



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



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

## *Publication Information*

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- 1 About the Faculty of Agricultural and Environmental Sciences, including School of Human Nutrition, page 13
- 2 Macdonald Campus Facilities, page 13
  - 2.1 Morgan Arboretum, page 13
  - 2.2 Macdonald Campus Library, page 13
  - 2.3 Macdonald Campus Computing Centre, page 13
  - 2.4 Lyman Entomological Museum and Research Laboratory, page 13
  - 2.5 Brace Centre for Water Resources Management, page 14
- 3 About Agricultural & Environmental Sciences (Undergraduate), page 14
  - 3.1 Location, page 14
  - 3.2 The Faculty of Agricultural and Environmental Sciences, including School of Human Nutrition (Undergraduate), page 14
  - 3.3 Faculty Admission Requirements, page 14
  - 3.4 Student Information, page 15
    - 3.4.1 Student Rights and Responsibilities, page 15
    - 3.4.2 The Student Affairs Office, page 15
    - 3.4.3 Student Services, page 15
    - 3.4.4 Macdonald Campus Residences, page 15
    - 3.4.5 Student Life, page 15
    - 3.4.6 Fees, page 15
      - 3.4.6.1 Tuition Fees, page 15
      - 3.4.6.2 Other Expenses, page 15
    - 3.4.7 Immunization for Dietetics Majors, page 16
    - 3.4.8 Language Requirement for Professions, page 16
  - 3.5 Faculty Information and Regulations, page 16
    - 3.5.1 Minimum Credit Requirement, page 16
    - 3.5.2 Minimum Grade Requirement, page 16
    - 3.5.3 Academic Advisors, page 16
    - 3.5.4 Categories of Students, page 17
      - 3.5.4.1 Full-time Students, page 17
      - 3.5.4.2 Part-time Students, page 17
    - 3.5.5 Academic Standing, page 17
      - 3.5.5.1 Committee on Academic Standing, page 17
    - 3.5.6 Credit System, page 17
      - 3.5.6.1 School of Continuing Studies Courses, page 17
    - 3.5.7 Academic Credit Transfer, page 17
    - 3.5.8 Second Academic Majors, page 18
      - 3.5.8.1 Procedures for Minor Programs, page 18
    - 3.5.9 Course Change Information, page 18
    - 3.5.10 Graduate Courses Available to Undergraduates, page 18
    - 3.5.11 Attendance and Conduct in Class, page 18
    - 3.5.12 Incomplete Grades, page 18

- 
- 3.5.13 Examinations, page 19
    - 3.5.13.1 Reassessments and Rereads, page 19
    - 3.5.13.2 Deferred Examinations, page 19
  - 3.5.14 Degree Requirements, page 19
  - 3.5.15 Graduation Honours, page 19
  - 3.5.16 Scholarships, Bursaries, Prizes, and Medals, page 19
  - 4 Overview of Programs Offered, page 19
    - 4.1 Internship Opportunities, page 20
      - 4.1.1 FAES 200 / FAES 300 Internship Program, page 20
      - 4.1.2 AGRI 310 Internship in Agriculture/Environment, page 20
      - 4.1.3 AGRI 410D1 and AGRI 410D2 Agrology Internship, page 20
      - 4.1.4 AGRI 499 Agricultural Development Internship, page 21
    - 4.2 Exchange Programs (Overview), page 21
    - 4.3 Bachelor of Science in Agricultural and Environmental Sciences – B.Sc.(Ag.Env.Sc.) (Overview), page 21
      - 4.3.1 Majors and Honours, page 21
      - 4.3.2 Specializations, page 21
    - 4.4 Bachelor of Engineering in Bioresource Engineering – B.Eng.(Bioresource) (Overview), page 22
    - 4.5 Bachelor of Science in Food Science – B.Sc.(F.Sc.) (Overview), page 23
    - 4.6 Bachelor of Science in Nutritional Sciences – B.Sc.(Nutr.Sc.) (Overview), page 23
    - 4.7 Concurrent Bachelor of Science in Food Science – B.Sc.(F.Sc.) and Bachelor of Science in Nutritional Sciences – B.Sc.(Nutr.Sc.) (Overview), page 23
    - 4.8 Honours Programs (Overview), page 23
    - 4.9 Minor Programs (Overview), page 24
    - 4.10 Post-Baccalaureate Certificate Programs (Overview), page 24
    - 4.11 Diploma Program (Undergraduate) (Overview), page 24
    - 4.12 Diploma in Collegial Studies (Overview), page 24
    - 4.13 Environmental Sciences Programs (Overview), page 25
      - 4.13.1 Bieler School of Environment, page 25
      - 4.13.2 Environmental Programs on the Macdonald Campus, page 25
    - 4.14 Graduate Programs, page 25
  - 5 Browse Academic Programs, page 25
    - 5.1 Major Freshman/Foundation Year, page 25
      - 5.1.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Freshman/Foundation Year (30 credits) , page 26
      - 5.1.2 Bachelor of Engineering (Bioresource) (B.Eng.(Bioresource)) - Freshman/Foundation Year (30 credits) , page 27
      - 5.1.3 Bachelor of Science (Food Science) (B.Sc.(F.Sc.)) - Freshman/Foundation Year (30 credits) , page 28
      - 5.1.4 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Freshman/Foundation Year (30 credits) , page 28
      - 5.1.5 Concurrent Bachelor of Science Food Science (B.Sc. (F.Sc.)) and Bachelor of Science Nutritional Sciences (B.Sc. (Nutr.Sc.)) - Freshman/Foundation Year (Concurrent) (30 credits) , page 29
    - 5.2 Bachelor of Science (Agricultural and Environmental Sciences) – B.Sc.(Ag.Env.Sc.), page 29

