



**Faculty of Agricultural and Environmental  
Sciences, including School of Human Nutrition  
(Graduate)  
Programs, Courses and University Regulations  
2021-2022**



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

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## 1 Dean's Welcome

Welcome to Graduate and Postdoctoral Studies (GPS) at McGill. You are joining a community of world-class researchers and more than 10,000 graduate students in over 400 programs. GPS is here to support you from admissions through to graduation and beyond. McGill's approach to graduate education emphasises skills development; we cultivate your academic and professional growth through a variety of workshops, events and experiential learning opportunities. I invite you to consult the [GPS website](#) for information on the range of resources available to graduate students at McGill.

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

*Josephine Nalbantoglu, Ph.D.*

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

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## 2 Graduate and Postdoctoral Studies

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### 2.1 Administrative Officers

#### Administrative Officers

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

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

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

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

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

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

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

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

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### 2.2 Location

James Administration Building, Room 400

845 Sherbrooke Street West

Montreal QC H3A 0G4

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



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

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### 2.3 Graduate and Postdoctoral Studies' Mission

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

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## 3 Important Dates

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

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## 4 Graduate Studies at a Glance

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

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## 5 Program Requirements

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

- Master's Degrees
- Doctoral Degrees
- Coursework for Graduate Programs, Diplomas, and Certificates

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## 6 Graduate Admissions and Application Procedures

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

- Application for Admission
- Admission Requirements
- Application Procedures
- Competency in English

and other important information regarding admissions and application procedures for Graduate and Postdoctoral Studies.

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## 7 Fellowships, Awards, and Assistantships

Please refer to [University Regulations & Resources > Graduate > : Fellowships, Awards, and Assistantships](#) for information and contact information regarding fellowships, awards, and assistantships in Graduate and Postdoctoral Studies.

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## 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 postdoctoral scholars will require during their studies at McGill and should be periodically consulted, along with other sections and related publications.

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### 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 them 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.).

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## **8.2 Guidelines and Policy for Academic Units on Postdoctoral Education**

Every unit hosting postdocs should apply institutional policies and procedures for the pro

i. Postdocs are subject to the responsibilities outlined at [mcgill.ca/students/srr](http://mcgill.ca/students/srr) and must abide by the policies listed at [mcgill.ca/secretariat/policies-and-regulations](http://mcgill.ca/secretariat/policies-and-regulations).



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## 10 Graduate Student Services and Information

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

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

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

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

- Regulations on Research Policy
- Regulations Concerning the Inic

Website: [mcgill.ca/nrs/graduate-students/graduate/agricultural-economics](http://mcgill.ca/nrs/graduate-students/graduate/agricultural-economics)

## 12.1.2 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 Applied Economics related to agriculture, environment, and ecological economics;
- Environmental and Resource Economics;
- International Agricultural Development;
- Farm Management, Production, and Finance.

The program prepares graduates for rewarding careers in research, analysis, and decision-making in academia; private and NGO sectors; and government. For more information on the **M.Sc. in Agricultural Economics**, please refer to [section 12.7: Natural Resource Sciences](#). Further details can also be found at [mcgill.ca/nrs/academic/graduate/agricultural-economics](http://mcgill.ca/nrs/academic/graduate/agricultural-economics).

## 12.1.3 Agricultural Economics Admission Requirements and Application Procedures

### 12.1.3.1 Admission Requirements

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.

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. To enter the M.Sc. in Agricultural Economics from the Qualifying Year program, a student must earn a GPA of at least a 3.2 in the approved program. In all cases, after completion of a Qualifying Year, an applicant interested in commencing the M.Sc. in Agricultural Economics must apply for admission by the posted deadline.

Details on the M.Sc. are available from [section 12.7: Natural Resource Sciences > section 12.7.5: M.Sc. in Agricultural Economics \(Thesis\) \(45 credits\)](#). Further details can also be found at [mcgill.ca/nrs/academic/graduate/agricultural-economics](http://mcgill.ca/nrs/academic/graduate/agricultural-economics).

### Financial Aid

Financial aid is available but 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 through a scholarship/award and/or by the student's supervisor. Academic units cannot guarantee financial support via teaching assistantships.

### English Language Proficiency

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

### 12.1.3.2 Application Procedures

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

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

### 12.1.3.2.1 Additional Requirements

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

- Curriculum Vitae
- Personal Statement
- The GPI Tm(elopmenHrr(itaTl requirements set by pe2 Tm(ut limite2 2eenteme)Ts)Tjj1 0 0 1 254.7421 0 0 1 81.692662 11 0 0 1 81.6W482 TF1 8.1rc10 1 406.







## **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 and can only be recommended at the discretion of the Department. **Successful completion of a Qualifying program does not guarantee admission to a degree program.**

### **Financial Aid**

Financial aid is available but 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 through a scholarship/award and/or by the student's supervisor. Academic units cannot guarantee financial support via teaching assistantships.

