



**Faculty of Agricultural and Environmental
Sciences, including School of Human Nutrition
(Graduate)
Programs, Courses and University Regulations
2022-2023**

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

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- 1 Dean's Welcome, page 9
- 2 Graduate and Postdoctoral Studies, page 9
 - 2.1 Administrative Officers, page 9
 - 2.2 Location,

- 12.5.6 Master of Science (M.Sc.) Food Science and Agricultural Chemistry (Non-Thesis) (45 credits) , page 38
- 12.5.7 Master of Science (M.Sc.) Food Science & Agricultural Chemistry: Food Safety (Non-Thesis) (45 credits) , page 38
- 12.5.8 Doctor of Philosophy (Ph.D.) Food Science and Agricultural Chemistry , page 39
- 12.6 Human Nutrition, page 39
 - 12.6.1 Location, page 39
 - 12.6.2 About Human Nutrition, page 40
 - 12.6.3 Human Nutrition Admission Requirements and Application Procedures, page 41
 - 12.6.3.1 Admission Requirements, page 41
 - 12.6.3.2 Application Procedures, page 41
 - 12.6.3.3 Application Dates and Deadlines, page 41
 - 12.6.4 Human Nutrition Faculty, page 42
 - 12.6.5 Master of Science (M.Sc.) Human Nutrition (Thesis) (45 credits) , page 43
 - 12.6.6 Master of Science, Applied (M.Sc.A.) Human Nutrition (Non-Thesis): Dietetics Credentialing (83 credits) , page 43
 - 12.6.7 Master of Science, Applied (M.Sc.A.) Human Nutrition (Non-Thesis): Practicum (45 credits) , page

- 12.8.1 Location, page 57
 - 12.8.2 About Parasitology, page 57
 - 12.8.3 Parasitology Admission Requirements and Application Procedures, page 58
 - 12.8.3.1 Admission Requirements, page 58
 - 12.8.3.2 Application Procedures, page 58
 - 12.8.3.3 Application Dates and Deadlines, page 59
 - 12.8.4 Parasitology Faculty, page 59
 - 12.8.5 Master of Science (M.Sc.) Parasitology (Thesis) (45 credits) , page 59
 - 12.8.6 Doctor of Philosophy (Ph.D.) Parasitology , page 60
 - 12.8.7 Doctor of Philosophy (Ph.D.) Parasitology: Bioinformatics , page 60
- 12.9

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 emphasizes 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

2 Graduate and Postdoctoral Studies

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)

2.2 Location

James Administration Building, Room 400

845 Sherbrooke Street West

Montreal QC H3A 0G4

Website: mcgill.ca/gps



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

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.

3 Important Dates

For all dates relating to the academic year4857288(est)T1iron

4 Graduate Studies at a Glance

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

5 Program Requirements

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

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

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.

7 Fellowships, Awards, and Assistantships

Please refer to [University Regulations & Resources](#) > *Graduate* > : [F](#)

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 and must abide by the policies listed at mcgill.ca/secretariat/policies-and-regulations.
- ii. Each academic unit hosting postdocs should clearly identify postdocs' needs and the means by which they will be met by the unit.
- iii. Each academic unit should assess the availability of research supervision facilities, office space, and research funding before recruiting postdocs.
- iv. Some examples of the responsibilities of the academic unit are:
 - to verify the postdoc's eligibility period for registration;ostdoc'

8.5 Postdoctoral Research Trainees

Eligibility

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

The category of Postdoctoral Research Trainee is for:

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

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

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

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



Note: 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/diplomas
- 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 [University Regulations & 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 Graduate Student Services and Information

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

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

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

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

- Regulations on Research Policy
- Regulations Concerning the Investigation of Research Misconduct
- Requirements for Research Involving Human Participants
- Policy on the Study and Care of Animals
- Policy on Intellectual Property
- Regulations Governing Conflicts of Interest
- Safety in Field Work
- Office of Sponsored Research
- Postdocs
- Research Associates

12 Browse Academic Units & Programs

The programs and courses in the following sections have been approved for the 2022–2023 session as listed.

12.1 Agricultural Economics

12.1.1 Location

Department of Agricultural Economics/Natural Resource Sciences
Macdonald Campus
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue QC H9X 3V9
Canada
Telephone: 514-398-7838
Email: gradstudies.macdonald@mcgill.ca
Website: 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.

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 under

Application Opening Dates		Application Deadlines	
Summer Term:	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.

12.1.4 Agricultural Economics Faculty

Program Director

P.J. Thomassin

Professor

P.J. Thomassin

Associate Professor

N. Kosoy

Assistant Professors

M.K. Doidge; A.P. Harou.

