineering (Non-Thesis) — Neotropical Environment (45 credits)

Research Project (12 credits)

BREE 671	(6)	Project 1
BREE 672	(6)	Project 2

Required Courses (8 credits)

BIOL 640	(3)	Tropical Biology and Conservation
BREE 651	(1)	Departmental Seminar M.Sc. 1
BREE 652	(1)	Departmental Seminar M.Sc. 2
ENVR 610	(3)	Foundations of Environmental Policy

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

Complementary Courses (25 credits)

3 credits (one elective course), 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.

22 additional credits of 500-, 600-, or 700-level courses chosen in consultation with the academic adviser.

11.3.14 Doctor of Philosophy (Ph.D.); Bioresource Engineering

Candidates for the Ph.D. degree will normally register for the M.Sc. degree first. In cases where the research work is proceeding very satisfactorily, or where the equivalent of the M.Sc. degree has been completed previously, candidates may be permitted to proceed directly to the Ph.D. degree.

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

BREE 701	(0)	Ph.D. Comprehensive Examination
BREE 751	(0)	Departmental Seminar Ph.D. 1
BREE 752	(0)	Departmental Seminar Ph.D. 2
BREE 753	(0)	Departmental Seminar Ph.D. 3
BREE 754	(0)	Departmental Seminar Ph.D. 4

Complementary Courses

Courses of study selected for a Ph.D. program will depend on the existing academic qualifications of the candidate, and on those needed for effective pursuit of research in the chosen field. Candidates are encouraged to take an additional course of study of their own choice in some field of the humanities, sciences, or engineering not directly related to their research. The program will be established by consultation of the candidate with a committee that will include the Research Director and at least one other professor.

11.3.15 Doctor of Philosophy (Ph.D.); Bioresource Engineering — 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 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

Note: BREE 701, the comprehensive component, must be taken either late in the first, or early in the second, registration year to qualify to proceed to the completion of the Ph.D. degree.

BREE 701	(0)	Ph.D. Comprehensive Examination
BREE 751	(0)	Departmental Seminar Ph.D. 1
BREE 752	(0)	Departmental Seminar Ph.D. 2

BREE 753	(0)	Departmental Seminar Ph.D. 3
BREE 754	(0)	Departmental Seminar Ph.D. 4
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

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, 600, or 700 level recommended by the Advisory Committee and approved by the Environment Option Committee.

11.3.16 Doctor of Philosophy (Ph.D.); Bioresource Engineering — Neotropical 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 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
BREE 701	(0)	Ph.D. Comprehensive Examination
BREE 751	(0)	Departmental Seminar Ph.D. 1
BREE 752	(0)	Departmental Seminar Ph.D. 2
BREE 753	(0)	Departmental Seminar Ph.D. 3
BREE 754	(0)	Departmental Seminar Ph.D. 4
ENVR 610	(3)	Foundations of Environmental Policy

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

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.

11.3.17 Graduate Certificate in Bioresource Engineering — Integrated Water Resources Management (15 credits)

Required Courses (9 credits)

BREE 503	(3)	Water: Society, Law and Policy
NRSC 514	(3)	Freshwater Ecosystems
PARA 515	(3)	Water, Health and Sanitation

Complementary Courses (6 credits)

3 credits from the following:

BREE 533	(3)	Water Quality Management
CIVE 550	(3)	Water Resources Management

and 3 credits from the list available in the Department chosen in consultation with the Academic Adviser.

11.4 Biotechnology

11.4.1 Location

Institute of Parasitology
Macdonald Campus
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue, QC H9X 3V9
Canada

Telephone: 514-398-7725
Fax: 514-398-7857
Email: *gradstudies.macdonald@mcgill.ca*
Website: *www.mcgill.ca/biotechgradprog*

11.4.2 About Biotechnology

Non-thesis Graduate Certificate and M.Sc.(Applied) degree in Biotechnology.

The non-thesis program in Biotechnology offers a course-based curriculum with practical training in laboratory courses and internships offered through the Institute of Parasitology. The Institute is housed on Macdonald Campus of McGill University in beautiful Sainte-Anne-de-Bellevue about 30 kilometers from the Montreal main campus downtown.

Graduates typically enter the biotechnology sector in research, management, or sales, or accept government positions.

BIOTECHNOLOGY PROGRAMS

section 11.4.5: Master of Science, Applied (M.Sc.A.); Biotechnology (Non-Thesis) (45 credits)

Candidates must possess a bachelor's degree in the biological/molecular sciences or an equivalent program. This applied master's program is unique in Quebec. It aims to prepare students for entry into the biotechnology and pharmaceutical industry or to pursue further graduate studies in biomedicine, agriculture, or the environment. Students can choose from a wide range of complementary courses given throughout the McGill campuses to “design” their own program toward a future career choice. The program provides in-house training in molecular biology with a strong focus on the molecular/biochemical sciences. Concurrently, it provides teaching in management and gives students the opportunity to look at the business aspect of biotechnology. A research internship of four to eight months is carried out in an active laboratory, and students learn to present and write research results. Graduates will find jobs ranging from positions as research assistants and/or technicians in biomedical or pharmaceutical laboratories to managerial or supervisory positions. They may also pursue a career in the business of biotechnology including patent and intellectual property management.

section 11.4.6: Graduate Certificate in Biotechnology (16 credits)

Candidates must possess a bachelor's degree in the biological/molecular sciences or an equivalent program. This is a short, intense program for students wishing to deepen their understanding of biotechnology and gain hands-on experience via an intensive laboratory course using the latest molecular biology techniques. Students can choose from a wide range of complementary courses given throughout the McGill campuses to “design” their own program toward a future career choice. Graduates will find employment in research or industrial laboratories as assistants and/or technicians.

11.4.3 Biotechnology Admission Requirements and Application Procedures

11.4.3.1 Admission Requirements

Candidates for the Graduate Certificate and the M.Sc.(Applied) in Biotechnology must possess a bachelor’s degree in biological sciences or equivalent with a minimum cumulative grade point average of 3.0/4.0 or 3.2/4.0 GPA in the last two full-time years of university study for the Graduate Certificate, and a

minimum of 3.2/4.0 CGPA for the M.Sc.(A.), as well as prerequisites or equivalents. Prerequisites or equivalents: applicants are required to have sufficient background in biochemistry, cellular biology, and molecular biology, preferably at an advanced level for the Master's Applied.

Qualifying Students

Some applicants whose academic degrees and standing entitle them to serious consideration for admission to graduate studies, but who are considered inadequately prepared in the subject selected, may be admitted to a Qualifying program if they have met the Graduate and Postdoctoral Studies minimum CGPA of 3.0/4.0. The course(s) to be taken in a Qualifying program will be prescribed by the academic unit concerned. Qualifying students are registered in graduate studies, **but not as candidates for a degree**. Only one Qualifying year is permitted. **Successful completion of a Qualifying Program does not guarantee admission to a degree program.**

Financial Support – **Financial support for Biotechnology programs is very limited.** Students must secure funding from governmental agencies or be self-sufficient. International students are strongly encouraged to secure funding from their home country or international agencies. More information is found at *www.mcgill.ca/biotechgradprog/admissions/tuition*.

11.4.3.2 Application Procedures

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

See *section 6.3: Application Procedures* for detailed application procedures.

11.4.3.2.1 Additional Requirements

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

- Other Supporting Documents – Other documents may be required for the admission process. Please consult the Biotechnology website at *www.mcgill.ca/biotechgradprog/admissions* for full details of the admission process.
- The GRE is not required, but it is highly recommended.

11.4.3.3 Application Deadlines

Canadian	International	Special/Exchange/Visiting
Fall: June 1	Fall: March 15	Fall: N/A
Winter: N/A	Winter: N/A	Winter: N/A
Summer: N/A	Summer: N/A	Summer: N/A

It may be necessary to delay review of the applicant's file until the following admittance period if application materials including supporting documents are received after the application deadlines. International applicants are advised to apply well in advance of these dates because immigration procedures may be lengthy.

11.4.4 Biotechnology Faculty

Biotechnology is a program offered through the Institute of Parasitology. For a complete faculty listing, please refer to *section 11.8.4: Parasitology Faculty*.

11.4.5 Master of Science, Applied (M.Sc.A.); Biotechnology (Non-Thesis) (45 credits)

Research Project (16 credits)

BTEC 622	(2)	Biotechnology Research Project 1
BTEC 623	(6)	Biotechnology Research Project 2
BTEC 624	(6)	Biotechnology Research Project 3
BTEC 625	(2)	Biotechnology Research Project 4

Required Courses (17 credits)

BIOT 505	(3)	Selected Topics in Biotechnology
BTEC 501	(3)	Bioinformatics
BTEC 619	(4)	Biotechnology Laboratory 2
BTEC 620	(4)	Biotechnology Laboratory 1
BTEC 621	(3)	Biotechnology Management

Complementary Courses (12 credits)

3 credits in Ethics at the 500 level or higher, selected in consultation with the academic adviser.

9 credits at the 500 level or higher, selected within the Faculties of Agricultural and Environmental Sciences, Medicine, Science, or Management in consultation with the academic adviser of the program in line with the interests of the student.

11.4.6 Graduate Certificate in Biotechnology (16 credits)

Required Courses (10 credits)

BIOT 505	(3)	Selected Topics in Biotechnology
BTEC 620	(4)	Biotechnology Laboratory 1
BTEC 621	(3)	Biotechnology Management

Complimentary Courses (6 credits)

Two courses chosen from the following:

General Topics

ANSC 622	(3)	Selected Topics in Molecular Biology
BINF 511	(3)	Bioinformatics for Genomics
BIOL 524	(3)	Topics in Molecular Biology
BIOL 568	(3)	Topics on the Human Genome
BTEC 501	(3)	Bioinformatics
BTEC 502	(3)	Biotechnology Ethics and Society
BTEC 535	(3)	Functional Genomics in Model Organisms
BTEC 555	(3)	Structural Bioinformatics
BTEC 691	(3)	Biotechnology Practicum
EXMD 511	(3)	Joint Venturing with Industry
EXMD 602	(3)	Techniques in Molecular Genetics

Health

EXMD 610	(3)	Molecular Methods in Medical Research
PARA 635	(3)	Cell Biology and Infection
PHGY 518	(3)	Artificial Cells

Environment and Food

BREE 530	(3)	Fermentation Engineering
FDSC 535	(3)	Food Biotechnology

11.5 Dietetics and Human Nutrition

11.5.1 Location

School of Dietetics and Human Nutrition

Macdonald-Stewart Building, Room MS2-039
McGill University, Macdonald Campus
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue, QC H9X 3V9
Canada

Telephone: 514-398-7762
Fax: 514-398-7739
Email: *gradstudies.macdonald@mcgill.ca*
Website: *www.mcgill.ca/dietetics*

11.5.2 About Dietetics and Human Nutrition

In the School of Dietetics and Human Nutrition, cutting-edge nutrition research is conducted by its nine tenure-track professors and six faculty lecturers in all areas recommended by North American Nutrition Societies. These include molecular and cellular nutrition, clinical, community, and international nutrition. Domains emphasized by School researchers include: epigenetics; proteomics; metabolomics; embryonic and fetal origins of health and disease; the development of improved recommendations and policies for optimizing health in at-risk populations including Aboriginal populations, mothers and children, and the elderly; and the development of novel nutritional and/or nutraceutical approaches for treatment during surgery and recovery from disease.