### **English Language Proficiency**

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

### **12.2.3.2 Application Procedures**

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

See [University Regulations & Resour](#)

**Emeritus Professors**

Eduardo R. Chavez; Ing. Agofessors

### 12.2.6 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 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 608	(3)	Population Genetics
ANSC 622	(3)	Experimental Techniques in Animal Science
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).

### 12.2.7 Master of Science, Applied (M.Sc.A.) Animal Science (Non-Thesis): Sustainable Agriculture (45 credits)

Climate change and rising human population have increased the need for sustainable agricultural practices. The Sustainable Agriculture option is taken with a M.Sc. Applied (Non-Thesis) program, and designed for students who wish to supplement their basic degree with graduate studies in animal science, with a specific focus on sustainability in agriculture. Students will be exposed to different approaches to improve the sustainability of agricultural systems through specialized coursework and a research project. The program aims to provide graduate training in applied areas of animal production with a view toward integrating technology and management in sustainable 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

### Required Courses (12 credits)

ANSC 555 (3) The Use and Welfare of Animals  
BREE 533 (3) Water Quality Management  
IGFS 611 (3) Advanced Issues on Development, Food and Agriculture  
PLNT 602 (3) Advances in Agronomy

### Complementary Courses (18 credits)

3 credits from the following list:

AEMA 610 (3) Statistical Methods 2  
AEMA 611 (3) Experimental Designs 1  
AEMA 614 (3) Temporal and Spatial Statistics 1

9-15 credits from the following list:

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 604 (3) Advanced Animal Biotechnology  
ANSC 611D1 (1.5) Advanced Reproductive Biology  
ANSC 611D2 (1.5) Advanced Reproductive Biology  
ANSC 622 (3) Experimental Techniques in Animal Science  
ANSC 635 (3) Vitamins and Minerals in Nutrition  
ANSC 637 (3) Livestock Breeding Systems  
FDSC 545 (3) Advances in Food Microbiology  
PLNT 662 (3) Advances in Plant Biotechnology

0-6 credits of sufficient 500-, or 600-level courses (with Adviser's approval) to bring the total credits to 45.

## 12.2.8 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 the field.

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

### 12.2.9 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 61ence Seminar 3	(3)	Bioinformatics: Functional Genomics

- irrigation and drainage engineering.
- **Bio-process engineering**
  - post-harvest technologies engineering;
  - food process engineering;
  - food quality, safety and security engineering;
  - bio-based responsive materials and chemical engineering;
  - bio-inspired multifunctional metamaterials;
  - meta-structures engineering.
- **Bio-environmental engineering**
  - ecological engineering;
  - hydrology and water engineering and management;
  - water resource and environmental systems engineering;
  - soil and water ecology engineering.

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 Univ

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 specialised skills in their home disciplines and acquire a broader perspective and awareness of environmental issues.

### **12.3.11: Master of Science, Applied (M.Sc.A.) Bioresource Engineering (Non-Thesis): Integrated Food and Bioprocessing (45 credits)**

...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.

...program are to provide up-to-date world class knowledge on techniques for adequate process design and management of biomass production and delivery of quality food, natural fiber, biochemicals, biomaterials, and biofuels, in a sustainable and environment-friendly way that benefits society. The program includes laboratory research and/or industrial/government internships.

### **section 12.3.12: Doctor of Philosophy (Ph.D.) Bioresource Engineering: Environment**

This is a research-based degree and is offered in the following areas: 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-environmental intelligence.


### **section 12.3.13: Doctor of Philosophy (Ph.D.) Bioresource Engineering: Environment**

The Ph.D. Bioresource Engineering: Environment – Option is coordinated through the Bieler School of Environment. 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 research into action and develop an appreciation for the roles of science, politics, economics, and ethics with regard to the environment.

#### **12.3.3.1 Admission Requirements**

The general rules of Graduate and Postdoctoral Studies apply. Candidates should indicate in some detail their fields of special interest when applying for admission. An equivalent cumulative grade point average (CGPA) of 3.0/4.0 (second class–upper division) or a grade point average (GPA) of 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

...degree but this does not need to be an engineering degree. Non-engineering students with a demonstrated interest in water resources management are encouraged to apply. Related disciplines could include, for example, geography, international development studies, sociology, anthropology, mathematics, environmental studies, biology, natural resources management, and engineering, among others.

 **Note:** Candidates for the M.Sc. Applied program (with concentration in Environmental Engineering) must have completed an undergraduate degree in a Canadian university.

**Note:** Candidates for the M.Sc. Applied program with concentration in Environmental Engineering shall have completed an undergraduate degree in



Financial aid is available but 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 through a scholarship/award and/or by the student's supervisor. Academic units cannot guarantee financial support via teaching assistantships.

## Professors

Viacheslav I. Adamchuk; B.Sc.(NUBiP), M.Sc., Ph.D.(Purd.)

