



**Faculty of Agricultural and Environmental
Sciences, including School of Human Nutrition
(Graduate)
Programs, Courses and University Regulations
2024-2025**

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

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Publication Information

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1 Graduate and Postdoctoral Studies

1.1 Administrative Officers

Administrative Officers

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

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Associate Dean (Graduate and Postdoctoral Studies)

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Associate Dean (Graduate and Postdoctoral Studies)

1.2 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.

1.3 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.

2 Important Dates

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

3 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.

4 Program Requirements

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

- Master's Degrees
- Doctoral Degrees

- ii. Upon registration, postdocs will be eligible for a University identity card issued by Enrolment Services.
- iii. Leaves of absence must comply with the Graduate and Postdoctoral Studies Policies for Vacation, Parental/Familial, and Health Leave (see [section 7.3: Vacation Policy for Graduate Students and Postdocs](#) and [University Regulations & Resources](#) > Graduate > Regulations > Categories of Students > : [Leave of Absence Status](#)).

3. Appointment, Funding, Letter of Agreement

- i. Postdoctoral appointments may not exceed the registration eligibility period as defined above.
- ii. In order to be registered, the postdoc must be assured of financial support other than from personal means during their stay at McGill University. This amount must be equivalent to the minimal stipend requirement set by the University in accordance with guidelines issued by federal and provincial research granting agencies or the collective agreement, as applicable. Funding during parental leave is subject to the conditions of the funding agency or the collective agreement, as applicable.
- iii. Postdocs require a [Letter of Agreement for Postdoctoral Education](#) signed by the postdoc, the supervisor, and the department/unit head or delegate.
- iv

- to clarify expectations regarding intellectual property rights in accordance with the University's policy;
- to provide mentorship for career development; and
- to prepare, sign, and adhere to a Letter of Agreement for Postdoctoral Education.

vi. Some examples of the responsibilities of postdocs are:

- to inform themselves of and adhere to the University's policies and/or regulations for postdocs as outlined at mcgill.ca/gps/postdocs and mcgill.ca/students/srr, and the Graduate and Postdoctoral Studies *University Regulations and Resources*;
- to submit a complete file for registration to Enrolment Services;
- to sign and adhere to their Letter of Agreement for Postdoctoral Education;
- to communicate regularly with their supervisor; and
- to inform their supervisor of their absences.

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

- to register postdocs;
- to provide an appeal mechanism in cases of conflict;
- to provide documented policies and procedures to postdocs;
- to provide postdocs with the necessary information on McGill University student services (Postdoctoral Fellows and Scholars) and HR policies and guidelines (Postdoctoral Researchers).

Approved by Senate, April 2000; revised May 2014; February 2020.

7.3 Vacation Policy for Postdocs

Please refer to the : [Vacation Policy for Graduate Students and Postdocs](#).

7.4 Leave of Absence for Health and Parental/Familial Reasons

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

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

Students who have been granted such a leave will have to register for the term(s) in question and their registration will show as "leave of absence" on their record. No tuition fees will be charged for the duration of the authorized leave. Research supervisors are not obligated to remunerate students and Postdocs on leave. A summary table of various leave policies (paid or unpaid) for students and Postdocs paid from the Federal and Quebec Councils through fellowships or research grants is available at mcgill.ca/gps/funding/getting-paid under "Leave Policies and Form."

7.5 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

research stage. Individuals who are expecting to spend more than one year are encouraged to obtain formal training (Master'

10 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

11 Browse Academic Units & Programs

The programs and courses in the following sections have been approved for the 2024–2025 session as listed.[gulgrams•OS\(oncrainees\)Tj1 0 0 1 8134 1 688.651Macdon](#)

11.1.3 Agricultural Economics Admission Requirements and Application Procedures

11.1.3.1 Admission Requirements

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

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

When an applicant does not have sufficient background in economics for admission to the M.Sc., they may be admitted to a Qualifying Year program of undergraduate courses. To enter the M.Sc. in Agricultural Economics from the Qualifying Year program, a student must earn a GPA of at least a 3.2 in the approved program. In all cases, after completion of a Qualifying Year, an applicant interested in commencing the M.Sc. in Agricultural Economics must apply for admission by the posted deadline.