- 
- 5.2.1 B.Sc.(Ag.Env.Sc.) Major and Honours Programs, page 29
    - 5.2.1.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Major Agricultural Economics (42 credits) , page 30
    - 5.2.1.2 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Honours Agricultural Economics (42 credits) , page 30
    - 5.2.1.3 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Major Agro-Environmental Sciences (42 credits) , page 32
    - 5.2.1.4 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Honours Agro-Environmental Sciences (54 credits) , page 33
    - 5.2.1.5 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Major Environmental Biology (42 credits) , page 34
    - 5.2.1.6 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Honours Environmental Biology (54 credits) , page 36
    - 5.2.1.7 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Major Global Food Security (42 credits) , page 37
    - 5.2.1.8 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Honours Global Food Security (54 credits) , page 38
    - 5.2.1.9 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Major Life Sciences (Biological and Agricultural) (42 credits) , page 40
    - 5.2.1.10 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Honours Life Sciences (Biological and Agricultural) (54 credits) , page 41
  - 5.2.2 Specializations, page 43
    - 5.2.2.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Agribusiness (24 credits) , page 43
    - 5.2.2.2 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Animal Biology (24 credits) , page 44
    - 5.2.2.3 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Animal Health and Disease (24 credits) , page 44
    - 5.2.2.4 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Animal Production (24 credits) , page 45
    - 5.2.2.5 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Applied Ecology (24 credits) , page 45
    - 5.2.2.6 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Ecological Agriculture (24 credits) , page 46
    - 5.2.2.7 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Environmental Economics (24 credits) , page 47
    - 5.2.2.8 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - International Agriculture (24 credits) , page 48
    - 5.2.2.9 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Life Sciences (Multidisciplinary) (24 credits) , page 49

- 
- 5.2.2.10 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Microbiology and Molecular Biotechnology (24 credits) , page 50
  - 5.2.2.11 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Plant Biology (24 credits) , page 50
  - 5.2.2.12 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Plant Production (24 credits) , page 51
  - 5.2.2.13 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Professional Agrology (24 credits) , page 51
  - 5.2.2.14 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Professional Agrology for Agribusiness (24 credits) , page 52
  - 5.2.2.15 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Soil and Water Resources (24 credits) , page 52
  - 5.2.2.16 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Wildlife Biology (24 credits) , page 53
  - 5.3 Bachelor of Engineering (Bioresource) – B.Eng.(Bioresource), page 54
    - 5.3.1 Bachelor of Engineering (Bioresource) (B.Eng.(Bioresource)) - Major Bioresource Engineering (113 credits) , page 54
    - 5.3.2 Bachelor of Engineering (Bioresource) (B.Eng.(Bioresource)) - Honours Bioresource Engineering (113 credits) , page 56
    - 5.3.3 Bachelor of Engineering (Bioresource) (B.Eng.(Bioresource)) - Major Bioresource Engineering - Professional Agrology (113 credits) , page 59
    - 5.3.4 Bachelor of Engineering (Bioresource) – B.Eng.(Bioresource) Related Programs, page 61
      - 5.3.4.1 Minor in Environmental Engineering, page 61
      - 5.3.4.2 Barbados Field Study Semester, page 61
      - 5.3.4.3 Internship Opportunities, page 62
  - 5.4 Bachelor of Science (Food Science) - B.Sc.(F.Sc.), page 62
    - 5.4.1 Bachelor of Science (Food Science) (B.Sc.(F.Sc.)) - Major Food Science - Food Science Option (90 credits) , page 62
    - 5.4.2 Bachelor of Science (Food Science) (B.Sc.(F.Sc.)) - Honours Food Science - Food Science Option (90 credits) , page 63
    - 5.4.3 Bachelor of Science (Food Science) (B.Sc.(F.Sc.)) - Major Food Science - Food Chemistry Option (90 credits) , page 64
    - 5.4.4 About the Concurrent B.Sc.(F.Sc.) and B.Sc.(Nutr.Sc.), page 65
      - 5.4.4.1 Concurrent Bachelor of Science in Food Science (B.Sc.(F.Sc.)) and Bachelor of Science Nutritional Sciences (B.Sc.(Nutr.Sc.)) - Food Science/Nutritional Science Major (Concurrent) (122 credits) , page 66
      - 5.4.4.2 Concurrent Bachelor of Science in Food Science (B.Sc.(F.Sc.)) and Bachelor of Science Nutritional Sciences (B.Sc.(Nutr.Sc.)) - Food Science/Nutritional Science Honours (Concurrent) (122 credits) , page 67
    - 5.4.5 Bachelor of Science (Food Science) – B.Sc.(F.Sc.) Related Programs, page 69
      - 5.4.5.1 Certificate in Food Science, page 69
  - 5.5 Bachelor of Science (Nutritional Sciences) – B.Sc.(Nutr.Sc.), page 69
    - 5.5.1 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Dietetics (115 credits) , page 69