Jan Adamowski; B.Eng.(RMC), M.Phil.(Camb.), M.B.A.(WUT, LBS, HEC Paris, NHH), Ph.D.(WUT) (*Liliane and David M. Stewart Sc*

BREE 695	(4)	M.Sc. Thesis 5
BREE 696	(4)	M.Sc. Thesis 6
BREE 697	(4)	M.Sc. Thesis 7
BREE 698	(3)	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.

**12.3.6 Master of Science (M.Sc.) Bioresource Engineering (Thesis): Environment (45 credits)**

The M.Sc. in Bioresource Engineering; (Thesis) Environment is a research program offered in collaboration with the Bieler School of Environment. As a complement to the unit's expertise, the program considers how various dimensions (scientific, social, legal, ethical.) interact to define environment and sustainability issues.

**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	(3)	M.Sc. Thesis 8

**Required Courses (8 credits)**

BREE 651	(1)	Departmental Seminar M.Sc. 1
BREE 652	(1)	Departmental Seminar M.Sc. 2
BREE 699	(3)	Scientific Publication
ENVR 615	(3)	Interdisciplinary Approach Environment and Sustainability

**Complementary Courses (6 credits)**

3-6 credits from:

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

0-3 credits from:

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

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

### **12.3.7 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
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#### **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.

### **12.3.8 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/water)

**Research Project (12 credits)**

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

**Required Courses (5 credits)**

BREE 651	(1)	Departmental Seminar M.Sc. 1
BREE 652	(1)	Departmental Seminar M.Sc. 2
ENVR 615	(3)	Interdisciplinary Approach Environment and Sustainability

**Complementary Courses (28 credits)**

3-6 credits from:

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

0-3 credits

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

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

22 additional credits of 500-level or higher chosen in consultation with the academic adviser.

**12.3.10 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:

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)	Bioprocesses for Wastewater Resource Recovery
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 551	(3)	Environmental Decisions
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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.

### 12.3.13 Doctor of Philosophy (Ph.D.) Bioresource Engineering: Environment

The Ph.D. in Bioresource Engineering Environment is a research program offered in collaboration with the Bieler School of Environment. As a complement to the unit's expertise, the program considers how various dimensions (scientific, social, legal, ethical) interact to define environment and sustainability issues.

#### Thesis

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

#### Required Courses (3 credits)

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 615	(3)	Interdisciplinary Approach Environment and Sustainability

#### Complementary Courses (6 credits)

3-6 credits from:

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

0-3 credits from:

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



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

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## 12.4 Biotechnology

### 12.4.1 Location

Institute of Parasitology  
Macdonald Campus  
21,111 Lakeshore Road  
Sainte-Anne-de-Bellevue QC H9X 3V9  
Canada  
Telephone: 514-398-7838  
Email: [gradstudies.macdonald@mcgill.ca](mailto:gradstudies.macdonald@mcgill.ca)  
Website: [mcgill.ca/biotechgradprog](http://mcgill.ca/biotechgradprog)

### 12.4.2 About Biotechnology

The non-thesis M.Sc.(Applied) degree 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 kilometres from the Montreal main campus downtown.

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

#### Biotechnology Programs

##### *section 12.4.5: 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 equip them 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 12.4.6: Graduate Certificate (Gr. Cert.) Biotechnology (16 credits)*

\*\*This program is currently not ofvidesyTm(vide Certificate (Gr)Tj10y..291 31443hemicri.77G program

English proficiency is required prior to admission. For a list of acceptable test scores and minimum requirements, visit [mcgill.ca/gradapplicants/international/proficiency](http://mcgill.ca/gradapplicants/international/proficiency)

### 12.4.3.2 Application Procedures

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

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

#### 12.4.3.2.1 Additional Requirements

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

- An [English Proficiency test](#) is required for most international applicants.
- The GRE (optional).
- Other Supporting Documents – Other documents may be required for the admission process. Please consult the Biotechnology website at [mcgill.ca/biotechgradprog/admissions](http://mcgill.ca/biotechgradprog/admissions) for full details of the admission process.

### 12.4.3.3 Application Dates and Deadlines

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

	Application Opening Dates		Application Deadlines	
	All Applicants	Non-Canadian citizens (incl. Special, Visiting & Exchange)	Canadian citizens/Perm. residents of Canada (incl. Special, Visiting & Exchange)	Current McGill Students (any citizenship)
<b>Fall Term:</b>	Sep. 15	Jan. 1	Jan. 1	Jan. 1
<b>Winter Term:</b>	N/A	N/A	N/A	N/A
<b>Summer Term:</b>	N/A	N/A	N/A	N/A

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

International applicants are advised to apply well in advance of these dates because immigration procedures may be lengthy.

## 12.4.4 Biotechnology Faculty

Biotechnology programs are offered through the Institute of Parasitology. For a complete faculty listing, please refer to [section 12.8.4: Parasitology Faculty](#).