Associate Member

C. Barrington-Leigh

12.2 Animal Science

12.2.1 Location

Department of Animal Science
 Macdonald Campus
 21,111 Lakeshore Road
 Sainte-Anne-de-Bellevue QC H9X 3V9
 Canada
 Telephone: 514-398-7838
 Email: gradstudies.macdonald@mcgill.ca
 Website: mcgill.ca/animal

12.2.2 About Animal Science

The Department of Animal Science provides exciting challenges to graduate students in the areas of:

- Animal Breeding and Genetics
- Animal Models for Human Medical Applications
- Dairy Cattle Welfare
- Epigenetic Modelling
- Food Safety
- Genome Editing (CRISPR tools)
- Large-data Analyses
- Metabolomics
- Reproductive Physiology
- Ruminant and Non-ruminant Nutrition and Metabolism

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 pi Research

Associate Professors

Vilceu Bordignon; Sergio Burgos; Roger I. Cue; Raj Duggavathi; Sarah Kimmins; Arif F. Mustafa; Elsa Vasseur; Kevin M. Wade; Jianguo (Jeff) Xia.

Assistant Professors

Jennifer Ronholm; Alexander Bekele-Yitbarek.

Adjunct Professors

Baurhoo Bushansingh; Pierre Lacasse; Bruce Murphy; Débora Santschi.

Affiliate Member

René Lacroix

12.2.5 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.

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 2.693 428.823 Tm(nr Rol0rth a vie)Tj0es (9 credits)

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 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 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 knowledge. It must show familiarity with previous w

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.

12.3 Bioresource Engineering

12.3.1 Location

Department of Bioresource Engineering
Macdonald Campus
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue QC H9X 3V9
Canada
Telephone: 514-398-7838
Email: gradstudies.macdonald@mcgill.ca
Website: mcgill.ca/bioeng

12.3.2 About Bioresource Engineering

The Department offers M.Sc. and Ph.D. research programs in various areas of bioresource engineering including:12.3.2

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

The Environmental option is coordinated through the Bieler School of Environment (BSE). 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 12.3.7: 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 12.3.8: Master of Science, Applied (M.Sc.A.) Bioresource Engineering (Non-Thesis) (45 credits)

The non-thesis option is aimed at individuals already employ

12.3.3 Bioresource Engineering Admission Requirements and Application Procedures

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 cumulated

	Application Opening Dates		Application Deadlines	
	All Applicants	Non-Canadian citizens (incl. Special, Visiting & Exchange)	Canadian citizens/Perm. residents of Canada (incl. Special, Visiting & Exchange)	Current McGill Students (any citizenship)
Fall Term:	Sept. 15	March 15	March 15	March 15
Winter Term*:	Feb. 15*	Aug. 31*	Aug. 31*	Aug. 31*
Summer Term:	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 immigration procedures may be lengthy.

12.3.4 Bioresource Engineering Faculty

Chair

Viacheslav I. Adamchuk

Graduate Program Director

G.S. Vijaya Raghavan

Associate Graduate Program Director

Mark Lefsrud

Emeritus Professors

Robert S. Broughton; Robert Kok.

Professors

Viacheslav I. Adamchuk; Jan Adamo

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 (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 of BR5c. vi5c. BR5c. B45c. B08 134.006entitit is a resr fi Sustac. bility0 1 165.864

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/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.

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

The M.Sc.(Applied) in Bioresource Engineering; Non-Thesis - Environment is a 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.

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 (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:

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)	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 601	(3)	Advanced Environmental Systems Modelling
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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

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)	Ecological Engineering
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 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.

12.3.12 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.

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

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

12.4 Biotechnology

12.4.1 Location

Institute of Parasitology
Macdonald Campus
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue QC H9X 3V9
Telephone: 514-398-7838
Email: gradstudies.macdonald@mcgill.ca
Website: 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 cell and molecular biology, and protein biochemistry, 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 b

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

12.4.3.2 Application Procedures

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

See *Univer*

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

Department of Food Science and

section 12.5.8: 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. de

* 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 immigration procedures may be lengthy.

12.5.4 Food Science and Agricultural Chemistry Faculty

Chair

Varoujan A. Yaylayan

Graduate Pr

12.5.6 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)	Enzymology
FDSC 516	(3)	Flavour Chemistry
FDSC 519	(3)	Advanced Food Processing
FDSC 520	(3)	Biophysical Chemistry of Food
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 and 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.