- 
- 5.5.2 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Nutrition - Food Function and Safety (90 credits) , page 71
  - 5.5.3 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Nutrition - Global Nutrition (90 credits) , page 72
  - 5.5.4 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Nutrition - Health and Disease (90 credits) , page 74
  - 5.5.5 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Nutrition - Metabolism, Health and Disease (90 credits) , page 76
  - 5.5.6 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Nutrition - Sports Nutrition (90 credits) , page 77
  - 5.5.7 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Honours in Nutrition (90 credits) , page 79
  - 5.5.8 Bachelor of Science (Nutritional Sciences) – Related Programs, page 80
    - 5.5.8.1 Minor in Human Nutrition, page 80
    - 5.5.8.2 Concurrent Bachelor of Science in Food Science – B.Sc.(F.Sc.) and Bachelor of Science in Nutritional Sciences – B.Sc.(Nutr.Sc.) – Food Science/Nutritional Science Major, page 80
  - 5.6 Minor Programs, page 80
    - 5.6.1 Minor in Environment (Bieler School of Environment), page 80
    - 5.6.2 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor Agribusiness Entrepreneurship (18 credits) , page 80
    - 5.6.3 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor Agricultural Economics (24 credits) , page 81
    - 5.6.4 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor Agricultural Production (24 credits) , page 82
    - 5.6.5 Bachelor of Engineering (Bioresource) (B.Eng.(Bioresource)) - Minor Animal Biology (24 credits) , page 82
    - 5.6.6 Bachelor of Engineering (Bioresource) (B.Eng.(Bioresource)) - Minor Animal Health and Disease (24 credits) , page 83
    - 5.6.7 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor Applied Ecology (24 credits) , page 84
    - 5.6.8 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor Ecological Agriculture (24 credits) , page 85
    - 5.6.9 Minor in Environmental Engineering, page 85
    - 5.6.10 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor Human Nutrition (24 credits) , page 86
    - 5.6.11 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor International Agriculture (24 credits) , page 87
  - 5.7 Post-Baccalaureate Certificate Programs, page 88
    - 5.7.1 Certificate (Cert.) Ecological Agriculture (30 credits) , page 88
    - 5.7.2 Certificate (Cert.) Food Science (30 credits) , page 89
  - 5.8 Field Studies, page 90
    - 5.8.1 Africa Field Study Semester, page 90

- 
- 5.8.2 Barbados Field Study Semester, page 90
  - 5.8.3 Barbados Interdisciplinary Tropical Studies Field Semester, page 90
  - 5.8.4 Panama Field Study Semester, page 90
  - 6 Academic Units, page 90
    - 6.1 Department of Animal Science, page 90
      - 6.1.1 Location, page 90
      - 6.1.2 About the Department of Animal Science, page 91
    - 6.2 Department of Bioresource Engineering, page 91
      - 6.2.1 Location, page 91
      - 6.2.2 About the Department of Bioresource Engineering, page 91
    - 6.3 Farm Management and Technology Program, page 91
      - 6.3.1 Location, page 91
      - 6.3.2 About the Farm Management and Technology Program, page 92
      - 6.3.3 Diploma of College Studies — Farm Management Technology , page 92
      - 6.3.4 Academic Rules and Information – FMT, page 94
        - 6.3.4.1 Entrance Requirements – FMT, page 94
        - 6.3.4.2 Important Dates – FMT, page 95
        - 6.3.4.3 Registration – FMT, page 95
        - 6.3.4.4 Academic Standing – FMT, page 95
        - 6.3.4.5 Student Rights and Responsibilities, page 95
        - 6.3.4.6 Institutional Policy on the Evaluation of Student Achievement – FMT, page 95
      - 6.3.5 Fees and Expenses – FMT, page 96
        - 6.3.5.1 Fees, page 96
        - 6.3.5.2 Textbooks and Supplies, page 96
        - 6.3.5.3 Financial Assistance, page 96
      - 6.3.6 Residence Accommodation – FMT, page 96
    - 6.4 Department of Food Science and Agricultural Chemistry, page 96
      - 6.4.1 Location, page 96
      - 6.4.2 About the Department of Food Science, page 96
    - 6.5 School of Human Nutrition, page 97
      - 6.5.1 Location, page 97
      - 6.5.2 About the School of Human Nutrition, page 97
      - 6.5.3 Degrees Offered by the School of Human Nutrition, page 97
      - 6.5.4 Academic Information and Regulations, page 98
        - 6.5.4.1 Application Procedures, page 98
        - 6.5.4.2 Academic Standing, page 98
    - 6.6 Department of Natural Resource Sciences, page 98
      - 6.6.1 Location, page 98
      - 6.6.2 About the Department of Natural Resource Sciences, page 98
    - 6.7 Institute of Parasitology, page 99