Details on the M.Sc. are available from [section 11.7: Natural Resource Sciences](#) > [section 11.7.4: Master of Science \(M.Sc.\) Agricultural Economics \(Thesis\) \(45 credits\)](#). Further details can also be found at mcgill.ca/nrs/academic/graduate/agricultural-economics.

Financial Aid

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

English Language Proficiency

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

11.1.3.2 Application Procedures

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

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

11.1.3.2.1 Additional Requirements

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

- Curriculum Vitae
- Personal Statement
- The GRE – not required, but highly recommended

11.1.3.3 Application Dates and Deadlines

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

Information on application deadlines is available at mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines.

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

11.2 Animal Science

11.2.1 Location

Department of Animal Science
 Macdonald Campus
 21,111 Lakeshore Road
 Sainte-Anne-de-Bellevue QC H9X 3V9
 Canada
 Telephone: 514-398-7838

Email: gradstudies.macdonald@mcgill.ca

Website: mcgill.ca/animal

11.2.2 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; and
- Ruminant and Non-Ruminant Nutrition and Metabolism

as they relate not only to livestock production, but also lead into the fields of human nutrition and medicine via animal models for human disease, infertility, and obesity. Official options in Biotechnology are also available.

Departmental researchers have excellent wet-lab facilities at their disposal; large-animal studies can be carried out at the Large Animal Research Unit on the Macdonald Campus farm, where other livestock species are available for research trials as well. Research can make use of the Small Animal Research Unit for studies involving rodent animal models, guinea pigs, neonatal piglets, and rabbits. Expertise is also available in applied information systems, management-software development, and large-scale data analyses. Close collaboration with the *Quebec Centre for Expertise in Dairy Production (Lactanet)* allows for large-scale data-mining projects, software development, and the production of advising tools for the industry. The Department also has significant expertise in food safety, environmental studies related to animal production, and global food security. Our staff's many connections via research networks allow for rich learning environments for our graduate students.

section 11.2.4: Master of Science (M.Sc.) Animal Science (Thesis) (45 credits)

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

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

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

11.2.3 Animal Science Admission Requirements and Application Procedures

11.2.3.1 Admission Requirements

M.Sc. (Thesis)

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

M.Sc. (Applied)

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

Ph.D.

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

Qualifying Students

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

Financial Aid

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

English Language Pr

The program typically takes 2 years to complete.

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

0-6 credits of sufficient 500-, or 600-lev

11.3 Bioresource Engineering

11.3.1 Location

11.3.3 Bioresource Engineering Admission Requirements and Application Procedures

11.3.3.1 Admission Requirements

The general rules of Graduate and Postdoctoral Studies apply. Candidates should indicate in some detail their fields of special interest when applying for admission. An equivalent cumulative grade point average (CGPA) of 3.0/4.0 (second class–upper division) or a grade point average (GPA) of 3.2/4.0 during the last tw

11.3.4 Master of Science (M.Sc.) Bioresource Engineering (Thesis) (45 credits)

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

Required Courses (36 credits)

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

Thesis Courses

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

Complementary Courses (9 credits)

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

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

This program is currently not offered.

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

Required Courses (39 credits)

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

Thesis Courses

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

Complementary Courses (6 credits)

3-6 credits from:

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

0-3 credits from:

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

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

11.3.611 ~~Mag. of Science (M.Sc.)~~ Bioresource Engineering (Non-Thesis): Integrated Water Resources Management (45 credits)

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

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

Environmental Policy Course

3 credits from the following:

URBP 506 (3) Environmental Policy and Planning

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

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

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

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

The Master of Science(Applied) [M.Sc.(A.)] in Bioresource Engineering; Non-Thesis - Integrated Food and Bioprocessing program provides the tools to understand how food and agricultural production interact to better manage agricultural, food, and biomass systems for the adequate supply of wholesome food, feed, fiber, biofuel, and any other bio-based material. The program focuses on the skills needed to assess existing production, delivery, and quality management systems; introduce improvements; and communicate effectively with policymakers and colleagues in multi-disciplinary teams. The program provides up-to-date, world-class knowledge on techniques for adequate process design and management of biomass production strategies for the delivery of quality food, natural fiber, biochemicals, biomaterials, and biofuels, in a sustainable and environment-friendly way that benefits all. Training activities will include laboratory research and/or industrial/government internships.