Research is conducted in our on-site research labs, the Centre for Indigenous Peoples' Nutrition and Environment (CINE), the Mary Emily Clinical Nutrition Research unit, and the MUHC Teaching Hospitals. Students can conduct research or participate in clinical rotations with the BITS – Barbados, IDRC – Ghana and field sites in Asia, Africa, and Latin America.

section 11.5.5: Master of Science (M.Sc.); Human Nutrition (Thesis) (45 credits)

A master's degree in Human Nutrition offers advanced Nutrition courses in a broad range of research areas. The program is suitable for students with an undergraduate degree in nutritional sciences, exercise physiology, kinesiology, food science, biochemistry, medicine, or another closely related field. Students are required to complete 14 credits in advanced nutrition coursework plus 31 credits related to their thesis research. Graduates of our M.Sc. thesis degree have pursued successful careers in research, international health agencies, government agencies, and industry.

section 11.5.7: Master of Science, Applied (M.Sc.A.); Human Nutrition (Non-Thesis) — Practicum (45 credits) **and** ***section 11.5.8: Master of Science, Applied (M.Sc.A.); Human Nutrition (Non-Thesis) — Project (45 credits)***

The M.Sc. Applied program is a course-based master's program. It allows students to further develop knowledge and expertise in nutrition. Students are required to complete 29 credits in advanced Nutrition courses plus 16 credits related to a research project or an advanced practicum (reserved for registered dietitians). Careers include managerial positions for practising dietitians, and careers in nutrition programs, government, and industry.

section 11.5.6: Master of Science, Applied (M.Sc.A.); Human Nutrition (Non-Thesis) — Dietetics Credentialing (83 credits)

The M.Sc. Applied program in Dietetics Credentialing is a course-based master's program with a dietetics *Stage* (internship) included. At the end of the program, students are qualified to be licensed with one of the provincial regulatory bodies in Canada, as well as in other countries, and practise in the areas of clinical nutrition, community nutrition, and foodservice management; French competency is an asset. The program is preceded by a Qualifying year, if necessary, to complete certain courses required for licensure. This is followed by three semesters of graduate-level courses (46 credits) and 3 semesters of *Stage* (37 credits), which include a practice-based graduate project.

section 11.5.9: Doctor of Philosophy (Ph.D.); Human Nutrition

A Ph.D. degree in Human Nutrition is suitable for students with an M.Sc. degree in Nutritional Sciences or related areas who wish to become independent researchers and/or leaders in the field of nutritional sciences. The School offers a stimulating research environment with opportunities in a wide range of areas of basic science, clinical research with our many hospital clinicians, as well as population health in Canada and abroad. Careers include academic, senior government, and industry positions within Canada and internationally.

section 11.5.10: Graduate Diploma in Registered Dietitian Credentialing (30 credits)

In the School of Dietetics and Human Nutrition at McGill, students pursuing a graduate degree in nutrition have the opportunity to apply to our Graduate Diploma in R.D. Credentialing, upon completion of the M.Sc. or Ph.D. program and upon completion of the undergraduate courses required by *l'Ordre professionnel des diététistes du Québec* (OPDQ). This Diploma consists of two semesters of *Stage* (internship) in Clinical Nutrition, Community Nutrition, and Foodservice Systems Management. Upon completion of the Diploma, the recipient is eligible to register and practice as a Dietitian in Quebec, as well as in other Canadian provinces and other countries.

11.5.3 Dietetics and Human Nutrition Admission Requirements and Application Procedures

11.5.3.1 Admission Requirements

M.Sc. Thesis and M.Sc. Applied (Project or Practicum)

Applicants must be graduates of a university of recognized reputation and hold a B.Sc. degree equivalent to a McGill degree in a subject closely related to the one selected for graduate work. Applicants must have at least a cumulative grade point average (CGPA) in McGill University's credit equivalency of

3.2/4.0 (second class – upper division) for the M.Sc. Thesis and 3.5/4.0 for the M.Sc. Applied during their bachelor's degree program. All eligible candidates to the M.Sc. (Applied) program may select the project option; those who have completed a dietetic internship and six months' work experience are eligible to apply for a practicum option.

Ph.D.

Applicants must be graduates of a university of recognized reputation and hold a B.Sc. and M.Sc. degree equivalent to a McGill degree in a subject closely related to the one selected for graduate work. Applicants must have at least a cumulative grade point average (CGPA) in McGill University's credit equivalency of 3.2/4.0 (second class – upper division) during their bachelor's and master's degree programs.

Graduate Diploma in R.D. Credentialing

For information on admission requirements, applicants must contact Dr. Maureen Rose in the School of Dietetics and Human Nutrition.

Qualifying Students

Some applicants whose academic degrees and Standing entitle them to serious consideration for admission to graduate studies, but who are considered inadequately prepared in the subject selected may be admitted to a Qualifying program if they have met the School's minimum CGPA of 3.2 out of 4.0. The courses to be taken in a Qualifying program will be prescribed by the academic unit. Qualifying students are registered in graduate studies, **but not as candidates for a degree**. Only one Qualifying year (two terms) is permitted. **Successful completion of a Qualifying program does not guarantee admission to a degree program. Students must re-apply for admission to a degree program.**

Financial Aid – **Financial aid is very limited and highly competitive. It is suggested that students give serious consideration to their financial planning before submitting an application.** Normally, a student will not be accepted unless adequate financial support can be provided by the student and/or the student's supervisor. While the school cannot guarantee financial support, teaching assistantships and other scholarships may be available.

11.5.3.2 Application Procedures

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

See *section 6.3: Application Procedures* for detailed application procedures.

11.5.3.2.1 Additional Requirements

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

- Final acceptance to the M.Sc. (Thesis) and Ph.D. programs depends on a staff member agreeing to serve as the student's supervisor. A supervisor is not required for acceptance to the M.Sc. (Applied) program.
- Graduate Record Exam (GRE) – The GRE is required for all applicants to the School of Dietetics and Human Nutrition who are submitting non-Canadian and non-U.S. transcripts.

11.5.3.3 Application Deadlines

Canadian	International	Special/Exchange/Visiting
Fall: March 1	Fall: March 1	Fall: Same as Canadian/International
Winter: Oct. 15	Winter: Aug. 31	Winter: Same as Canadian/International
Summer: Feb. 15	Summer: Dec. 15	Summer: Same as Canadian/International

It may be necessary to delay review of the applicant's file until the following admittance period if application materials including supporting documents are received after the application deadlines. International applicants are advised to apply well in advance of these dates because immigration procedures may be lengthy.

11.5.4 Dietetics and Human Nutrition Faculty

Director

Kristine G. Koski

Professor Emerita

Harriet V. Kuhnlein; B.S.(Penn. St.), M.S.(Ore. St.), Ph.D.(Calif.), R.D. (*joint appt. with Faculty of Medicine*)

Professors

Luis B. Agellon; B.Sc., Ph.D.(McM.) (*Canada Research Chair*)

Tim A. Johns; B.Sc.(McM.), M.Sc.(Br. Col.), Ph.D.(Mich.) (*joint appt. with Plant Science*)

Linda J. Wykes; B.Sc., M.Sc., Ph.D.(Tor.) (*William Dawson Scholar*)

Associate Professors

Katherine Gray-Donald; B.Sc., Ph.D.(McG.), R.D. (*joint appt. with Epidemiology and Biostatistics, Faculty of Medicine*)

Kristine G. Koski; B.S., M.S.(Wash.), Ph.D.(Calif.), R.D. (*joint appt. with the Division of Experimental Medicine, Faculty of Medicine*)

Stan Kubow; B.Sc.(McG.), M.Sc.(Tor.), Ph.D.(Guelph)

Grace S. Marquis; B.A.(Ind.), M.Sc.(Mich. St.), Ph.D.(C'nell) (*Canada Research Chair*)

Hugo Melgar-Qui onez; M.Sc.(SPHM), M.D.(USAC)

Louise Thibault; B.Sc., M.Sc., Ph.D.(Laval), Dt. P.

Hope Weiler; B.A.Sc.(Guelph), Ph.D.(McM.), R.D. (*Canada Research Chair*)

Faculty Lecturers

Mary Hendrickson-Nelson; B.A.(St. Benedict), B.Sc.(Minn.), M.Sc.(Colo. St.), Dt. P.

Sandy Phillips; B.Sc., M.Sc.(A.)(McG.), Dt. P. (*University Coordinator, Professional Practice (Stage) in Dietetics*)

Hughes Plourde; B.Sc.(McG.), M.Sc., Ph.D.(Montr.), Dt. P.

Maureen Rose; B.Sc., M.Ed., Ph.D.(McG.), Dt. P.

Associate Members

Anaesthesia: Franco Carli, Ralph Lattermann, Thomas Schricker

Food Science & Agricultural Chemistry: Selim Kermasha

Kinesiology: Ross Andersen

Medicine: Louis Beaumier, Stéphanie Chevalier, Réjeanne Gougeon, L. John Hoffer, Larry Lands, Errol B. Marliss, José Morais, Celia Rodd, Thomas Schricker, Jean-François Yale

Parasitology: Marilyn E. Scott

Adjunct Professors

Kevin A. Cockell (*Health Canada*)

Grace Egeland; B.Sc.(Luther College), Ph.D.(Pitt.)

11.5.5 Master of Science (M.Sc.); Human Nutrition (Thesis) (45 credits)

Thesis Courses (31 credits)

NUTR 680	(6)	Human Nutrition M.Sc. Thesis 1
NUTR 681	(6)	Human Nutrition M.Sc. Thesis 2
NUTR 682	(9)	Human Nutrition M.Sc. Thesis 3
NUTR 683	(10)	Human Nutrition M.Sc. Thesis 4

Required Courses (2 credits)

NUTR 695	(1)	Human Nutrition Seminar 1
NUTR 696	(1)	Human Nutrition Seminar 2

Complementary Courses (12 credits)

3 credits in graduate-level statistics

3 credits in graduate-level research methods

3-6 credits in graduate-level courses (chosen in consultation with supervisory committee)

0-3 credits:

NUTR 513	(3)	Credentialing in Dietetics

11.5.6 Master of Science, Applied (M.Sc.A.); Human Nutrition (Non-Thesis) — Dietetics Credentialing (83 credits)

Required Courses (74 credits)

EDPC 501	(3)	Helping Relationships
NUTR 501	(3)	Nutrition in Developing Countries
NUTR 503	(3)	Bioenergetics and the Lifespan
NUTR 511	(3)	Nutrition and Behaviour
NUTR 513	(3)	Credentialing in Dietetics
NUTR 515	(1)	Dietetics French Examination
NUTR 545	(5)	Clinical Nutrition 2
NUTR 602	(3)	Nutritional - Status Assessment
NUTR 606	(3)	Human Nutrition Research Methods
NUTR 612	(8)	Graduate Professional Practice 2 Management
NUTR 613	(14)	Graduate Professional Practice 3 Clinical Nutrition
NUTR 614	(8)	Graduate Professional Practice 4 Community Nutrition
NUTR 626	(3)	Professional Dietetics Writing
NUTR 627	(1)	Professional Dietetics Presentation
NUTR 628	(1)	Dietetics Comprehensive Examination
NUTR 629	(6)	Professional Dietetics Project
NUTR 651	(3)	M.Sc. (Applied) Nutrition 1
NUTR 660	(1)	M.Sc. (Applied) Nutrition 2
NUTR 695	(1)	Human Nutrition Seminar 1
NUTR 696	(1)	Human Nutrition Seminar 2

Complementary Courses (9 credits)

3 credits of Social Science courses, at the 500 level or higher, to be chosen in consultation with the Adviser.