## 12.4.5 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 (20 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
HGEN 660	(3)	Genetics and Bioethics

**Complementary Courses (9 credits)**

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.

**12.4.6 Graduate Certificate (Gr. Cert.) Biotechnology (16 credits)**

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

**Required Courses (10 credits)**

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

**Complementary Courses (6 credits)**

Two courses chosen from the following:

**General Topics**

ANSC 622	(3)	Experimental Techniques in Animal Science
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

**12.5 Food Science and Agricultural Chemistry****12.5.1 Location**

Department of Food Science and Agricultural Chemistry  
Macdonald-Stewart Building, Room MS1-033

Macdonald Campus of McGill University  
21,111 Lakeshore Road  
Sainte-Anne-de-Bellevue QC H9X 3V9  
Canada  
Telephone: 514-398-7838  
Email: [gradstudies.macdonald@mcgill.ca](mailto:gradstudies.macdonald@mcgill.ca)  
Website: [mcgill.ca/foodscience](http://mcgill.ca/foodscience)

### 12.5.2 About Food Science and Agricultural Chemistry

The Department of Food Science and Agricultural Chemistry offers M.Sc. (thesis and non-thesis) and Ph.D. programs. These programs provide training in evolving interdisciplinary areas of:

- food quality;
- food safety/food microbiology;
- food chemistry;
- food biotechnology;
- functional ingredients;
- applied infrared spectroscopy;
- food processing;
- thermal generation of aromas and toxicants;
- marine biochemistry;
- food chemical toxicants.

The Department has ke

## 12.5.3 Food Science and Agricultural Chemistry Admission Requirements and Application Procedures

### 12.5.3.1 Admission Requirements

Applicants to the M.Sc. programs (thesis or non-thesis) 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 3.4/4.0 (second class–upper division). 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 a minimum GPA of 3.6 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 available but 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 through a scholarship/award and/or by the student's supervisor. Academic units cannot guarantee financial support via teaching assistantships.

### 12.5.3.2 Application Procedures

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

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

#### 12.5.3.2.1 Additional Requirements

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

- Final acceptance to the M.Sc. Thesis or Ph.D. program depends on a faculty 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 – not required, but highly recommended.
- Proof of funding (all graduate programs, international applicants only): Documents must be provided in the application to prove that funding is available for the entire duration of the applied-for degree (including tuition, fees, surcharges, books and supplies, living and personal expenses, and any mandatory medical insurance required for the applicant's studies).
- An interview with the applicant may be requested by the Department of Food Science and Agricultural Chemistry in order to assist in the evaluation of the application.

### 12.5.3.3 Application Dates and Deadlines

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

	Application Opening Dates		Application Deadlines	
	All Applicants	Non-Canadian citizens (incl. Special, Visiting & Exchange)	Canadian citizens/Perm. residents of Canada (incl. Special, Visiting & Exchange)	Current McGill Students (any citizenship)
<b>Fall Term:</b>	Sept. 15	Jan. 15	Jan. 15	Jan. 15
<b>Winter Term*:</b>	Feb. 15*	Aug. 31*	Aug. 31*	Aug. 31*
<b>Summer Term:</b>	N/A	N/A	N/A	N/A

\* Admission to the Winter term is open for thesis programs only.

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

International applicants are advised to apply well in advance of these dates because imdce permitcons1 130.5 0 1 248.637 G7.5yvided in theexchange)

#### 12.5.4 Food Science and Agricultural Chemistry Faculty

##### Chair

Varoujan A. Yaylayan

##### Graduate Program Director

Ashraf Ismail

##### Emeritus Professors

Inteaz Alli; B.Sc.(Guyana), M.Sc., Ph.D.(McG.)

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

##### Professors

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

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

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

##### Associate Professors

Stephane Bayen; B.Sc.(ENSCM), M.Sc.(NUS), M.Eng.(ENSCM), Ph.D.(NUS)

Saji George; B.Sc., M.Sc.(MGU, Kerala), Ph.D.(NUS) (*Canada Research Chair*)

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

Salwa Karboune; B.Sc., M.Sc.(IAV Hassan II), D.E.A., Ph.D.(Aix-Marseille)

Xiaonan Lu; B.Sc.(Ocean), M.Sc., Ph.D. (Wash. St.) (*Ian and Jayne Munro Chair in Food Safety*)

##### Assistant Professor

Jennifer Ronholm; B.Sc.(Wat.), Ph.D.(Ott.) (*joint appt. with Animal Science*)

Yixiang Wang; B.Sc., Ph.D.(Wuhan)

##### Adjunct Professors

Luis Garcia; M.Sc.(Guelph)

Lawrence Goodridge; B.Sc., M.Sc., Ph.D.(Guelph)

Jocelyn Pare; B.Sc.(McG.), Ph.D.(Car.)

Ali Taherian; B.Sc.(SBU, Iran), M.Sc., Ph.D.(McG.)

##### Research/Academic Associates

Jacqueline Sedman; B.Sc., Ph.D.(McG.)