Required Courses (6 credits)

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

Complementary Courses (39 credits)

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

Minimum of 9 credits from courses selected from the following:

BREE 518	(3)	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:

Food and Agricultural Policym(BREE 602)Tj1 0 11..704 Tm((Throt4 Tm(wing):T15.747pro)Tj1 0 0 1 283.977 699.12

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 the Majority World

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

11.3.11 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 and be suitable for publication in the public domain. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Required Courses

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

Complementary Courses

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

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

This program is currently not offered.

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 contrib

BREE 752	(0)	Departmental Seminar Ph.D. 2
BREE 753	(0)	Departmental Seminar Ph.D. 3
BREE 754	(0)	Departmental Seminar Ph.D. 4
ENVR 615	(3)	Interdisciplinary Approach Environment and Sustainability

Complementary Courses (6 credits)

3-6 credits from:

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

0-3 credits from:

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

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

section 11.4.5: Graduate Certificate (Gr. Cert.) Biotechnology (16 credits)

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

11.4.3 Biotechnology Admission Requirements and Application Procedures**11.4.3.1 Admission Requirements**

Candidates for the M.Sc.(Applied) in Biotechnology must possess a bachelor's degree in biological sciences or equivalent with a minimum cumulative grade point average (CGPA) of 3.2/4.0, as well as all prerequisites or their equivalents. Applicants are required to have sufficient background in biochemistry, cellular biology, and molecular biology, preferably at an advanced level for the Master's Applied.

Financial Aid

Financial support is not available for this applied program. It is suggested that students give serious consideration to their financial planning before submitting an application. Students should be self-financed or self-funded to ensure they can complete this program financially worry free. Academic units cannot guarantee financial support via teaching assistantships.

English Language Proficiency

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

11.4.3.2 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.

11.4.3.2.1 Additional Requirements

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

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

11.4.3.3 Application Dates and Deadlines

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

Information on application deadlines is available at mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines.

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

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

The M.Sc.(Applied) in Biotechnology; Non-Thesis provides 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 the business aspect of biotechnology. The program also includes practical training in a laboratory and internships.

Research Project (16 credits)

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

Required Courses (20 credits)

BIOT 505	(3)	Selected Topics in Biotechnology
BTEC 501	(3)	Bioinformatics
BTEC 619	(4)	Biotechnology Laboratory 2
BTEC 620	(4)	Biotechnology Laboratory 1
BTEC 621	(3)	Biotechnology Management
HGEN 660	(3)	Genetics and Bioethics

Complementary Courses (9 credits)

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

11.4.5 Graduate Certificate (Gr. Cert.) Biotechnology (16 credits)

The Graduate Certificate in Biotechnology focuses on biotechnology and the latest molecular biology techniques.

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

11.5 Food Science and Agricultural Chemistry

11.5.1 Location

Department of Food Science and Agricultural Chemistry
Macdonald-Stewart Building, Room MS1-033
Macdonald Campus of McGill University
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue QC H9X 3V9
Canada
Telephone: 514-398-7838
Email: gradstudies.macdonald@mcgill.ca
Website: mcgill.ca/foodscience

11.5.2 About Food Science and Agricultural Chemistry

The Department of Food Science and Agricultural Chemistry of

section 11.5.6: Master of Science (M.Sc.) Food Science & Agricultural Chemistry: Food Safety (Non-Thesis) (45 credits)

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.

section 11.5.7: Doctor of Philosophy (Ph.D.) Food Science and Agricultural Chemistry