3 credits from the following:

ANSC 551	(3)	Carbohydrate and Lipid Metabolism
ANSC 560	(3)	Biology of Lactation
FDSC 545	(3)	Advances in Food Microbiology
NUTR 502	(3)	Independent Study 2
NUTR 512	(3)	Herbs, Foods and Phytochemicals
NUTR 551	(3)	Analysis of Nutrition Data
NUTR 608	(3)	Special Topics 1
NUTR 610	(3)	Maternal and Child Nutrition

3 credits from the following:

AEMA 610	(3)	Statistical Methods 2
PSYC 650	(3)	Advanced Statistics 1

11.5.7 Master of Science, Applied (M.Sc.A.); Human Nutrition (Non-Thesis) — Practicum (45 credits)

Practicum (12 credits)

NUTR 656	(3)	M.Sc. (Applied) Practicum 1
NUTR 657	(3)	M.Sc. (Applied) Practicum 2
NUTR 658	(3)	M.Sc. (Applied) Practicum 3
NUTR 659	(3)	M.Sc. (Applied) Practicum 4

Required Courses (6 credits)

NUTR 651	(3)	M.Sc. (Applied) Nutrition 1
NUTR 660	(1)	M.Sc. (Applied) Nutrition 2
NUTR 695	(1)	Human Nutrition Seminar 1
NUTR 696	(1)	Human Nutrition Seminar 2

Complementary Courses (18 credits)

3 credits in statistics at the 500 level or higher

3 credits in research methods at the 500 level or higher

12 credits of course work, at the 500 level or higher, in Nutrition, Animal Science, or Food Science chosen in consultation with the student's supervisor.

Elective Courses (9 credits)

9 credits of 500-level or higher courses in consultation with the student’s academic adviser or supervisor.

11.5.8 Master of Science, Applied (M.Sc.A.); Human Nutrition (Non-Thesis) — Project (45 credits)

Research Project (12 credits)

NUTR 652	(3)	M.Sc. (Applied) Project 1
NUTR 653	(3)	M.Sc. (Applied) Project 2
NUTR 654	(3)	M.Sc. (Applied) Project 3
NUTR 655	(3)	M.Sc. (Applied) Project 4

Required Courses (6 credits)

NUTR 651	(3)	M.Sc. (Applied) Nutrition 1
NUTR 660	(1)	M.Sc. (Applied) Nutrition 2
NUTR 695	(1)	Human Nutrition Seminar 1
NUTR 696	(1)	Human Nutrition Seminar 2

Complementary Courses (18 credits)

3 credits of 500-level or higher Statistics.

3 credits in research methods at the 500 level or higher

12 credits of course work, at the 500 level or higher, in Nutrition, Animal Science, or Food Science chosen in consultation with the student's supervisor.

Elective Courses (9 credits)

9 credits of 500-level or higher courses in consultation with the student’s academic adviser or supervisor.

11.5.9 Doctor of Philosophy (Ph.D.); Human Nutrition

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

NUTR 701	(0)	Doctoral Comprehensive Examination
NUTR 797	(1)	Human Nutrition Seminar 3
NUTR 798	(1)	Human Nutrition Seminar 4

11.5.10 Graduate Diploma in Registered Dietitian Credentialing (30 credits)

The Graduate Diploma is open to students who have completed a graduate degree with the School of Dietetics and Human Nutrition including NUTR 513 Credentialing in Dietetics.

Required Courses (30 credits)

NUTR 612	(8)	Graduate Professional Practice 2 Management
NUTR 613	(14)	Graduate Professional Practice 3 Clinical Nutrition
NUTR 614	(8)	Graduate Professional Practice 4 Community Nutrition

11.6 Food Science and Agricultural Chemistry

11.6.1 Location

Department of Food Science and Agricultural Chemistry
Macdonald-Stewart Building, Room MS1-034
Macdonald Campus of McGill University
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue, QC H9X 3V9
Canada

Telephone: 514-398-7898
Fax: 514-398-7977
Email: *gradstudies.macdonald@mcgill.ca*
Website: *www.mcgill.ca/foodscience*

11.6.2 About Food Science and Agricultural Chemistry

The Department of Food Science and Agricultural Chemistry offers both M.Sc. (thesis and non-thesis) and Ph.D. programs. These programs provide training in evolving interdisciplinary areas of food quality, food safety, food chemistry, food biotechnology, functional ingredients, applied infrared spectroscopy, food processing, thermal generation of aromas and toxicants, marine biochemistry, and food toxicology. The Department has key infrastructure with all major equipment necessary for conducting research in all these areas. Our graduate program provides strong mentoring/advisory support while maintaining high flexibility for individual research projects.

section 11.6.6: Master of Science (M.Sc.); Food Science and Agricultural Chemistry (Non-Thesis) (45 credits)

The program offers advanced food science courses in a broad range of areas. It is suitable for students with an undergraduate degree in food science or a closely related discipline. Entry is possible from other disciplines; however, students will be expected to complete a Qualifying term or year to pick up relevant courses to orient themselves to food science. Students are required to complete a total of 45 credits (10 graduate-level courses, a seminar course, and a research project). Subsequent career paths include work within the food industry and government agencies.

section 11.6.7: Master of Science (M.Sc.); Food Science and Agricultural Chemistry — Food Safety (Non-Thesis) (45 credits)

This 45-credit program is offered to candidates who seek further specialization in the area of food safety but do not wish to pursue independent research. These credits are obtained through a combination of graduate-level courses. The residence time for the M.Sc. (Non-Thesis) degree is three academic terms.

section 11.6.5: Master of Science (M.Sc.); Food Science and Agricultural Chemistry (Thesis) (45 credits)

This program is a research-based degree in various areas related to food science for candidates entering the M.Sc. program without restrictions (i.e., not requiring a Qualifying term/year). The M.Sc. degree consists of 45 graduate credits; these credits are obtained through a combination of graduate courses (15 credits) and a research thesis (30 credits). Entry into the M.Sc. (Thesis) program also hinges on the availability of supervisory staff and financing. Therefore, it is advisable that the applicant for the M.Sc. (Thesis) degree select the M.Sc. (Non-Thesis) as a second choice in the application form, to ensure admission to the Food Science graduate program. Subsequent career paths include work within the food industry, government agencies, and in research.

section 11.6.8: Doctor of Philosophy (Ph.D.); Food Science and Agricultural Chemistry

A Ph.D. in food science is suitable for students with an M.Sc. degree in food science or related areas who wish to become independent researchers and/or leaders in the field of food science. Candidates with a B.Sc. degree applying for the Ph.D. need to register first for the M.Sc. degree. In cases where the candidates are proceeding well during their first year, they may be permitted to proceed to the Ph.D. degree. Entry into the Ph.D. graduate program hinges on the availability of supervisory staff and financing.

11.6.3 Food Science and Agricultural Chemistry Admission Requirements and Application Procedures

11.6.3.1 Admission Requirements

Applicants to the M.Sc. programs must be graduates of a university of recognized reputation and hold a B.Sc. in Food Science or a related discipline such as Chemistry, Biochemistry, or Microbiology with a minimum cumulative grade point average (CGPA) of 3.0/4.0 (second class – upper division) and 3.2/4.0 during the last two years of full-time university study. Applicants to the Ph.D. program must hold an M.Sc. degree in Food Science or related areas with a minimum CGPA of 3.4 in their M.Sc. and 3.2 for the last two years of their B.Sc. degree. High grades are expected in courses considered by the academic unit to be preparatory to the graduate program.

Qualifying Students

Some applicants whose academic degrees and standing entitle them to serious consideration for admission to graduate studies, but who are considered inadequately prepared in the subject selected may be admitted to a Qualifying program if they have met the Graduate and Postdoctoral Studies minimum CGPA of 3.0/4.0. The course(s) to be taken in a Qualifying program will be prescribed by the academic unit concerned. Qualifying students are registered in graduate studies, **but not as candidates for a degree**. Only one Qualifying year is permitted. **Successful completion of a Qualifying program does not guarantee admission to a degree program.**

Financial Aid – **Financial aid is very limited and highly competitive. It is suggested that students give serious consideration to their financial planning before submitting an application.** Normally, a student will not be accepted unless adequate financial support can be provided by the student and/or the student's supervisor. While the Department cannot guarantee financial support, students can apply for teaching assistantships and other scholarships.

11.6.3.2 Application Procedures

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

See *section 6.3: Application Procedures* for detailed application procedures.

11.6.3.2.1 Additional Requirements

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

- Final acceptance to the M.Sc. and Ph.D. programs depends on a staff member agreeing to serve as the student's supervisor. A supervisor is not required for acceptance to the M.Sc. Non-Thesis program.
- The GRE is not required, but it is highly recommended.

11.6.3.3 Application Deadlines

Canadian	International	Special/Exchange/Visiting
Fall: June 30	Fall: March 1	Fall: Same as Canadian/International
Winter: Nov. 15	Winter: Sept. 15	Winter: Same as Canadian/International
Summer: March 30	Summer: Jan. 15	Summer: Same as Canadian/International

It may be necessary to delay review of the applicant's file until the following admittance period if application materials including supporting documents are received after the application deadlines. International applicants are advised to apply well in advance of these dates because immigration procedures may be lengthy.

11.6.4 Food Science and Agricultural Chemistry Faculty

Chair

V. Yaylayan

Chair of Graduate Program

S. Karboune

Professors

I. Alli; B.Sc.(Guy.), M.Sc., Ph.D.(McG.)

H.S. Ramaswamy; B.Sc.(B'lore), M.Sc., Ph.D.(Br. Col.)

V.A. Yaylayan; B.Sc.(Beirut), M.Sc., Ph.D.(Alta.)

Associate Professors

A.A. Ismail; B.Sc., Ph.D.(McG.)

S. Kermasha; B.Sc.(Baghdad), C.E.S, D.E.A, D.Sc.(Nancy)

B.K. Simpson; B.Sc.(Ghana), Ph.D.(Nfld.)

Assistant Professors

M. Chénier; B.Sc.(Laval), M.Sc.(IAF), Ph.D.(McG.)

S. Karboune; B.Sc., M.Sc.(Rabat), D.E.A., Ph.D.(Marseille)

Professor Post-Retirement

F.R. van de Voort; B.Sc., M.Sc., Ph.D.(Br. Col.)

Emeritus Professor

W.D. Marshall; B.Sc.(New Br.), Ph.D.(McM.)

11.6.5 Master of Science (M.Sc.); Food Science and Agricultural Chemistry (Thesis) (45 credits)

For candidates entering the M.Sc. program without restrictions, i.e., those not requiring a qualifying term/year, the M.Sc. degree consists of 45 graduate credits. These credits are obtained through a combination of graduate courses and a research thesis.