#### 12.5.5 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)**

### 12.5.7 Master of Science (M.Sc.) Food Science & 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 and Toxicants

#### Research Project (12 credits)

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

#### 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.

### 12.5.8 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

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## 12.6 Human Nutrition

### 12.6.1 Location

School of Human Nutrition  
Macdonald-Stewart Building  
McGill University, Macdonald Campus  
21,111 Lakeshore Road  
Sainte-Anne-de-Bellevue QC H9X 3V9  
Canada  
Telephone: 514-398-7838  
Email: [gradstudies.macdonald@mcgill.ca](mailto:gradstudies.macdonald@mcgill.ca)  
Website: [mcgill.ca/nutrition](http://mcgill.ca/nutrition) **Human Nutrition**

#### ***section 12.6.6: Master of Science, Applied (M.Sc.A.) Human Nutrition (Non-Thesis): Dietetics Credentialing (83 credits)***

necessary, to complete certain courses required for licensure. This is followed by three semesters of graduate-level courses and three semesters of *Stage*, which include a practice-based graduate project.

#### ***section 12.6.9: 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 12.6.10: Graduate Diploma (Gr. Dip.) Registered Dietitian Credentialing (30 credits)***

In the School of Human Nutrition at McGill, students pursuing a Ph.D. in human nutrition have the opportunity to apply to our Graduate Diploma in R.D. Credentialing, upon completion of the Ph.D. program and upon completion of the undergraduate courses required by *l'Ordre professionnel des diététistes du Québec* (OPDQ). Additional preparatory courses for *Stages* (internships) are NUTR 513, NUTR 515, NUTR 607, and NUTR 611. This Diploma consists of two semesters of *Stage* (internship) in Clinical Nutrition, Community Nutrition, and Foodservice 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.

### **12.6.3 Human Nutrition Admission Requirements and Application Procedures**

#### **12.6.3.1 Admission Requirements**

##### **M.Sc. Thesis and M.Sc. Applied (Project, Practicum, and Dietetics Credentialing)**

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 a minimum 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 M.Sc. Applied during their bachelor's degree program. Eligible candidates to the M.Sc. (Applied) program may select one of three options:

- 1.** The project option;
- 2.** The practicum option, which is reserved for those who have completed a dietetics internship and six months of work experience and wish to further develop their skills in a particular area of practice through an advanced internship;
- 3.** The dietetics credentialing option, for those who wish to follow a program combining courses and internship, leading to licensure as a dietitian. This program has a specific entrance CGPA requirement of 3.5/4.0.

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

Applicants must be graduates of a university of recognized reputation and hold a B.Sc. and M.Sc. degree equiv



### **Assistant Professors**

Ryan Mailloux; B.Sc., Ph.D.(Laur.)

Daiva Nielsen; B.Sc., Ph.D.(Tor.)

### **Academic Associate**

Patrick Cortbaoui; Ph.D.(McG.), Ag.Eng. (*Managing Director, Margaret A. Gilliam Institute for Global Food Security*)

### **Senior Faculty Lecturers**

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

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

Maureen Rose; B.Sc., M.Ed., Ph.D.(McG.), Dt. P. (*Director, Food and Nutrition Laboratories*)

### **Faculty Lecturers**

Paul-Guy Duhamel; B.Sc.(McG.), M.Sc.(Montr.), Dt. P. (*Manager, Food and Nutrition Laboratories*)

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

Joane Routhier; B.Sc.(McG.)

### **Associate Members**

*Anaesthesia*: Franco Carli, Thomas Schricker

*Institute for the Study of International Development (ISID)*: Nii Addy

*Medicine and Health Sciences*: L. John Hoffer, Larry Lands, José Morais

*Nursing*: Rosetta Antonacci

*Parasitology*: Marilyn E. Scott

### **Adjunct Professors**

Kevin A. Cockell; B.Sc., Ph.D.(Guelph) (*Health Canada*)

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### 12.6.5 Master of Science (M.Sc.) Human Nutrition (Thesis) (45 credits)

#### Thesis Courses (33 credits)

NUTR 680	(7)	Human Nutrition M.Sc. Thesis 1
NUTR 681	(8)	Human Nutrition M.Sc. Thesis 2
NUTR 682	(9)	Human Nutrition M.Sc. Thesis 3
NUTR 683	(9)	Human Nutrition M.Sc. Thesis 4

#### Required Courses (3 credits)

NUTR 695	(1)	Human Nutrition Research Orientation
NUTR 696	(1)	Human Nutrition Seminar
NUTR 697	(1)	MSc Final Presentation

#### Complementary Courses (9 credits)

3 credits in graduate-level statistics

3 credits in graduate-level research methods

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

### 12.6.6 Master of Science, Applied (M.Sc.A.) Human Nutrition (Non-Thesis): Dietetics Credentialing (83 credits)

This program is open to students with a B.Sc. in nutrition or an allied health profession, including biochemistry, kinesiology, physiology, or other related field, who would like to become a member of the Ordre professionnel des diététistes du Québec. Students may be required to complete a qualifying year (a variable number of required undergraduate credits), before taking the required M.Sc.Applied professional course, complementary courses, and elective courses (46 credits), followed by a Stage (Internship) component, which includes a practice based project (37 credits). On completion, students will meet OPDQ credits and professional practice requirements for licensure as a registered dietitian. A basic level or professional French competency will be required to complete the professional practice Stage component. The entrance requirements of a CGPA of 3.5 must be maintained throughout the program.