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

11.5.3 Food Science and Agricultural Chemistry Admission Requirements and Application Procedures

11.5.3.1 Admission Requirements

Applicants to the M.Sc. programs (thesis or non-thesis) must be graduates of a university of recognized reputation and hold a B.Sc. in Food Science or a related discipline such as Chemistry, Biochemistry, or Microbiology with a minimum cumulative grade point average (CGPA) of 3.4/4.0 (second class–upper division). Applicants to the Ph.D. program must hold an M.Sc. degree in Food Science or related areas with a minimum CGPA of 3.4 in their M.Sc. and a minimum GPA of 3.6 for the last two years of their B.Sc. degree. High grades are expected in courses considered by the academic unit to be preparatory to the graduate program.

Qualifying Students

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

Financial Aid

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

11.5.3.2 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.

11.5.3.2.1 Additional Requirements

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

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

11.5.3.3 Application Dates and Deadlines

Elective Courses (15 credits)

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

11.5.6 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.

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

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

Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner.

The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Required Courses (9 credits)

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

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

11.6 Human Nutrition

11.6.1 Location

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

11.6.2 About Human Nutrition

In the School of Human Nutrition, cutting-edge nutrition research is conducted by 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 behaviours;
- 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; and
- 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 *Clinical Nutrition Research Unit (CNRU)*, 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 11.6.4: 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 11.6.6: Master of Science, Applied (M.Sc.A.) Human Nutrition (Non-Thesis): Practicum (45 credits) and

section 11.6.7: Master of Science, Applied (M.Sc.A.) Human Nutrition (Non-Thesis): Project (45 credits)

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

section 11.6.5: Master of Science, Applied (M.Sc.A.) Human Nutrition (Non-Thesis): Dietetics Credentialing (83 credits)

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

section 11.6.8: Doctor of Philosophy (Ph.D.) Human Nutrition

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

section 11.6.9: Graduate Diploma (Gr. Dip.) Registered Dietitian Credentialing (30 credits)

In the School of Human Nutrition at McGill, students pursuing a Ph.D. in human nutrition have the opportunity to apply to our Graduate Diploma in R.D. Credentialing, upon completion of the Ph.D. program and upon completion of the undergraduate courses required by *l'Ordre des diététistes-nutritionnistes du Québec (ODNQ)*. Additional preparatory courses for *Stages* (internships) are NUTR 513, NUTR 515, NUTR 607, and NUTR 611. This Diploma consists of two semesters of *Stage* (internship) in clinical nutrition, community nutrition, and foodservice management. Upon completion of the Diploma, the recipient is eligible to register and practice as a Dietitian in Quebec (professional French is a requirement), as well as in other Canadian provinces and other countries.

11.6.3 Human Nutrition Admission Requirements and Application Procedures

11.6.3.1 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 056 285.321 TmT.881 m(5.881 Tm(v Tm(vision.92 a su1pl scienc6.621 T

11.6.3.2 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

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

NUTR 614	(8)	Graduate Professional Practice 4 Community Nutrition
NUTR 615	(7)	Graduate Professional Practice 5 Clinical Nutrition

11.7 Natural Resource Sciences

11.7.1 Location

Department of Natural Resource Sciences
McGill University, Macdonald Campus
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue QC H9X 3V9
Canada
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section 11.7.7: Master of Science (M.Sc.) Renewable Resources (Thesis) (45 credits)

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 11.7.8: 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

section 11.7.9: 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 11.7.10: 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 11.7.11: 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 11.7.12: Doctor of Philosophy (Ph.D.) Renewable Resources: Neotropical Environment

Please contact the Department for more information about this program.

11.7.3 Natural Resource Science Admission Requirements and Application Procedures

11.7.3.1 Admission Requirements

M.Sc. Thesis (Agricultural Economics)

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

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

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

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

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

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

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

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

Qualifying Program

Some applicants whose academic degrees and standing entitle them to serious consideration for admission to graduate studies, but who are considered inadequately prepared in the subject selected, may be admitted to a Qualifying program if they have met the Graduate and Postdoctoral Studies minimum CGPA of 3.0/4.0. The course(s) to be taken in a Qualifying program will be prescribed by the academic unit concerned. Qualifying students are registered

in graduate studies, **but not as candidates for a degree**. Only one Qualifying year is permitted. **Successful completion of a Qualifying program does not**

ECON 610	(3)	Microeconomic Theory 1
ECON 620	(3)	Macroeconomic Theory 1

or a theory course, at the 500 level or higher, approved by the Graduate Program Director.