The residence time for a M.Sc. degree is three academic terms based on unqualified entry into the M.Sc. program. Students are encouraged to complete their studies within this time frame.

Thesis (30 credits)

FDSC 690	(8)	M.Sc. Literature Review
FDSC 691	(7)	M.Sc. Research Protocol
FDSC 692	(15)	M.Sc. Thesis

Required Courses (6 credits)

FDSC 695	(3)	M.Sc. Graduate Seminar 1
FDSC 696	(3)	M.Sc. Graduate Seminar 2

Complementary Courses (9 credits)

At least 9 credits, normally from 500- or 600-level departmental courses.

11.6.6 Master of Science (M.Sc.); Food Science and Agricultural Chemistry (Non-Thesis) (45 credits)

This 45-credit program is offered to candidates who seek further training in Food Science, but do not wish to pursue independent research. These credits are obtained through a combination of graduate courses.

The residence time for a M.Sc. degree (Non-Thesis) is three academic terms.

PROGRAM REQUIREMENTS

Research Project (12 credits)

FDSC 697	(6)	M.Sc. Project Part 1
FDSC 698	(6)	M.Sc. Project Part 2

Complementary Courses (18 credits)

3 credits chosen from the following:

FDSC 695	(3)	M.Sc. Graduate Seminar 1
FDSC 696	(3)	M.Sc. Graduate Seminar 2

15 credits chosen from the following:

AGRI 510	(3)	Professional Practice
FDSC 515	(3)	Enzyme Thermodynamics/Kinetics
FDSC 516	(3)	Flavour Chemistry
FDSC 519	(3)	Advanced Food Processing
FDSC 520	(3)	Biophysical Chemistry of Food
FDSC 535	(3)	Food Biotechnology
FDSC 536	(3)	Food Traceability
FDSC 537	(3)	Nutraceutical Chemistry
FDSC 538	(3)	Food Science in Perspective
FDSC 540	(3)	Sensory Evaluation of Foods
FDSC 545	(3)	Advances in Food Microbiology
FDSC 634	(3)	Food Toxins & Toxicants
FDSC 651	(3)	Principles of Food Analysis 2
FDSC 652	(3)	Separation Techniques in Food Analysis 2

Elective Courses (15 credits)

At the 500 level or higher, and chosen in consultation with the academic adviser.

11.6.7 Master of Science (M.Sc.); Food Science and Agricultural Chemistry — Food Safety (Non-Thesis) (45 credits)

The program is intended to train graduate students as specialists in food safety with the expectation that graduates will be well prepared academically to take on the challenging food safety events and issues that emerge both in Canada and globally. The program will cover food safety through the entire food supply chain from food production through processing/manufacturing to the food consumer; the courses which make up the program reflect the food safety considerations at the different stages of the farm to table food supply chain.

Required Courses (12 credits)

FDSC 545	(3)	Advances in Food Microbiology
FDSC 624	(3)	Current Food Safety Issues
FDSC 626	(3)	Food Safety Risk Assessment

FDSC 634	(3)	Food Toxins & Toxicants

Complementary Courses (15 credits)

3 credits chosen from the following:

FDSC 695	(3)	M.Sc. Graduate Seminar 1
FDSC 696	(3)	M.Sc. Graduate Seminar 2

12 credits chosen from the following:

AGRI 510	(3)	Professional Practice
BREE 535	(3)	Food Safety Engineering
FDSC 525	(3)	Food Quality Assurance
FDSC 536	(3)	Food Traceability
FDSC 555	(3)	Comparative Food Law
NUTR 512	(3)	Herbs, Foods and Phytochemicals
OCCH 612	(3)	Principles of Toxicology
PARA 515	(3)	Water, Health and Sanitation

Elective Courses (6 credits)

At the 500 level or higher, and selected in consultation with the academic adviser.

11.6.8 Doctor of Philosophy (Ph.D.); Food Science and Agricultural Chemistry

Candidates will be judged principally on their research ability. Coursework will be arranged in consultation with the student's departmental graduate advisory 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 (9 credits)

Note: Candidates should be prepared to take the Comprehensive Preliminary Examination before the end of the second year of the program.

FDSC 700	(0)	Comprehensive Preliminary Examination
FDSC 725	(3)	Advanced Topics in Food Science
FDSC 797	(3)	Ph.D. Graduate Seminar 1
FDSC 798	(3)	Ph.D. Graduate Seminar 2

11.7 Natural Resource Sciences

11.7.1 Location

Department of Natural Resource Sciences
McGill University, Macdonald Campus
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue, QC H9X 3V9

Canada

Telephone: 514-398-7890
Fax: 514-398-7990
Email: *gradstudies.macdonald@mcgill.ca*
Website: *www.mcgill.ca/nrs*

11.7.2 About Natural Resource Sciences

The Department of Natural Resource Sciences offers programs leading to M.Sc. and Ph.D. degrees in Entomology (includes Environment and Neotropical Environment options), Microbiology (includes Bioinformatics and Environment options), Renewable Resources (includes Forest Science, Micrometeorology, Soil Science, and Wildlife Biology with Environment and Neotropical Environment options available) and an M.Sc. degree in Agricultural Economics. It is also possible for students to pursue doctoral studies through the Department of Economics with Agricultural Economics as a field of specialization. An interdisciplinary option in Bioinformatics for doctoral students is available.

The Department possesses, or has access to, excellent facilities for laboratory and field research. Affiliated with the Department are the Lyman Entomological Museum and Research Laboratory, the Molson Nature Reserve, the Morgan Arboretum, and the Ecomuseum of the St. Lawrence Valley Natural History Society.

Master of Science Degrees

section 11.7.5: Master of Science (M.Sc.); Agricultural Economics (Thesis) (46 credits)

This program provides students with applied economic concepts and tools to identify, define, and analyze economic problems affecting the performance of the agri-food sector and the environment. The ideal prior preparation is an undergraduate degree in Agricultural Economics or Economics, including undergraduate courses in intermediate economic theory (micro and macro), calculus, algebra, statistics, and econometrics.

Attention is given to the development of analytical skills in the broad areas of agricultural, environmental, and ecological economics. Students may specialize, by way of their research program, in agribusiness, development, finance, marketing and trade, policy, and resource economics. The program prepares graduates for rewarding careers in research, analysis, and decision-making in academia, private and NGO sectors, and government.

section 11.7.6: Master of Science (M.Sc.); Entomology (Thesis) (45 credits)

Please contact the Department for more information about this program.

section 11.7.7: Master of Science (M.Sc.); Entomology (Thesis) — Environment (46 credits)

Please contact the Department for more information about this program.

section 11.7.8: Master of Science (M.Sc.); Entomology (Thesis) — Neotropical Environment (48 credits)

Please contact the Department for more information about this program.

section 11.7.9: Master of Science (M.Sc.); Microbiology (Thesis) (45 credits)

Please contact the Department for more information about this program.

section 11.7.10: Master of Science (M.Sc.); Microbiology (Thesis) — Environment (46 credits)

Please contact the Department for more information about this program.

section 11.7.11: Master of Science (M.Sc.); Renewable Resources (Thesis) (45 credits)

(Including Micrometeorology, Forest Science, Soil Science, and Wildlife Biology as areas of research)

section 11.7.12: Master of Science (M.Sc.); Renewable Resources (Thesis) — Environment (46 credits)

Please contact the Department for more information about this program.

section 11.7.13: Master of Science (M.Sc.); Renewable Resources (Thesis) — Neotropical Environment (48 credits)

Please contact the Department for more information about this program.

section 11.7.14: Master of Science (M.Sc.); Renewable Resources (Non-Thesis) — Environmental Assessment (45 credits)

This program is not offered in 2013–2014.

Ph.D. Degrees in Entomology, Microbiology, or Renewable Resources

(Includes Micrometeorology, Forest Science, Soil Science, and Wildlife Biology)

section 11.7.15: Doctor of Philosophy (Ph.D.); Entomology

Please contact the Department for more information about this program.

section 11.7.16: Doctor of Philosophy (Ph.D.); Entomology — Environment

Please contact the Department for more information about this program.

section 11.7.17: Doctor of Philosophy (Ph.D.); Entomology — Neotropical Environment

Please contact the Department for more information about this program.

section 11.7.18: Doctor of Philosophy (Ph.D.); Microbiology

Please contact the Department for more information about this program.

section 11.7.19: Doctor of Philosophy (Ph.D.); Microbiology — Bioinformatics

Please contact the Department for more information about this program.

section 11.7.20: Doctor of Philosophy (Ph.D.); Microbiology — Environment

Please contact the Department for more information about this program.

section 11.7.21: Doctor of Philosophy (Ph.D.); Renewable Resources

Please contact the Department for more information about this program.

section 11.7.22: Doctor of Philosophy (Ph.D.); Renewable Resources — Environment

Please contact the Department for more information about this program.

section 11.7.23: Doctor of Philosophy (Ph.D.); Renewable Resources — Neotropical Environment

Please contact the Department for more information about this program.

11.7.3 Natural Resource Science Admission Requirements and Application Procedures

11.7.3.1 Admission Requirements

M.Sc. Thesis (Agricultural Economics)

Direct admission to the M.Sc. requires the completion of a B.Sc. in Agricultural Economics or a closely related area, with the equivalent cumulative grade point average of 3.0/4.0 (second class – upper division) or 3.2/4.0 during the last two years of full-time university study. High grades are expected in courses considered by the academic unit to be preparatory to the graduate program.

The ideal preparation includes courses in agricultural economics, economic theory (intermediate micro and macro), calculus, linear algebra, and statistics. Students with deficiencies in these areas will be required to take additional courses as part of their degree program.

M.Sc. Thesis (Entomology, Microbiology, Renewable Resources)

Candidates are required to have a bachelor's degree with an equivalent cumulative grade point average of 3.0/4.0 (second class – upper division) or 3.2/4.0 during the last two years of full-time university study. High grades are expected in courses considered by the academic unit to be preparatory to the graduate program.

M.Sc. in Renewable Resources (Non-Thesis) – Environmental Assessment Option

Applications are not being accepted for the 2013–2014 academic year; the program is currently under review.

Ph.D. Thesis (Entomology, Microbiology, Renewable Resources)

Candidates, normally, are required to hold an M.Sc. degree and will be judged primarily on their ability to conduct an original and independent research study.

Qualifying Students

Some applicants whose academic degrees and standing entitle them to serious consideration for admission to graduate studies, but who are considered inadequately prepared in the subject selected may be admitted to a Qualifying program if they have met the Graduate and Postdoctoral Studies minimum CGPA of 3.0/4.0. The course(s) to be taken in a Qualifying program will be prescribed by the academic unit concerned. Qualifying students are registered in graduate studies, **but not as candidates for a degree**. Only one Qualifying year is permitted. **Successful completion of a Qualifying program does not guarantee admission to a degree program.**

Financial Support – **Financial aid is very limited and highly competitive. It is suggested that students give serious consideration to their financial planning before submitting an application.** Normally, a student will not be accepted unless adequate financial support can be provided by the student and/or the student's supervisor. Academic units cannot guarantee financial support via teaching assistantships or other funds.

11.7.3.2 Application Procedures

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

See *section 6.3: Application Procedures* for detailed application procedures.