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 Advanced TAdv
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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
Website: mcgill.ca/nutrition

12.6.2 About Human Nutrition

In the School of Human Nutrition, cutting-edge nutrition research is conducted by 14 tenure-track professors and six faculty lecturers in all areas recommended by North American Nutrition Societies. These areas include clinical, community, and international nutrition as well as molecular and cellular nutrition. Research at the School emphasizes the following domains:

- nutritional biochemistry and metabolism;
- nutrigenomics and lifestyle behaviour;
- global food security;
- fetal, perinatal, and childhood origins of health and disease;
- clinical and epidemiological studies addressing health outcomes in at-risk populations including Indigenous Peoples, mothers and children, and older adults;
- nutritional management and development of novel nutritional approaches to optimize health during chronic diseases and 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 *McGill Institute for Global Food Security*, the *Mary Emily Clinical Nutrition Research Unit* (MECNRU), and the MUHC Teaching Hospitals. Students can conduct research or participate in clinical rotations in Ghana and field sites in Asia, Africa, Latin America, and the Caribbean.

section 12.6.5: 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 advanced nutrition coursework and activities 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 12.6.7: Master of Science, Applied (M.Sc.A.) Human Nutrition (Non-Thesis): Practicum (45 credits) and section 12.6.8: 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 kno

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

the recipient is eligible to register and practice as a Dietitian in Quebec (professional French is a requirement), 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 3.3/4.0 (high 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 are members of the ODNQ 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** and French proficiency (minimum level B2) requirement.

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 a minimum cumulative grade point average (CGPA) in McGill University's credit equivalency of 3.3/4.0 (high second class–upper division) during their bachelor's and master's degree programs. Exceptional students may apply to transfer to the Ph.D. program after one year of study in the M.Sc. (Thesis) 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 School's minimum CGPA of 3.3 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 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

12.6.3.2 Application Procedures

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

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

12.6.3.2.1 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 faculty 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 Ph.D. applicants to the School of Human Nutrition who are submitting non-Canadian or non-U.S. transcripts.

12.6.3.3 Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the School of Human Nutrition 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.

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)

Affiliate Members

Kathryn Arcudi; Marie-Ève Besner; Sarah Blunden; Catherine Delorme; Thea Demmers; Linda Falcon; Loudgina Khoury; Isabelle Lam; Alexander McLean; Laura Li Ching Ng; Piraveena Piremathasan; Marilyn Rabin; Donna Schafer; Patricia Urrico.

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)

The M.Sc.(Applied) in Human Nutrition; Non-Thesis – Dietetics Credentialing focuses on nutrition and food, leadership, communication skills, management skills and critical thinking. The program includes 40 weeks of internship or professional practice (stage). This program is accredited by the Partnership for Dietetic Education and Practice (PDEP), and recognized in Québec by the Ordre des diététistes-nutritionnistes du Québec (ODNQ), and meets all the standards and requirements of this professional order.

Required Courses (77 credits)

IPEA 500	(0)	Roles in Interprofessional Teams
IPEA 501	(0)	Communication in Interprofessional Teams
IPEA 502	(0)	Patient-Centred Care in Action
IPEA 503	(0)	Managing Interprofessional Conflict
NUTR 503	(3)	Nutrition and Exercise
NUTR 505	(3)	Public Health Nutrition
NUTR 511	(3)	Nutrition and Behaviour
NUTR 545	(4)	Clinical Nutrition 2
NUTR 546	(4)	Clinical Nutrition 3
NUTR 551	(3)	Analysis of Nutrition Data
NUTR 603	(3)	Credentialing in Dietetics
NUTR 606	(3)	Human Nutrition Research Methods
NUTR 607	(3)	Counselling in Professional Practice
NUTR 611	(2)	Graduate Professional Practice 1
NUTR 612	(8)	Graduate Professional Practice 2 Management

NUTR 613	(7)	Graduate Professional Practice 3 Clinical Nutrition
NUTR 614	(8)	Graduate Professional Practice 4 Community Nutrition
NUTR 615	(7)	Graduate Professional Practice 5 Clinical Nutrition
NUTR 618	(1)	Dietetics Professional Practice
NUTR 625	(3)	Emerging Issues for Nutritionists
NUTR 629	(6)	Professional Dietetics Project
NUTR 651	(3)	M.Sc. (Applied) Literature Review
NUTR 660	(1)	M.Sc.(Applied) Final Presentation
NUTR 695	(1)	Human Nutrition Research Orientation
NUTR 696	(1)	Human Nutrition Seminar

Complementary Courses (3 credits)

3 credits from the following:

AEMA 610	(3)	Statistical Methods 2
ANSC 560	(3)	Biology of Lactation
EDKP 654	(3)	Sport Psychology
EDPC 501	(3)	Facilitating Relationships
EDPC 504	(3)	Communication and Critical Conflict Resolution
EDPE 502	(3)	Theories of Human Development
EPIB 507	(3)	Biostats for Health Sciences
FDSC 537	(3)	Nutraceutical Chemistry
FDSC 538	(3)	Food Science in Perspective
FDSC 545	(3)	Advances in Food Microbiology
NUTR 501	(3)	Nutrition in Developing Countries
NUTR 502	(3)	Independent Study 2
NUTR 506	(3)	Qualitative Methods in Nutrition
NUTR 507	(3)	Advanced Nutritional Biochemistry
NUTR 512	(3)	Herbs, Foods and Phytochemicals
NUTR 520	(3)	Indigenous Peoples' Nutrition
NUTR 537	(3)	Advanced Human Metabolism
NUTR 608	(3)	Special Topics 1
NUTR 610	(3)	Pediatric and Maternal Nutrition
NUTR 641	(3)	Advanced Global Food Security
PSYC 650	(3)	Advanced Statistics 1

Elective Courses (3 credits)

To be chosen, at the 500 level or higher, in consultation with the Program Director.

Compulsory Immunization

A compulsory immunization program exists at McGill which is required for Dietetics students. Students should complete their immunization upon commencing the program. Confirmation of immunization will be coordinated by the Student Wellness Hub (<https://www.mcgill.ca/wellness-hub/>). Certain deadlines apply.

*Advising Notes for Professional Practice (Stage):

All courses must be passed with a minimum grade of B-. The admissions CGPA of 3.5 must be maintained throughout to remain in the program. All clinical nutrition courses must be completed at McGill University within 3 years prior to commencing the Professional Practice (Stage). Students who have had extended delays and exceed this 3-year maximum will be asked to repeat these clinical nutrition courses. Registration for all Professional Practice (Stage)

courses is restricted to students with a CGPA greater than or equal to 3.5. Students need to develop a working knowledge of French in order to effectively complete their Stage placements. Students are reminded that ethical conduct on Professional Practice (Stage) rotations is required. The School reserves the right to require the withdrawal of any student if at any time the student has displayed unprofessional conduct or demonstrates incompetence.

12.6.7 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) Literature Review
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),,A greater than 57h4its 1 1seel,

Elective Courses (9 credits)

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

12.6.9 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 695	(1)	Human Nutrition Research Orientation
NUTR 701	(0)	Doctoral Comprehensive Examination
NUTR 796	(1)	PhD Research Presentation

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

- Entomology (Neotropical Environment option available)
- Microbiology (Bioinformatics option available)
- Renewable Resources (this includes Forest Science, Micrometeorology, Soil Science, and Wildlife Biology; Neotropical Environment options available)

An **interdisciplinary** option in Bioinformatics for doctoral students in Microbiology is also 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](#); details are available on the [Natural Resource Sciences website](#).

Master of Science Degrees

section 12.7.5: Master of Science (M.Sc.) Agricultural Economics (Thesis) (45 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 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 (45 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.

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

section 12.7.11: 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 12.7.12: Doctor of Philosophy (Ph.D.) Entomology: Environment

Please contact the Department for more information about this program.

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

Please contact the Department for more information about this program.

section 12.7.14: Doctor of Philosophy (Ph.D.) Microbiology

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 and 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 12.7.15: Doctor of Philosophy (Ph.D.) Microbiology: Bioinformatics

Please contact the Department for more information about this program.

section 12.7.16: 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 12.7.17: Doctor of Philosophy (Ph.D.) Renewable Resources: Environment

Please contact the Department for more information about this program.

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

Please contact the Department for more information about this program.

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

12.7.3.2 Application Procedures

McGill's online application form for graduate program candidates is available at 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 mcgill.ca/gps/contact/graduate-program.

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

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

12.7.4 Natural Resource Sciences Faculty

Chair

Brian Driscoll

Graduate Program Director

Sébastien Faucher

Program Director - Agricultural Economics

Paul J. Thomassin

Emeritus Professors

David M. Bird; James W. Fyles; Edmund S. Idziak; Peter H. Schuepp; Robin K. Stewart.

Professors

Niladri Basu; Elena Bennett; Peter Brown; Christopher Buddle; Gordon Hickey; Murray Humphries; Paul J. Thomassin; Joann Whalen; Lyle G. Whyte.

Associate Professors

Jeffrey Cardille; Benoît Côté; Brian T. Driscoll; Gary B. Dunphy; Kyle Elliott; Sebastien Faucher; Jessica Head; Nicolas Kosoy; Ian B. Strachan.