#### Required Courses (74 credits)

(0)	Managing Interprofessional Conflict
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NUTR 660	(1)	M.Sc.(Applied) Final Presentation
NUTR 695	(1)	Human Nutrition Research Orientation
NUTR 696	(1)	Human Nutrition Seminar

**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.

**12.6.8 Master of Science, Applied (M.Sc.A.) Human Nutrition (Non-Thesis): Project (45 credits)**

**Research Project (12 credits)**

#### **12.6.10 Graduate Diploma (Gr. Dip.) Registered Dietitian Credentialing (30 credits)**

The Graduate Diploma in Registered Dietitian Credentialing is open to students with a Ph.D. in Human Nutrition from the School of Human Nutrition who would like to become a member of the Ordre professionnel des diététistes du Québec (OPDQ). The Diploma consists of 30 weeks of stage placements in Clinical, Community, and Management rotations. Before acceptance into the program, students will be required to complete courses in clinical nutrition, and certain required courses in preparation for Stage; and to demonstrate a basic level of French competency. This preparation may be done during the Ph.D. program, or in a qualifying year after the Ph.D. On completion, students will meet OPDQ credits and professional practice requirements for licensure as a registered dietitian.

The Graduate Diploma is open to students who have completed a graduate degree with the School of Human Nutrition including NUTR 603 Credentialing in Dietetics.



*section 12.7.6: Master of Science (M.Sc.) Entomology (Thesis) (45 credits)*

Graduate students in the entomology program work within, and often across, multiple disciplines of basic and applied environmental sciences. Specialties within the program include terrestrial arthropod ecology, physiology, zoogeography, diversity, and systematics. Our students typically have exceptionally strong backgrounds in one or more of these specialties and an interest in research that advances both theory and applied management of ecosystems. After completing their degrees they go on to careers in academia, environmental policy, government agencies, industry, and other fields.

*section 12.7.7: Master of Science (M.Sc.) Entomology (Thesis): Neotropical Environment (48 credits)*

Please contact the Department for more information about this program.

*section 12.7.8: Master of Science (M.Sc.) Microbiology (Thesis) (45 credits)*

Graduate students in the microbiology program work within, and often across, multiple disciplines of basic and applied environmental sciences. Specialties within the program range from the study of microbial diversity in extreme environments, either natural or man-induced, to the role of microbes in managed ecosystems, such as in agriculture and forests. Our students typically have exceptionally strong backgrounds in one or more of these specialties and an interest in research that advances our fundamental knowledge about microorganisms as well as leads to improved efficiencies of our managed ecosystems. After completing their degrees they go on to careers in academia, environmental policy, government agencies, industry, and other fields.

*section 12.7.9: Master of Science (M.Sc.) Renewable Resources (Thesis) (45 credits)*

Graduate students in the renewable resources program work within, and often across, multiple disciplines of basic and applied environmental sciences. Specialties within the program include environmental and ecological economics, environmental health and toxicology, forest ecology, fish and fisheries biology, landscape ecology, limnology, micrometeorology, soil science, and wildlife biology. They typically have exceptionally strong backgrounds in one or more of these specialties and an interest in research that advances both theory and applied management of natural resources. After completing their degrees they go on to careers in academia, environmental policy, government agencies, industry, and other fields.

*section 12.7.10: Master of Science (M.Sc.) Renewable Resources (Thesis): Neotropical Environment (45 credits)*

Please contact the Department for more information about this program.

*section 12.7.11: Master of Science (M.Sc.) Renewable Resources (Non-Thesis): Environmental Assessment (45 credits)*

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

**Ph.D. Degrees in Entomology, Microbiology, or Renewable Resources (Includes Micrometeorology, Forest Science, Soil Science, and Wildlife Biology)**

*section 12.7.12: Doctor of Philosophy (Ph.D.) Entomology*

Graduate students in the entomology program work within, and often across, multiple disciplines of basic and applied environmental sciences. Specialties within the program include terrestrial arthropod ecology, physiology, zoogeography, diversity, and systematics. Our students typically have exceptionally strong backgrounds in one or more of these specialties and an interest in research that advances both theory and applied management of ecosystems. After completing their degrees they go on to careers in academia, environmental policy, government agencies, industry, and other fields.

*section 12.7.13: Doctor of Philosophy (Ph.D.) Entomology: Environment*

Please contact the Department for more information about this program.