11.7.3.2.1 Additional Requirements

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

- Acceptance to all programs normally depends on a staff member agreeing to serve as the student's supervisor and the student obtaining financial support.
- The GRE is not required, but it is highly recommended.

11.7.3.3 Application Deadlines

Canadian	International	Special/Exchange/Visiting
Fall: Feb. 15	Fall: Feb. 15	Fall: Feb. 15
Winter: Nov. 15	Winter: Sept. 30	Winter: Same as Canadian/International
Summer: March 30	Summer: Feb. 28	Summer: Same as Canadian/International

It may be necessary to delay review of the applicant's file until the following admittance period if application materials including supporting documents are received after the application deadlines. International applicants are advised to apply well in advance of these dates because immigration procedures may be lengthy.

11.7.4 Natural Resource Sciences Faculty

Chair

J.W. Fyles

Graduate Program Director

T.A. Wheeler

Program Director - Agricultural Economics

J.C. Henning

Emeritus Professors

E.S. Idziak; B.Sc.(Agr.), M.Sc.(McG.), D.Sc.(Delft); *Microbiology*

A.F. MacKenzie; B.S.A., M.Sc.(Sask.), Ph.D.(C'nell); *Soil Science*

R.A. MacLeod; B.A., M.A.(Br. Col.), Ph.D.(Wisc.), F.R.S.C.; *Microbiology*

P.H. Schuepp; Dipl.Sc.Nat.(Zür.), Ph.D.(Tor.); *Agricultural Physics*

R.K. Stewart; B.Sc.(Agr.), Ph.D.(Glas.); *Entomology*

Professors

P. Brown; B.A.(Haver.), M.A., Ph.D.(Col.); *Environmental Policy and Ethics* (*joint appt. with Geography and McGill School of Environment*)

J.W. Fyles; B.Sc., M.Sc.(Vic., BC), Ph.D.(Alta.); *Forest Resources* (*Tomlinson Chair in Forest Ecology*)

W.H. Hendershot; B.Sc.(Tor.), M.Sc.(McG.), Ph.D.(Br. Col.); *Soil Science*

Associate Professors

E. Bennett; B.A.(Oberlin), M.S., Ph.D.(Wisc.); *Ecosystem Ecology* (*joint appt. with McGill School of Environment*)

C. Buddle; B.Sc.(Guelph), Ph.D.(Alta.); *Forest Insect Ecology*

B. Côté; B.Sc., Ph.D.(Laval); *Forest Resources*

B.T. Driscoll; B.Sc., Ph.D.(McM.); *Microbiology*

G.B. Dunphy; B.Sc.(New Br.), M.Sc., Ph.D.(Nfld.); *Entomology*

J.C. Henning; B.Sc., Ph.D.(Guelph); *Agricultural Economics*

Associate Professors

M. Humphries; B.Sc.(Manit.), M.Sc.(Alta.), Ph.D.(McG.); *Wildlife Biology*

D.J. Lewis; B.Sc., M.Sc., Ph.D.(Nfld.); *Entomology*

I.B. Strachan; B.Sc.(Tor.), M.Sc., Ph.D.(Qu.); *Micrometeorology*

P.J. Thomassin; B.Sc.(McG.), M.S., Ph.D.(Hawaii Pac.); *Agricultural and Environmental Economics*

J. Whalen; B.Sc.(Agr.)(Dal.), M.Sc.(McG.), Ph.D.(Ohio St.); *Soil Science*

T.A. Wheeler; B.Sc.(Nfld.), M.Sc., Ph.D.(Guelph); *Entomology*

L.G. Whyte; B.Sc.(Regina), Ph.D.(Wat.); *Microbiology*

Assistant Professors

A. Biswas; B.Sc.(BCKV), M.Sc.(UAS Bangalore), Ph.D.(Sask.); *Soil Physics*

J. Cardille; B.Sc.(Carn. Mell), M.Sc.(Georgia Tech.), M.Sc., PhD.(Wisc.); *Landscape Ecology* (*joint appt. with McGill School of Environment*)

S. Faucher; B.Sc., Ph.D.(Montr.); *Microbiology*

G. Hickey; B.Sc.(Melb.), Ph.D.(Br. Col.), EMPA(ANZSOG, Monash); *Sustainable Natural Resource Management*

N. Kosoy; B.Sc.(Univ. Simon Bolivar), M.Sc.(Univ. of Kent, Univ. Autonoma de Barcelona), Ph.D.(Univ. Autonoma de Barcelona); *Ecological Economics* (*joint appt. with McGill School of Environment*)

A. Naseem; B.Sc.(McG.), M.Sc., Ph.D.(Mich.); *Agricultural Economics*

C. Solomon; B.Sc.(C'nell), Ph.D.(Wisc.); *Wildlife Biology*

Associate Members

C.A. Chapman (*Anthropology*)

L.J. Chapman (*Biology*)

M. Chenier (*Food Science and Agricultural Chemistry*)

D. Green (*Redpath Museum*)

M. Scott (*Institute of Parasitology*)

D. Smith (*Plant Science*)

I. Vaccaro (*Anthropology, McGill School of Environment*)

Adjunct Professors

D. Angers

G. Boivin

M.A. Bouchard

K. Fernie

C. Greer

D. Houle

J. Macdonald

J. Noceraa

G. Sunahara

11.7.5 Master of Science (M.Sc.); Agricultural Economics (Thesis) (46 credits)

Students may specialize, by way of their research program, in agri-business, development, finance, marketing and trade, policy, and resource and ecological economics.

Thesis Courses (27 credits)

AGEC 691	(6)	M.Sc. Thesis 1

AGEC 692	(3)	M.Sc. Thesis 2
AGEC 693	(6)	M.Sc. Thesis 3
AGEC 694	(6)	M.Sc. Thesis 4
AGEC 695	(6)	M.Sc. Thesis 5

Required Course

(1 credit)

AGEC 690	(1)	Seminar

Complementary Courses (18 credits)

6 credits, two theory courses chosen from:

AGEC 633	(3)	Environmental and Natural Resource Economics
ECON 610	(3)	Microeconomic Theory 1
ECON 611	(3)	Microeconomic Theory 2
ECON 620	(3)	Macroeconomic Theory 1
ECON 621	(3)	Macroeconomic Theory 2

3 credits, one quantitative methods course chosen from:

AEMA 610	(3)	Statistical Methods 2
ECON 525	(3)	Project Analysis
ECON 662	(6)	Econometrics
ECON 665	(3)	Quantitative Methods
MGSC 679	(3)	Applied Deterministic Optimization

9 credits, three 3-credit courses at the 500, 600, or 700 level, at least one of which must be in Agricultural Economics, chosen in consultation with the Agricultural Economics Adviser.

11.7.6 Master of Science (M.Sc.); Entomology (Thesis) (45 credits)

Thesis Courses (36 credits)

NRSC 691	(12)	M.Sc. Thesis Research 1
NRSC 692	(12)	M.Sc. Thesis Research 2
NRSC 693	(12)	M.Sc. Thesis Research 3

Required Courses (3 credits)

NRSC 643	(1)	Graduate Seminar 1
NRSC 644	(1)	Graduate Seminar 2
NRSC 651	(1)	Graduate Seminar 3

Complementary Courses (6 credits)

Two 3-credit courses at the 500, 600, or 700 level; normally one of these will be a course in statistics.

11.7.7 Master of Science (M.Sc.); Entomology (Thesis) — Environment (46 credits)

Thesis Courses (36 credits)

NRSC 691	(12)	M.Sc. Thesis Research 1
NRSC 692	(12)	M.Sc. Thesis Research 2
NRSC 693	(12)	M.Sc. Thesis Research 3

Required Courses (7 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
NRSC 651	(1)	Graduate Seminar 3

Complementary Courses (3 credits)

One of the following courses:

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

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

11.7.8 Master of Science (M.Sc.); Entomology (Thesis) — Neotropical Environment (48 credits)

Thesis Courses (36 credits)

NRSC 691	(12)	M.Sc. Thesis Research 1
NRSC 692	(12)	M.Sc. Thesis Research 2
NRSC 693	(12)	M.Sc. Thesis Research 3

Required Courses (9 credits)

BIOL 640	(3)	Tropical Biology and Conservation
ENVR 610	(3)	Foundations of Environmental Policy
NRSC 643	(1)	Graduate Seminar 1
NRSC 644	(1)	Graduate Seminar 2
NRSC 651	(1)	Graduate Seminar 3

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

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.

11.7.9 Master of Science (M.Sc.); Microbiology (Thesis) (45 credits)

Thesis Courses (36 credits)

NRSC 691	(12)	M.Sc. Thesis Research 1
NRSC 692	(12)	M.Sc. Thesis Research 2
NRSC 693	(12)	M.Sc. Thesis Research 3

Required Courses (3 credits)

NRSC 643	(1)	Graduate Seminar 1
NRSC 644	(1)	Graduate Seminar 2
NRSC 651	(1)	Graduate Seminar 3

Complementary Courses (6 credits)

Two 3-credit 500-, 600-, or 700-level courses; normally one of these will be a course in statistics.

11.7.10 Master of Science (M.Sc.); Microbiology (Thesis) — Environment (46 credits)

Thesis Courses (36 credits)

NRSC 691	(12)	M.Sc. Thesis Research 1
NRSC 692	(12)	M.Sc. Thesis Research 2
NRSC 693	(12)	M.Sc. Thesis Research 3

Required Courses (7 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
NRSC 651	(1)	Graduate Seminar 3

Complementary Course (3 credits)

One of the following courses:

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

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

11.7.11 Master of Science (M.Sc.); Renewable Resources (Thesis) (45 credits)

Includes Micrometeorology, Forest Science, Soil Science and Wildlife Biology as areas of research.

Thesis Courses (36 credits)

NRSC 691	(12)	M.Sc. Thesis Research 1
NRSC 692	(12)	M.Sc. Thesis Research 2
NRSC 693	(12)	M.Sc. Thesis Research 3

Required Courses (3 credits)

NRSC 643	(1)	Graduate Seminar 1
NRSC 644	(1)	Graduate Seminar 2
NRSC 651	(1)	Graduate Seminar 3

Complementary Courses (6 credits)

Two 3-credit courses at the 500 level or higher recommended by the supervisory committee; one of which must be in quantitative methods/techniques.

11.7.12 Master of Science (M.Sc.); Renewable Resources (Thesis) — Environment (46 credits)

Thesis Courses (33 credits)

NRSC 691	(12)	M.Sc. Thesis Research 1
NRSC 692	(12)	M.Sc. Thesis Research 2
NRSC 694	(9)	M.Sc. Thesis Research 4

Required Courses (7 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
NRSC 651	(1)	Graduate Seminar 3

Complementary Courses (6 credits)

3 credits, one of the following courses:

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

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

3 credits of statistics at the 500, 600, or 700 level.

11.7.13 Master of Science (M.Sc.); Renewable Resources (Thesis) — Neotropical Environment (48 credits)

Thesis Courses (36 credits)

NRSC 691	(12)	M.Sc. Thesis Research 1

NRSC 692	(12)	M.Sc. Thesis Research 2
NRSC 693	(12)	M.Sc. Thesis Research 3

Required Courses (9 credits)

BIOL 640	(3)	Tropical Biology and Conservation
ENVR 610	(3)	Foundations of Environmental Policy
NRSC 643	(1)	Graduate Seminar 1
NRSC 644	(1)	Graduate Seminar 2
NRSC 651	(1)	Graduate Seminar 3

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

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.