At least 3 credits of quantitative methods course chosen from:

ECON 662D1	(3)	Econometrics
ECON 662D2	(3)	Econometrics
ECON 665	(3)	Quantitative Methods

or a quantitative course, at the 500 level or higher, approved by the Graduate Program Director.

A minimum of 3 credits 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
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.

11.7.5 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)	M.Sc. Proposal Seminar
NRSC 644	(1)	M.Sc. Update Seminar
NRSC 651	(1)	M.Sc. Final Seminar

Complementary Courses (6 credits)

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

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

The Master of Science in Microbiology is a thesis program of 45 credits. The program involves research within, and often across, multiple disciplines of basic and applied environmental sciences that advances our fundamental knowledge about microorganisms as well as leads to improved efficiencies of our managed ecosystems. Specialties within the program range from the study of microbial ecology and diversity in natural, human-induced and extreme environments, molecular genetics, bioinformatics, and bacterial pathogens.

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 Cour

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

11.7.9 Doctor of Philosophy (Ph.D.) Entomology

The Doctor of Philosophy in Entomology is a program that involves research primarily within the discipline of entomology but also across multiple disciplines of basic and applied environmental sciences, that advances both theory and applied management of natural resources. Specialties within the program include terrestrial arthropod ecology, physiology, zoogeography, diversity, and systematics.

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)	PhD Research Proposal
NRSC 752	(0)	Teaching Experience
NRSC 753	(0)	PhD Research Progress Report
NRSC 754	(0)	PhD Final Research Report

Coursework

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

11.7.10 Doctor of Philosophy (Ph.D.) Microbiology

The Doctor of Philosophy in Microbiology involves research within, and often across, multiple disciplines of basic and applied environmental sciences that advances our fundamental knowledge about microorganisms as well as leads to improved efficiencies of our managed ecosystems. Specialties within the program range from the study of microbial ecology and diversity in natural, human-induced and extreme environments, molecular genetics, bioinformatics, and bacterial pathogens

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)	PhD Research Proposal
NRSC 752	(0)	Teaching Experience
NRSC 753	(0)	PhD Research Progress Report
NRSC 754	(0)	PhD Final Research Report

Coursework

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

11.7.11 Doctor of Philosophy (Ph.D.) Renewable Resources

The Doctor of Philosophy in Renewable Resources is a Resources program that involves research within, and

often across, multiple disciplines of basic and applied environmental sciences that advances both theory and applied management of natural resources. 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.

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.

11.8 Parasitology**11.8.1 Location**

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

11.8.4 Master of Science (M.Sc.) Parasitology (Thesis) (45 credits)

The M.Sc. in Parasitology focuses on the phenomenon of parasitism in humans, livestock, and other animals, and the control of parasitic diseases, including the interface of parasitism/immunity/nutrition in the context of the host-parasite. The research thesis is under the direction of a supervisor.

Thesis Courses (35 credits)

PARA 687	(11)	Thesis Research 1
PARA 688	(11)	Thesis Research 2
PARA 689	(13)	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.

11.8.5 Doctor of Philosophy (Ph.D.) Parasitology

Thesis

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

Required Courses (10 credits)

PARA 635	(3)	Cell Biology and Infection
PARA 655	(3)	Host-Parasite Interactions
PARA 701	(0)	PhD Comprehensive Exam
PARA 710	(2)	Parasitology Ph.D. Seminar 1
PARA 711	(2)	Parasitology Ph.D. Seminar 2

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

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

11.8.6 Doctor of Philosophy (Ph.D.) Parasitology: Bioinformatics

Thesis

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

Required Courses (13 credits)

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
PARA 635	(3)	Cell Biology and Infection