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***section 12.7.16: Doctor of Philosophy (Ph.D.) Microbiology: Bioinformatics***

Please contact the Department for more information about this program.

***section 12.7.17: Doctor of Philosophy (Ph.D.) Renewable Resources***

Graduate students in the renewable resources program work within, and often across, multiple disciplines of basic and applied environmental sciences. Specialties within the program include environmental and ecological economics, environmental health and toxicology, forest ecology, fish and fisheries biology, landscape ecology, limnology, micrometeorology, soil science, and wildlife biology. Our students typically have exceptionally strong backgrounds in one or more of these specialties and an interest in research that advances both theory and applied management of natural resources. After completing their degrees they go on to careers in academia, environmental policy, government agencies, industry, and other fields.

***section 12.7.18: Doctor of Philosophy (Ph.D.) Renewable Resources: Environment***

Please contact the Department for more information about this program.

***section 12.7.19: Doctor of Philosophy (Ph.D.) Renewable Resources: Neotropical Environment***

Please contact the Department for more information about this program.

### **12.7.3 Natural Resource Science Admission Requirements and Application Procedures**

#### **12.7.3.1 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 minimum equivalent cumulative grade point average (CGPA) of 3.0/4.0 (second class–upper division) or minimum grade point average (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.

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 a minimum equivalent CGPA of 3.0/4.0 (second class–upper division) or a minimum 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.

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

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

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

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

##### **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 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 available but 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 through a scholarship/award and/or by the student's supervisor. Academic units cannot guarantee financial support via teaching assistantships.

##### **English Language Proficiency**

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

#### **12.7.3.2 Application Procedures**

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

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

### **12.7.3.2.1 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 – not required, but highly recommended.

### **12.7.3.3 Application Dates and Deadlines**

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Department of Natural Resource Sciences and may be revised at any time. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at



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

**Required Course (3 credits)**

AGEC 690	(3)	Seminar in Agricultural Economics
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**Complementary Courses (18 credits)**

6 credits, two theory courses chosen from:

ECON 610	(3)	Microeconomic Theory 1
		Macroeconomic dits)

## 12.7.7 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

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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.

**12.7.10 Master of Science (M.Sc.) Renewable Resources (Thesis): Neotropical Environment (45 credits)**

The McGill-STRI Neotropical Environment Option (NEO) is a research-based option for Masters or PhD students in the departments of Anthropology, Biology, Bioresource Engineering, Geography, Natural Resource Sciences, Plant Science, and Political Science at McGill University. NEO is aimed at students who wish to focus their graduate research on environmental issues relevant to the Neotropics and Latin American countries. NEO favors interdisciplinary approaches to research and learning through the participation of researchers from McGill and from STRI. Students will complete their research in Latin America and NEO's core and complementary courses will be taught in Panama. NEO's educational approach seeks to facilitate a broader understanding of tropical environmental issues and the development of skills relevant to working in the tropics.

Whether applying to a Master or a PhD, students are expected to meet all the degree.

**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 (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.

**12.7.11 Master of Science (M.Sc.) Renewable Resources (Non-Thesis): Environmental Assessment (45 credits)**

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

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
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**Required Internship (15 credits)**

NRSC 615	(15)	Environmental Assessment Internship
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**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)	Special Topics 7

**Complementary Courses (6 credits)**

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

**12.7.12 Doctor of Philosophy (Ph.D.) Entomology**



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

0-3 credits from:

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

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

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

### **Doctor of Philosoph**

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.

## 12.7.16 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.

## 12.7.17 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.

#### 12.7.18 Doctor of Philosophy (Ph.D.) Renewable Resources: Environment

The Ph.D. in Renewable Resources Environment is a research program offered in collaboration with the Bieler School of Environment. As a complement to the unit's expertise, the program considers how various dimensions (scientific, social, legal, ethical) interact to define environment and sustainability issues.

### Thesis

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

### Required Courses (3 credits)

ENVR 615	(3)	Interdisciplinary Approach Environment and Sustainability
NRSC 701	(0)	Ph.D. Comprehensive Examination
NRSC 754	(0)	Graduate Seminar 7

### Complementary Courses (6 credits)

3-6 credits from:

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

0-3 credits from:

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

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

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

#### 12.7.19 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
	(0)	Ph.D. Comprehensive Examination

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.

*section 12.8.5: Master of Science (M.Sc.) Parasitology (Thesis) (45 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 12.8.6: 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 scientific careers in a university, private industry, or government.

*section 12.8.7: 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.

### **12.8.3 Parasitology Admission Requirements and Application Procedures**

#### **12.8.3.1 Admission Requirements**

### 12.8.3.3 Application Dates and Deadlines

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

Application Opening Dates		Application Deadlines	
All Applicants	Non-Canadian citizens (incl. Special, Visiting & Exchange)	Canadian citizens/Perm. residents of Canada (incl. Special, Visiting & Exchange)	Current McGill Students (any citizenship)
Sept. 15	March 15	May 31	May 31



COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
	(3tics Seminar	Cell Biology and Infection



***section 12.9.5: 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 12.9.6: Master of Science (M.Sc.) Plant Science (Thesis): Bioinformatics (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. 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.