11.7.14 Master of Science (M.Sc.); Renewable Resources (Non-Thesis) — Environmental Assessment (45 credits)

This program is not offered in 2013-2014.

The non-thesis master's in Renewable Resources: Environmental Assessment option is normally taken over a one year cycle beginning in the Winter term and concluding in the Fall term. It is comprised of three interrelated elements: graduate-level courses, primarily given in the Winter term, a Summer term internship, and a project-related research paper, which is completed in the Fall term. The program is aimed at environmental assessment professionals and advanced environmental science scholars planning for careers in the public and private sector agencies, which guide environmental impact assessment, integrated assessment, and sustainable development in Canada and internationally. McGill's non-thesis master's in Environmental Assessment is offered in conjunction with a Memorandum of Understanding (MOU) with the United Nations Environment Program (UNEP - 2003), which designates the Faculty of Agricultural and Environmental Sciences as a UNEP Collaborating Centre on Environmental Assessment. An important component of the MOU is that the Faculty advance teaching and training through the development of course offerings that enable students to prepare for contributing to sustainable development by utilizing the excellent materials provided by UNEP and other national and international agencies.

Research Project (9 credits)

NRSC 616	(9)	Environmental Assessment Project Paper

Required Internship (15 credits)

NRSC 615	(15)	Environmental Assessment Internship

Required Courses (15 credits)

NRSC 610	(3)	Advanced Environmental Assessment
NRSC 611	(3)	Environmental Assessment Knowledge Base
NRSC 612	(3)	Environmental Assessment and Sustainable Development
NRSC 613	(3)	Strategic and Sectoral Environmental Assessment
NRSC 614	(3)	Meeting Environmental Assessment Regulations

Complementary Courses (6 credits)

500- or 600-level relevant courses to be chosen in consultation with the Supervisor and Program Director.

11.7.15 Doctor of Philosophy (Ph.D.); Entomology

Includes Micrometeorology, Forest Science, Soil Science, and Wildlife Biology.

Thesis

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

Required Courses

NRSC 701	(0)	Ph.D. Comprehensive Examination
NRSC 751	(0)	Graduate Seminar 4
NRSC 752	(0)	Graduate Seminar 5
NRSC 753	(0)	Graduate Seminar 6
NRSC 754	(0)	Graduate Seminar 7

Coursework

Course requirements are specified by the staff in the discipline, but are flexible and depend largely on the student's background, immediate interests, and ultimate objectives.

11.7.16 Doctor of Philosophy (Ph.D.); Entomology — 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 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
NRSC 701	(0)	Ph.D. Comprehensive Examination
NRSC 754	(0)	Graduate Seminar 7

Coursework

Course requirements are specified by the staff in the discipline, but are flexible and depend largely on the student's background, immediate interests, and ultimate objectives.

Complementary Courses

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

11.7.17 Doctor of Philosophy (Ph.D.); Entomology — Neotropical 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 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
NRSC 701	(0)	Ph.D. Comprehensive Examination
NRSC 751	(0)	Graduate Seminar 4
NRSC 752	(0)	Graduate Seminar 5
NRSC 753	(0)	Graduate Seminar 6
NRSC 754	(0)	Graduate Seminar 7

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

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.

11.7.18 Doctor of Philosophy (Ph.D.); Microbiology

Includes Micrometeorology, Forest Science, Soil Science, and Wildlife Biology.

Thesis

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

Required Courses

NRSC 701	(0)	Ph.D. Comprehensive Examination
NRSC 751	(0)	Graduate Seminar 4
NRSC 752	(0)	Graduate Seminar 5
NRSC 753	(0)	Graduate Seminar 6
NRSC 754	(0)	Graduate Seminar 7

Coursework

Course requirements are specified by the staff in the discipline, but are flexible and depend largely on the student's background, immediate interests, and ultimate objectives.

11.7.19 Doctor of Philosophy (Ph.D.); Microbiology — 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

COMP 616D1	(1.5)	Bioinformatics Seminar

COMP 616D2	(1.5)	Bioinformatics Seminar
NRSC 701	(0)	Ph.D. Comprehensive Examination
NRSC 751	(0)	Graduate Seminar 4
NRSC 752	(0)	Graduate Seminar 5
NRSC 753	(0)	Graduate Seminar 6
NRSC 754	(0)	Graduate Seminar 7

Complementary Courses

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

Additional courses at the 500, 600, or 700 level may be required at the discretion of the candidate's supervisory committee.

11.7.20 Doctor of Philosophy (Ph.D.); Microbiology — 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 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
NRSC 701	(0)	Ph.D. Comprehensive Examination
NRSC 754	(0)	Graduate Seminar 7

Coursework

Course requirements are specified by the staff in the discipline, but are flexible and depend largely on the student's background, immediate interests, and ultimate objectives.

Complementary Courses

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

11.7.21 Doctor of Philosophy (Ph.D.); Renewable Resources

Includes Micrometeorology, Forest Science, Soil Science, and Wildlife Biology.

Thesis

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

Required Courses

NRSC 701	(0)	Ph.D. Comprehensive Examination
NRSC 751	(0)	Graduate Seminar 4
NRSC 752	(0)	Graduate Seminar 5
NRSC 753	(0)	Graduate Seminar 6
NRSC 754	(0)	Graduate Seminar 7

Coursework

Course requirements are specified by the staff in the discipline, but are flexible and depend largely on the student's background, immediate interests, and ultimate objectives.

11.7.22 Doctor of Philosophy (Ph.D.); Renewable Resources — 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 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
NRSC 701	(0)	Ph.D. Comprehensive Examination
NRSC 754	(0)	Graduate Seminar 7

Coursework

Course requirements are specified by the staff in the discipline but are flexible and depend largely on the student's background, immediate interests, and ultimate objectives.

Complementary Courses

One course chose 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 other graduate course recommended by the Advisory Committee and approved by the Environment Option Committee.

11.7.23 Doctor of Philosophy (Ph.D.); Renewable Resources — Neotropical 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 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
NRSC 701	(0)	Ph.D. Comprehensive Examination
NRSC 751	(0)	Graduate Seminar 4
NRSC 752	(0)	Graduate Seminar 5
NRSC 753	(0)	Graduate Seminar 6
NRSC 754	(0)	Graduate Seminar 7

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

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.

11.8 Parasitology

11.8.1 Location

Institute of Parasitology
Macdonald Campus
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue, QC H9X 3V9
Canada

Telephone: 514-398-7722
Fax: 514-398-7857
Email: *gradstudies.macdonald@mcgill.ca*
Website: *www.mcgill.ca/parasitology*

11.8.2 About Parasitology

M.Sc. and Ph.D. thesis research degrees in Parasitology, with Bioinformatics and Environment options; and non-thesis Graduate Certificate and M.Sc. (Applied) degree in Biotechnology.

The Institute of Parasitology teaches and researches the phenomenon of parasitism of humans and livestock. The nutrition/parasitism interface is also examined. Current research involvement includes the biology, biochemistry, bioinformatics, pharmacology, control, ecology, epidemiology, immunology,

molecular biology, neurobiology, and population and molecular genetics of parasitic organisms, viruses, and cancer cells. The non-thesis programs in Biotechnology offer a course-based curriculum with practical training in laboratory courses and internships.

The Institute is housed in its own building adjacent to the Macdonald Campus Library and has well-equipped laboratories. A confocal microscopy suite and a FACSAria cell sorting facility are available on site. Small and large animal facilities are present on the Macdonald campus. The Institute is affiliated with the McGill Centre for Tropical Diseases at the Montreal General Hospital.

Graduates typically go on to become career research scientists, enter the biotechnology sector in research, management, or sales, or accept government positions.

Parasitology Programs

section 11.8.5: Master of Science (M.Sc.); Parasitology (Thesis) (46 credits)

A research project is undertaken in an area of parasitology under the direction of a supervisor, and a thesis is produced. Coursework is minimal. Graduates have gone on to medical school, to teaching positions, or have found employment in scientific fields.

section 11.8.6: Master of Science (M.Sc.); Parasitology (Thesis) — Bioinformatics (47 credits)

A research project is undertaken in an area of parasitology under the direction of a supervisor, and a thesis is produced. This option involves additional coursework specializing in bioinformatics, and graduates are highly trained professionals with expertise in bioinformatics.

section 11.8.7: Master of Science (M.Sc.); Parasitology (Thesis) — Environment (46 credits)

A research project is undertaken under the direction of a supervisor, and a thesis is produced. This option involves extra coursework in topics relevant to the environment and is suitable for students interested in environmental issues. Graduates find employment in science and/or the environment, such as management or consulting positions in the emerging field of environmental protection, or go on to further graduate studies.

section 11.8.8: Doctor of Philosophy (Ph.D.); Parasitology

An advanced, original research project is undertaken in an area of parasitology supervised by faculty staff. Coursework is minimal. Graduates are well suited for teaching positions in academia or research careers in a university or private industry laboratory.

section 11.8.9: Doctor of Philosophy (Ph.D.); Parasitology — Bioinformatics

An advanced, original research project in an area of parasitology is undertaken supervised by faculty staff, and a thesis is produced. Additional coursework in the field of bioinformatics is required for this option. Graduates are well suited for a teaching or research career, especially where there is particular emphasis on the science of bioinformatics.

section 11.8.10: Doctor of Philosophy (Ph.D.); Parasitology — Environment

An advanced, original research project in an area of parasitology is undertaken supervised by faculty staff, and a thesis is produced. There is additional coursework on environmental topics for this option. Graduates are prepared for careers in academia, industry, or government, especially where the focus is on environmental protection or management of valuable natural resources, such as water.

11.8.3 Parasitology Admission Requirements and Application Procedures

11.8.3.1 Admission Requirements

Candidates for either the M.Sc. or the Ph.D. thesis research degree should possess a bachelor's degree in the biological or medical sciences with a minimum cumulative grade point average of 3.2/4.0 (second class – upper division). High grades are expected in courses considered by the academic unit to be preparatory to the graduate program. Previous experience in parasitology is not essential.

Qualifying Students

Some applicants whose academic degrees and standing entitle them to serious consideration for admission to graduate studies, but who are considered inadequately prepared in the subject selected, may be admitted to a Qualifying program if they have met the Graduate and Postdoctoral Studies minimum CGPA of 3.0/4.0. The course(s) to be taken in a Qualifying program will be prescribed by the academic unit concerned. Qualifying students are registered in graduate studies, **but not as candidates for a degree**. Only one Qualifying year is permitted. **Successful completion of a Qualifying program does not guarantee admission to a degree program.**

Financial Aid – **Financial aid is very limited and highly competitive. It is suggested that students give serious consideration to their financial planning before submitting an application.** Normally, a student will not be accepted unless adequate financial support can be provided by the student and/or the student's supervisor. Academic units cannot guarantee financial support via teaching assistantships or other funds.

11.8.3.2 Application Procedures

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

See *section 6.3: Application Procedures* for detailed application procedures.