PARA 655	(3)	Host-Parasite Interactions
PARA 701	(0)	PhD Comprehensive Exam
PARA 710	(2)	Parasitology Ph.D. Seminar 1
PARA 711	(2)	Parasitology Ph.D. Seminar 2

Complementary Courses (6 credits)

6 credits chosen from the following:

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

Additional courses at the 500, 600, or 700 level may be chosen from the following:

section 11.9.5: 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 (45 credits)

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

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

section 11.9.6: Master of Science (M.Sc.) Plant Science (Thesis): Neotropical Environment (45 credits)

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

section 11.9.7: Master of Science, Applied (M.Sc.A.) Plant Science (Non-Thesis) (45 credits)

****Please note that program is currently under revision and will not be accepting applicants.****

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

section 11.9.8: Doctor of Philosophy (Ph.D.) Plant Science

This Ph.D. in Plant Science requires approximately three years for completion. Overall, the program consists of seminars and a research project leading to a thesis. Students must also complete a comprehensive examination within their first year of study. The research project is defined with the help of an advisory committee. Subsequent career paths are varied, but include work with government agencies, universities, or the private sector.

section 11.9.9: Doctor of Philosophy (Ph.D.) Plant Science: Bioinformatics

This Ph.D. in Plant Science requires approximately three years for completion. Overall, the program consists of seminars and a research project leading to a thesis. Students must also complete a comprehensive examination within their first year of study. The research project is defined with the help of an advisory committee. Subsequent career paths are varied, but include work with government agencies, universities, or the private sector. This Bioinformatics option has an added emphasis on bioinformatics, including additional courses and seminars. The goal of this option is to train students to become researchers in the interdisciplinary field of bioinformatics, which lies at the intersection of biological/medical sciences and mathematics/computer science/engineering.

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

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

This Ph.D. in Plant Science requires approximately three years for completion. Overall, the program consists of seminars and a research project leading to a thesis. Students must also complete a comprehensive examination within their first year of study. The research project is defined with the help of an advisory committee. Subsequent career paths are varied, but include work with government agencies, universities, or the private sector. This Environment graduate option has an added emphasis on environmental sciences, including additional courses and seminars. It is aimed at students who wish to take an interdisciplinary approach in their graduate research on environmental issues and who wish to benefit from interactions with students from a wide range of disciplines.

section 11.9.11: Doctor of Philosophy (Ph.D.) Plant Science: Neotropical Environment

This Ph.D. in Plant Science requires approximately three years for completion. Overall, the program consists of seminars and a research project leading to a thesis. Students must also complete a comprehensive examination within their first year of study. The research project is defined with the help of an advisory committee. Subsequent career paths are varied, but include work with government agencies, universities, or the private sector. This option has an added emphasis on neotropical environments, including additional courses and seminars. Part of the program takes place in Panama.

section 11.9.12: Graduate Certificate (Gr. Cert.) Bioinformatics (15 credits)

****This program is currently under revision and will not be accepting applicants.****

The Graduate Certificate in Bioinformatics is a ne

PLNT 664	(12)	M.Sc. Thesis 1
PLNT 665	(12)	M.Sc. Thesis 2
PLNT 666	(15)	M.Sc. Thesis 3

Required Invisc6pConal SeminarTj/F0 8.1 Tf1 0 0 1 221.949 763.1441Tm(Reqsearch Horizons in Plant Science1)Tj1 0 0 1 165.864 763.1441T

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

Required Invitational Seminar

PLNT 690	(0)	Research Horizons in Plant Science 1
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Required Courses (6 credits)

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

Elective Courses (3 credits)

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

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

11.9.7 Master of Science, Applied (M.Sc.A.) Plant Science (Non-Thesis) (45 credits)

N.B. this program is under revision. Please contact Ms. Carolyn Bowes for information.

11.9.8 Doctor of Philosophy (Ph.D.) Plant Science

Students who have taken their M.Sc. degree at McGill University will be required to spend one term in study at another research institution.

Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previousM.a1 Ore633

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 lev

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