AGEC 633	(3)	Environmental and Natural Resource Economics
AGEC 642	(3)	Economics of Agricultural Development
AGEC 685	(3)	Selected Topics in Agricultural Economics

Additional Complementary Courses: To complete the 45 credit program requirement from courses in your field or thesis area at the 500 level or higher in consultation with the Agricultural Economics Adviser.

12.7.6 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.

12.7.7 Master of Science (M.Sc.) Entomology (Thesis): Neotropical Environment (45 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 (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.

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

Thesis Courses (36 credits)

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

12.7.9 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)

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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 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 i1e31 0 0 Ht05.718 378.In th

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 Philosophy (Ph.D.) Entomology: Ncd 0 0 Nt6y.3 1 251.642 591.54 Add by the Environment

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.

12.7.15 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.

12.7.16 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.

12.7.17 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 ho

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. 9.8.3198.843 650.441AND

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

Candidates for either the M.Sc. or the Ph.D. thesis research degree should possess a bachelor's degree in biological or medical sciences with a minimum cumulative grade point average (CGPA) 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 Support

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. For information on awards and funding opportunities, see:

- mcgill.ca/gradapplicants/funding;
- mcgill.ca/parasitology/graduatestudies/admissions;
- mcgill.ca/macdonald/prospective/gradstudies/funding;
- mcgill.ca/macdonald/gradstudents/gradawards; and
- mcgill.ca/internalawards/faculty/agricultural-and-environmental-sciences.

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

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.

Application Opening Dates		Application Deadlines		
		All Applicants	Non-Canadian citizens (incl. Special, Visiting & Exchange)	Canadian citizens/Perm. residents of Canada (incl. Special, Visiting & Exchange)
Fall Term:	Sept. 15	March 15	May 31	May 31
Winter Term:	Feb. 15	Aug. 31	Oct. 15	Oct. 15
Summer Term:	N/A	N/A	N/A	N/A

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

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

12.8.4 Parasitology Faculty**Director**

Reza Salavati

Emeritus Professor

Timothy G. Geary

Professors

Roger Prichard; Reza Salavati; Marilyn Scott.

Associate Professors

Robin N. Beech; Elias Georges; Petra Rohrbach; Jianguo (Jeff) Xia.

Assistant Professors

Igor Cestari; Qian (Vivian) Liu; Thavy Long; Fernando Lopes.

Associate Members

Gregory J. Matlashewski; Momar Ndao; Martin Olivier; Mary Stevenson.

Adjunct Professors

Traian Sulea; Karine Thivierge.

12.8.5 Master of Science (M.Sc.) Parasitology (Thesis) (45 credits)**Thesis Courses (35 credits)**

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

Required Courses (10 credits)

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.

12.8.6 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 ho

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

12.9 Plant Science

12.9.1 Location

Department of Plant Science
 Macdonald Campus
 21,111 Lakeshore Road
 Sainte-Anne-de-Bellevue QC H9X 3V9
 Canada
 Telephone: 514-398-7838
 Email: gradstudies.macdonald@mcgill.ca
 Website: mcgill.ca/plant

12.9.2 About Plant Science

The Department offers an M.Sc. and a 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:

- Horticultural Research Centre
- Emile A. Lods Agronomy Research Centre
- greenhouses
- growth cabinets
- McGill University Herbarium
- multi-scale imaging facility
- genome editing laboratory
- plant-pest containment laboratory
- field phenomics platform

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 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.

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, b

Emeriti Professors

Deborah J. Buszard; Alan K. Watson.

Professors

Pierre Dutilleul; Anja Geitmann; Suha Jabaji; Ajjamada C. Kushalappa; Philippe Seguin; Donald L. Smith.

Associate Professors

Jacqueline C. Bede; Sylvie de Blois; Jean-Benoit Charron; Valérie Gravel; Jaswinder Singh; Martina V. Stromvik.

Assistant Professors

Mehran Dastmalchi; Valerio Hoyos-Villegas.

Faculty Lecturers

Caroline Begg; David Wees

Academic Associate

Frieda Beauregard

Adjunct Professors

Konstantinos Aliferis; Annick Bertrand;

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

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.

12.9.10 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

12.9.11 Doctor of Philosophy (Ph.D.) Plant Science: Environment

The Ph.D. in Plant Science 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.

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
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Required Courses (3 credits)

* Must be taken within the first year of registering

ENVR 615	(3)	Interdisciplinary Approach Environment and Sustainability
PLNT 701*	(0)	Doctoral Comprehensive Examination

Complementary Courses (6 credits)

3-6 credits from:

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

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.

12.9.12 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
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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.

12.9.13 Graduate Certificate (Gr. Cert.) 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