11.8.3.2.1 Additional Requirements

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

- Acceptance to all thesis research programs depends on a staff member agreeing to serve as the student's supervisor and the student obtaining financial support.
- International students are strongly encouraged to secure funding from their home country or international agencies.
- Other Supporting Documents – Other documents may be required for the admission process. Please consult the Parasitology website at *www.mcgill.ca/parasitology/graduatestudies/admission* for full details.

11.8.3.3 Application Deadlines

Canadian	International	Special/Exchange/Visiting
Fall: June 30	Fall: April 30	Fall: Same as Canadian/International
Winter: November 15	Winter: September 30	Winter: Same as Canadian/International
Summer: N/A	Summer: N/A	Summer: N/A

It may be necessary to delay review of the applicant's file until the following admittance period if application materials including supporting documents are received after the application deadlines. International applicants are advised to apply well in advance of these dates because immigration procedures may be lengthy.

11.8.4 Parasitology Faculty

Director

Timothy G. Geary

Professors

John P. Dalton; B.Sc., Ph.D.(Dublin) (*Canada Research Chair in Infectious Diseases*)

Timothy G. Geary; B.Sc.(Notre Dame), Ph.D.(Mich.) (*Canada Research Chair in Parasite Biotechnology*)

Roger Prichard; B.Sc., Ph.D.(NSW) (*James McGill Professor*)

Marilyn Scott; B.Sc.(New Br.), Ph.D.(McG.)

Associate Professors

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

Elias Georges; B.Sc., Ph.D.(McG.)

Armando Jardim; B.Sc., Ph.D.(Vic., BC)

Paula Ribeiro; B.Sc., Ph.D.(York)

Reza Salavati; B.A., M.A.(Calif. St.), Ph.D.(Wesl.)

Assistant Professor

Petra Rohrbach; B.Sc.(McG.), Ph.D.(Heidelberg, Germany)

Associate Members

Gregory J. Matlashewski; B.Sc.(C'dia), Ph.D.(Ott.)

Martin Olivier; B.Sc., M.Sc.(Montr.), Ph.D.(McG.)

Mary Stevenson; B.A.(Hood Coll.), M.Sc., Ph.D.(CUA)

Brian Ward; M.Sc.(Oxf.), M.D.,C.M.(McG.), DTM&H(Lond.)

Adjunct Professors

Florence Dzierszinski; B.Sc., M.Sc., Ph.D.(Lille, France)

Sean Forrester; B.Sc.(Cape Breton), M.Sc.(Lake.), Ph.D.(McG.)

David Marcogliese; B.Sc.(C'dia), M.Sc.(Dal.), Ph.D.(Wake Forest Univ. N. Carolina)

11.8.5 Master of Science (M.Sc.); Parasitology (Thesis) (46 credits)

Thesis Courses (32 credits)

PARA 687	(10)	Thesis Research 1
PARA 688	(10)	Thesis Research 2
PARA 689	(12)	Thesis Research 3

Required Courses (14 credits)

PARA 600	(4)	Thesis Proposal for M.Sc
PARA 606	(2)	Parasitology Seminar
PARA 607	(2)	Parasitology Research Seminar
PARA 635	(3)	Cell Biology and Infection
PARA 655	(3)	Host-Parasite Interactions

Other course work in related subjects may be required, depending upon the candidate's background and research orientation.

11.8.6 Master of Science (M.Sc.); Parasitology (Thesis) — Bioinformatics (47 credits)

Thesis Courses (24 credits)

PARA 688	(10)	Thesis Research 2
PARA 689	(12)	Thesis Research 3
PARA 690	(2)	Thesis Research 4

Required Courses (17 credits)

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
PARA 600	(4)	Thesis Proposal for M.Sc
PARA 606	(2)	Parasitology Seminar
PARA 607	(2)	Parasitology Research Seminar
PARA 635	(3)	Cell Biology and Infection
PARA 655	(3)	Host-Parasite Interactions

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

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

11.8.7 Master of Science (M.Sc.); Parasitology (Thesis) — Environment (46 credits)

Thesis Courses (26 credits)

PARA 687	(10)	Thesis Research 1
PARA 688	(10)	Thesis Research 2
PARA 691	(6)	Thesis Research 5

Required Courses (14 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
PARA 600	(4)	Thesis Proposal for M.Sc
PARA 606	(2)	Parasitology Seminar
PARA 607	(2)	Parasitology Research Seminar

Complementary Courses (6 credits)

3 credits from one of the following:

PARA 635	(3)	Cell Biology and Infection
PARA 655	(3)	Host-Parasite Interactions

3 credits from one of 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 other graduate course recommended by the Advisory Committee and approved by the Environment Option Committee.

Note: Other course work in related subjects may be required, depending upon the candidate's background and research orientation.

11.8.8 Doctor of Philosophy (Ph.D.); Parasitology

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 (10 credits)

PARA 635	(3)	Cell Biology and Infection
PARA 655	(3)	Host-Parasite Interactions
PARA 700	(0)	Thesis Proposal for Ph.D

PARA 710	(2)	Parasitology Ph.D. Seminar 1
PARA 711	(2)	Parasitology Ph.D. Seminar 2

* Note: In the first year of the doctoral program, the candidates must successfully complete a written thesis proposal and make an oral presentation on their proposed research to fulfil PARA 700, the comprehensive component.

Depending upon the candidate's background, other course work may be required.

11.8.9 Doctor of Philosophy (Ph.D.); Parasitology — 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 (13 credits)

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
PARA 635	(3)	Cell Biology and Infection
PARA 655	(3)	Host-Parasite Interactions
PARA 700	(0)	Thesis Proposal for Ph.D
PARA 710	(2)	Parasitology Ph.D. Seminar 1
PARA 711	(2)	Parasitology Ph.D. Seminar 2

Complementary Courses (6 credits)

6 credits 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.

11.8.10 Doctor of Philosophy (Ph.D.); Parasitology — 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 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 (14 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
PARA 700	(0)	Thesis Proposal for Ph.D

PARA 710	(2)	Parasitology Ph.D. Seminar 1
PARA 711	(2)	Parasitology Ph.D. Seminar 2

Complementary Courses (6 credits)

One of the following courses:

PARA 635	(3)	Cell Biology and Infection
PARA 655	(3)	Host-Parasite Interactions

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 recommended by the Advisory Committee and approved by the Environment Option Committee.

11.9 Plant Science

11.9.1 Location

Department of Plant Science
Macdonald Campus
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue, QC H9X 3V9
Canada

Telephone: 514-398-7851
Fax: 514-398-7897
Email: *gradstudies.macdonald@mcgill.ca*
Website: *www.mcgill.ca/plant*

11.9.2 About Plant Science

The Department offers an M.Sc. and Ph.D. in Plant Science with options in Bioinformatics, Environment, or Neotropical Environment, and provides for study in all fields of plant science. Research facilities—both field and laboratory—are available for investigations in plant breeding, crop physiology, crop management, crop quality, plant ecology, the epidemiology and biology of plant diseases, epigenetics, biosystematics, recombinant DNA technology, mycology, weed biology, tissue culture, plant biochemistry, and bioinformatics. Facilities include: the Horticultural Research Centre, the Emile A. Lods Agronomy Research Centre, greenhouses, growth cabinets, the McGill University Herbarium, the Applied Biotechnology laboratory, the CT Scanning laboratory, and a Level 2 Quarantine Facility.

An advisory committee is named for each student and has the responsibility of developing the program of study appropriate to the student's background and area of specialization.

section 11.9.5: Master of Science (M.Sc.); Plant Science (Thesis) (45 credits)

This M.Sc. in Plant Science requires approximately two years for completion. Overall, the program consists of two graduate-level courses, seminars, and a research project leading to a thesis. The courses and the research project are chosen and defined with the help of an advisory committee. Subsequent career paths are varied, but include work with government agencies, the private sector, or further graduate studies in a related field.

section 11.9.6: Master of Science (M.Sc.); Plant Science (Thesis) — Bioinformatics (48 credits)

This M.Sc. in Plant Science requires approximately two years for completion. Overall, the program consists of two graduate-level courses, seminars, and a research project leading to a thesis. The courses and the research project are chosen and defined with the help of an advisory committee. The goal of the Bioinformatics option 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 option has an added emphasis on bioinformatics, including additional seminars. Subsequent career paths are varied, but include work with government agencies, the private sector, or further graduate studies in a related field.

section 11.9.7: Master of Science (M.Sc.); Plant Science (Thesis) — Environment (48 credits)

This M.Sc. in Plant Science requires approximately two years for completion. Overall, the program consists of two graduate-level courses, seminars, and a research project leading to a thesis. The courses and the research project are chosen and defined with the help of an advisory committee. Subsequent career paths are varied, but include work with government agencies, the private sector, or further graduate studies in a related field. This option has an added emphasis on environmental sciences, including additional courses and seminars. The Environment graduate option is aimed at students who wish to take an interdisciplinary approach in their graduate research on environmental issues and who wish to benefit from interactions with students from a wide range of disciplines.

section 11.9.8: Master of Science (M.Sc.); Plant Science (Thesis) — Neotropical Environment (48 credits)

This M.Sc. in Plant Science requires approximately two years for completion. Overall, the program consists of two graduate-level courses, seminars, and a research project leading to a thesis. The courses and the research project are chosen and defined with the help of an advisory committee. Subsequent career paths are varied, but include work with government agencies, the private sector, or further graduate studies in a related field. This option has an added emphasis on neotropical environments, including additional courses and seminars. Part of the program takes place in Panama.

section 11.9.9: Master of Science, Applied (M.Sc.A.); Plant Science (Non-Thesis) (45 credits)

This M.Sc. in Plant Science requires about 18 months or four to five terms for completion. Overall, the program consists of graduate-level courses, seminars, and a research project. The courses and the research project are chosen and defined with the help of an advisory committee. Subsequent career paths are varied, but include work with government agencies, the private sector, or further graduate studies in a related field.

section 11.9.10: Doctor of Philosophy (Ph.D.); Plant Science

This Ph.D. in Plant Science requires approximately three years for completion. Overall, the program consists of seminars and a research project leading to a thesis. Students must also complete a comprehensive examination within their first year of study. The research project is defined with the help of an advisory committee. Subsequent career paths are varied, but include work with government agencies, universities, or the private sector.

section 11.9.11: Doctor of Philosophy (Ph.D.); Plant Science — Bioinformatics

This Ph.D. in Plant Science requires approximately three years for completion. Overall, the program consists of seminars and a research project leading to a thesis. Students must also complete a comprehensive examination within their first year of study. The research project is defined with the help of an advisory committee. Subsequent career paths are varied, but include work with government agencies, universities, or the private sector. This option has an added emphasis on bioinformatics, including additional courses and seminars. The goal of the Bioinformatics option 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.

section 11.9.12: Doctor of Philosophy (Ph.D.); Plant Science — Environment

This Ph.D. in Plant Science requires approximately three years for completion. Overall, the program consists of seminars and a research project leading to a thesis. Students must also complete a comprehensive examination within their first year of study. The research project is defined with the help of an advisory committee. Subsequent career paths are varied, but include work with government agencies, universities, or the private sector. This option has an added emphasis on environmental sciences, including additional courses and seminars. The Environment graduate option is aimed at students who wish to take an interdisciplinary approach in their graduate research on environmental issues and who wish to benefit from interactions with students from a wide range of disciplines.

section 11.9.13: Doctor of Philosophy (Ph.D.); Plant Science — Neotropical Environment

This Ph.D. in Plant Science requires approximately three years for completion. Overall, the program consists of seminars and a research project leading to a thesis. Students must also complete a comprehensive examination within their first year of study. The research project is defined with the help of an advisory committee. Subsequent career paths are varied, but include work with government agencies, universities, or the private sector. This option has an added emphasis on neotropical environments, including additional courses and seminars. Part of the program takes place in Panama.

section 11.9.14: Graduate Certificate in Bioinformatics (15 credits)

The Graduate Certificate in Bioinformatics is a new cross-disciplinary program that teaches students the foundations of bioinformatics thinking, methodology, and applications through hands-on experience with computers and bioinformatics tools. The program introduces students to many areas of application such as medicine, agriculture, and chemistry. Required courses include basic UNIX skills, genomics data, common bioinformatics software, relational databases, and web resources. The Certificate is completed in one term (Winter) after which graduates may go on to pursue successful careers in the biomedical, biotechnology, and biosciences fields.