***: 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 Environment graduate option has an added emphasis on environmental sciences, including additional courses and seminars. It 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 12.9.7: Master of Science (M.Sc.) Plant Science (Thesis): Neotropical Environment (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. This option has an added emphasis on neotropical environments, including additional courses and seminars. Part of the program takes place in Panama.

***section 12.9.8: Master of Science, Applied (M.Sc.A.) Plant Science (Non-Thesis) (45 credits)***

\*\*\*Please note that program is currently under review, and will not be accepting applicants\*\*\*

This M.Sc. in Plant Science requires about 18 months or four to five tw



	Application Opening Dates		Application Deadlines	
	All Applicants	Non-Canadian citizens (incl. Special, Visiting & Exchange)	Canadian citizens/Perm. residents of Canada (incl. Special, Visiting & Exchange)	Current McGill Students (any citizenship)
<b>Fall Term:</b>	Sept. 15	Jan. 15	Jan. 15	Jan. 15
<b>Winter Term:</b>	Feb. 15	Aug. 31	Aug. 31	Aug. 31
<b>Summer Term:</b>	N/A	N/A	N/A	N/A

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

International applicants are advised to apply well in advance of these dates because immigration procedures may be lengthy.

#### 12.9.4 Plant Science Faculty

##### Chair

Martina V. Stromvik

##### Associate Chair and Graduate Program Director

Jean-Benoit Charron

##### Associate Graduate Program Director

Valérie Gravel

##### Emeriti Professors

Deborah J. Buszard; B.Sc.(Bath), Ph.D.(Lond.)

Alan K. Watson; B.Sc.(Agr.), M.Sc.(Br. Col.), Ph.D.(Sask.)

##### Professors

Pierre Dutilleul; B.Sc., M.Sc., Ph.D.(Louvain)

Anja Geitmann; Diplom(Konstanz), Ph.D.(Siena) (*Canada Research Chair in Biomechanics of Plant Development*)

Suha Jabaji; B.Sc.(Beirut), M.Sc.(Guelph), Ph.D.(Wat.)

Ajjamada C. Kushalappa; B.Sc., M.Sc.(B'lore), Ph.D.(Flor.)

Philippe Seguin; B.Sc.(Agr.), M.Sc.(McG.), Ph.D.(Minn.)

Donald L. Smith; B.Sc., M.Sc.(Acad.), Ph.D.(Guelph) (*Distinguished James McGill Professor*)

##### Associate Professors

Jacqueline C. Bede; B.Sc.(Calg.), M.Sc., Ph.D.(Tor.)

Sylvie de Blois; B.Sc.(Agr.)(McG.), M.Sc., Ph.D.(Montr.)

Jean-Benoit Charron; B.Sc.(Montr.), M.Sc., Ph.D.(UQAM)

Valérie Gravel; B.Sc.(Agr.), M.Sc., Ph.D.(Laval)

Jaswinder Singh; B.Sc.(Agr.), M.Sc.(PAU), Ph.D.(Syd.)

Martina V. Stromvik; B.A., M.Sc.(Stockholm), Ph.D.(Ill.)

##### Assistant Professors

Mehran Dastmalchi; B.Sc.(Tor.) Ph.D.(UWO)

Valerio Hoyos-Villegas; B.Sc.(Caldas), M.Sc.(Missouri/Col.), Ph.D.(Mich.)

##### Faculty Lecturers

Caroline Begg; B.Sc.(Agr.)(McG.), M.Sc.(Sask.), Ph.D.(McG.)

David Wees; B.Sc.(Agr.), M.Sc.(McG.)

**Academic Associate**

Frieda Beauregard B.Sc. M.Sc. Ph.D.(McG.)

**Adjunct Professors**

Konstantinos Aliferis

Annick Bertrand

Antoine Page

**12.9.5 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
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**Complementary Courses (6 credits)**

Two graduate-level courses

Additional courses may be required at the discretion of the candidate's supervisory committee.

**12.9.6 Master of Science (M.Sc.) Plant Science (Thesis): Bioinformatics (45 credits)**

**Thesis Courses (36 credits)**

PLNT 664	(12)	M.Sc. Thesis 1
PLNT 665	(12)	M.Sc. Thesis 2
PLNT 667	(12)	MSc Thesis 3A

**Required Invitational Seminar**

PLNT 690	(0)	Research Horizons in Plant Science 1
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**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



**Complementary Courses**

Any courses at the 500 or 600 level deemed necessary for the chosen area of specialization.

**Doctor of Philosophy (Ph.D.) Plant Science: Bioinformatics (Ph.D**

Interdisciplinary Approach En

**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