11.9.3 Plant Science Admission Requirements and Application Procedures

11.9.3.1 Admission Requirements

General

The minimum cumulative grade point average (CGPA) is 3.0/4.0 (second class – upper division) or a GPA of 3.2/4.0 during the last two years of full-time university study. High grades are expected in courses considered by the academic unit to be preparatory to the graduate program.

Ph.D.

Ph.D. candidates are required to have an M.Sc. degree in an area related to the chosen field of specialization for the Ph.D. program. Outstanding M.Sc. students may be permitted to transfer to the second year of the Ph.D. program following one year of study.

Qualifying Students

Some applicants whose academic degrees and standing entitle them to serious consideration for admission to graduate studies, but who are considered inadequately prepared in the subject selected may be admitted to a Qualifying program if they have met the Graduate and Postdoctoral Studies minimum CGPA of 3.0/4.0. The course(s) to be taken in a Qualifying program will be prescribed by the academic unit concerned. Qualifying students are registered in graduate studies, but not as candidates for a degree. Only one Qualifying year is permitted. Successful completion of a qualifying program does not guarantee admission to a degree program.

Financial Aid – **Financial aid is very limited and highly competitive. It is suggested that students give serious consideration to their financial planning before submitting an application.** Normally, a student will not be accepted unless adequate financial support can be provided by the student and/or the student's supervisor. Academic units cannot guarantee financial support via teaching assistantships or other funds.

11.9.3.2 Application Procedures

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

See *section 6.3: 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:

- Acceptance to all programs depends on a staff member agreeing to serve as the student's supervisor and the student obtaining financial support.
- The GRE is not required, but it is highly recommended.

11.9.3.3 Application Deadlines

Canadian	International	Special/Exchange/Visiting
Fall: June 1	Fall: March 15	Fall: Same as Canadian/International
Winter: Oct. 15	Winter: Sept. 15	Winter: Same as Canadian/International
Summer: March 1	Summer: Jan. 15	Summer: Same as Canadian/International

It may be necessary to delay review of the applicant's file until the following admittance period if application materials, including supporting documents, are received after the application deadlines. International applicants are advised to apply well in advance of these dates because immigration procedures may be lengthy.

11.9.4 Plant Science Faculty

Chair

P. Seguin

Emeritus Professors

D.J. Buszard; B.Sc.(Bath), Ph.D.(Lond.)

R.H. Estey; B.Ed.(New Br.), M.S.(Maine), D.I.C.(Imp. Coll.), B.Sc.(Agr.), Ph.D.(McG.), F.L.S.

Professors

P. Dutilleul; L.Sc., D.Sc.(Louvain)

D.L. Smith; B.Sc., M.Sc.(Acad.), Ph.D.(Guelph)

A.K. Watson; B.Sc.(Agr.), M.Sc.(Br. Col.), Ph.D.(Sask.)

Associate Professors

J. Bede; B.Sc.(Calg.), M.Sc., Ph.D.(Tor.)

S. deBlois; B.Sc.(Agr.)(McG.), M.Sc., Ph.D.(Montr.)

D.J. Donnelly; B.Sc.(Agr.)(McG.), M.Sc.(Br. Col.), Ph.D.(S. Fraser)

S. Jabaji; B.Sc.(Beirut), M.Sc.(Guelph), Ph.D.(Wat.)

A.C. Kushalappa; B.Sc., M.Sc.(B'Lore), Ph.D.(Flor.)

P. Seguin; B.Sc.(Agr.), M.Sc.(McG.), Ph.D.(Minn.)

K. Stewart; B.Sc.(Agr.), (Br. Col.), Ph.D.(R'dg) (*Post-Retirement*)

M. Stromvik; B.A., M.Sc.(Stockholm), Ph.D.(Ill.)

M. Waterway; B.A.(Grand Rapids), M.S.(Wisc.), Ph.D.(C'nell)

Assistant Professors

J.-B. Charron; B.Sc.(Montr.), M.Sc., Ph.D.(UQAM)

V. Gravel; B.Sc.(Agr.), M.Sc., Ph.D.(Laval)

J. Singh; B.Sc.(Agr.), M.Sc.(Punjab), Ph.D.(Syd.)

Faculty Lecturers

C. Begg; B.Sc.(Agr.)(McG.), M.Sc.(Sask.), Ph.D.(McG.)

S. Lussier; B.Sc.(Agr.)(McG.)

D. Wees; B.Sc.(Agr.), M.Sc.(McG.)

Associate Members

G. Brown (*Department of Biology*)

T.A. Johns (*School of Dietetics and Human Nutrition*)

Adjunct Professors

A. Bertrand

S. Jenni

S. Khanizadeh

11.9.5 Master of Science (M.Sc.); Plant Science (Thesis) (45 credits)

Thesis Courses (39 credits)

PLNT 664	(12)	M.Sc. Thesis 1
PLNT 665	(12)	M.Sc. Thesis 2
PLNT 666	(15)	M.Sc. Thesis 3

Required Invitational Seminar

PLNT 690	(0)	Research Horizons in Plant Science 1

Complementary Courses (6 credits)

Two graduate-level courses

Additional courses may be required at the discretion of the candidate's supervisory committee.

11.9.6 Master of Science (M.Sc.); Plant Science (Thesis) — Bioinformatics (48 credits)

Thesis Courses (39 credits)

PLNT 664	(12)	M.Sc. Thesis 1
PLNT 665	(12)	M.Sc. Thesis 2
PLNT 666	(15)	M.Sc. Thesis 3

Required Invitational Seminar

PLNT 690	(0)	Research Horizons in Plant Science 1

Required Courses (3 credits)

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
PLNT 691	(0)	Research Horizons in Plant Science 2

Complementary Courses (6 credits)

Chosen from the following:

BINF 511	(3)	Bioinformatics for Genomics
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 or 600 level may be required at the discretion of the candidate's advisory committee.

11.9.7 Master of Science (M.Sc.); Plant Science (Thesis) — Environment (48 credits)

Thesis Courses (39 credits)

PLNT 664	(12)	M.Sc. Thesis 1
PLNT 665	(12)	M.Sc. Thesis 2
PLNT 666	(15)	M.Sc. Thesis 3

Required Invitational Seminar

PLNT 690	(0)	Research Horizons in Plant Science 1

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 (3 credits)

Chosen from one of the following courses:

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

or other graduate course recommended by the Advisory Committee and approved by the Environment Option Committee.

Additional courses may be required at the discretion of the candidate's Supervisory Committee.

11.9.8 Master of Science (M.Sc.); Plant Science (Thesis) — Neotropical Environment (48 credits)

Candidates must participate in the STRI seminar series when in residence in Panama, and in the MSE-Panama Symposium Presentation in Montreal.

Thesis Courses (39 credits)

PLNT 664	(12)	M.Sc. Thesis 1
PLNT 665	(12)	M.Sc. Thesis 2
PLNT 666	(15)	M.Sc. Thesis 3

Required Invitational Seminar

PLNT 690	(0)	Research Horizons in Plant Science 1

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.

Additional courses may be required at the discretion of the candidate's supervisory committee.

11.9.9 Master of Science, Applied (M.Sc.A.); Plant Science (Non-Thesis) (45 credits)

N.B. this program is under revision. Please contact Ms. Carolyn Bowes for information.

11.9.10 Doctor of Philosophy (Ph.D.); Plant Science

Students who have taken their M.Sc. degree at McGill University will be required to spend one term in study at another research institution.

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 Invitational Seminar

PLNT 690	(0)	Research Horizons in Plant Science 1

Required Courses

* Must be taken within one year of registering

PLNT 701	(0)	Doctoral Comprehensive Examination

Complementary Courses

Any courses at the 500 or 600 level deemed necessary for the chosen area of specialization.

11.9.11 Doctor of Philosophy (Ph.D.); Plant 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 expression and for publication in the public domain.

Required Invitational Seminar

PLNT 690	(0)	Research Horizons in Plant Science 1

Required Courses (3 credits)

* Must be taken within one year of registering.

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
PLNT 701*	(0)	Doctoral Comprehensive Examination

Complementary Courses (6 credits)

Two courses to be chosen from the following:

BINF 511	(3)	Bioinformatics for Genomics
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 or 600 level may be required at the discretion of the candidate's advisory committee.

11.9.12 Doctor of Philosophy (Ph.D.); Plant Science — 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 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 Invitational Seminar

PLNT 690	(0)	Research Horizons in Plant Science 1

Required Courses (6 credits)

* Must be taken within the first year of registering

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
PLNT 701*	(0)	Doctoral Comprehensive Examination

Coursework

Course requirements are specified by the staff in the discipline, but are flexible and depend largely on the student's background, immediate interests, and ultimate objectives.

Complementary Courses (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 other graduate course recommended by the Advisory Committee and approved by the Environment Option Committee.

11.9.13 Doctor of Philosophy (Ph.D.); Plant Science — Neotropical Environment

Students who have taken their M.Sc. degree at McGill University will be required to spend one term in study at another research institution.

The required thesis for this Ph.D. degree must display original scholarship expressed in proper literate style and must be a distinct contribution to knowledge.

Candidates must participate in the STRI seminar series when in residence in Panama, and in the MSE-Panama Symposium Presentation in Montreal.

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 Invitational Seminar

PLNT 690	(0)	Research Horizons in Plant Science 1

Required Courses (6 credits)

* Must be taken within one year of registering.

BIOL 640	(3)	Tropical Biology and Conservation
ENVR 610	(3)	Foundations of Environmental Policy
PLNT 701*	(0)	Doctoral Comprehensive Examination

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.

11.9.14 Graduate Certificate in Bioinformatics (15 credits)

Required Courses (9 credits)

BINF 511	(3)	Bioinformatics for Genomics
BINF 660	(3)	Advances in Bioinformatics
BTEC 555	(3)	Structural Bioinformatics

Complementary Courses (6 credits)

6 credits from the following:

ANSC 565	(3)	Applied Information Systems
BMDE 652	(3)	Bioinformatics: Proteomics
COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
COMP 616N1	(1.5)	Bioinformatics Seminar
COMP 616N2	(1.5)	Bioinformatics Seminar
COMP 618	(3)	Bioinformatics: Functional Genomics
GLIS 673	(3)	Bioinformatics Resources
HGEN 663	(3)	Beyond the Human Genome