- 
- 6.7.1 Location, page 99
  - 6.7.2 About the Institute of Parasitology, page 99
  - 6.8 Department of Plant Science, page 99
    - 6.8.1 Location, page 99
    - 6.8.2 About the Department of Plant Science, page 99



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## 1 About the Faculty of Agricultural and Environmental Sciences, including School of Human Nutrition

**Mission Statement:** The Faculty of Agricultural and Environmental Sciences is committed to excellence in teaching, research, and service to ensure that humanity's present and future food, health, and natural resource needs are met while protecting the environment.

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## 2 Macdonald Campus Facilities

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### 2.1 Morgan Arboretum

The Morgan Arboretum is one of McGill's teaching and research stations. It has 245 hectares of managed and natural woodlands, fields, and tree plantations used for environmental research and teaching in a wide range of courses. Eighteen formal tree collections contain groups of Canadian native trees and many useful and important exotics. In addition, over 170 species of birds, 30 species of mammals, and 20 species of reptiles and amphibians seasonally inhabit the property. The Arboretum features 25 kilometres of ski, snowshoe, and walking trails in a variety of forest ecosystems that are available for members of the Morgan Arboretum and visitors. A nature interpretation program is also offered at different times of the year. Conservation projects and forest operations, such as the production of maple syrup and firewood, are routinely done on a small-scale basis. More information is available at [mcgill.ca/nrs/facilities/arboretum](http://mcgill.ca/nrs/facilities/arboretum).

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### 2.2 Macdonald Campus Library

Located in the Barton Building, the Macdonald Campus Library offers outstanding collections, facilities, and services to support a broad range of information needs. The Library's collections encompass a vast range of research material with a specific focus on the areas of agricultural sciences, nutrition, and environmental sciences.

The Library's website leads users to a wealth of information, including the library catalogue, article databases, McGill theses, and instructive web pages on how to gain access to the material and services available to users. The Library's eZone computers provide specialized software such as ArcGIS, STATA, and EndNote. Printer-photocopiers, comfortable seating, three group study rooms equipped with LCD monitors, and a 24-hour study area are also available to you.

Librarians specializing in specific subject areas are available to help you find information for your course assignments or research topics, either in person or by phone, email, or chat. Research workshops are provided throughout the year.

More information is available at [mcgill.ca/library/branches/macdonald](http://mcgill.ca/library/branches/macdonald), or feel free to drop by.

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### 2.3 Macdonald Campus Computing Centre

The Macdonald Campus Computing Centre is managed by McGill's IT Customer Services (ICS) unit. Undergraduate computing labs are open 24/7, year round. These labs offer computers running Microsoft Office software, a variety of course-related software, and access to uPrint printers.

For support on all central IT services, contact the ICS Service Desk by email at [ITsupport@mcgill.ca](mailto:ITsupport@mcgill.ca) or call 514-398-3398. For more information and to search the IT Knowledge Base, visit the IT Services web page at [mcgill.ca/it](http://mcgill.ca/it).

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### 2.4 Lyman Entomological Museum and Research Laboratory

Originally established in 1914 and formerly housed in the Redpath Museum, the Lyman Entomological Museum was moved to the Macdonald Campus in 1961. It houses the largest university collection of insects in Canada, second in size only to the National Collection. The Museum also has an active graduate research program in association with the Department of Natural Resource Sciences. Study facilities are available, on request from the Curator, to all bona fide students of entomology. Visits by other interested parties can be arranged by calling 514-398-7914. More information is available at [mcgill.ca/historicalcollections/departmental/lyman](http://mcgill.ca/historicalcollections/departmental/lyman).

## 2.5 Brace Centre for Water Resources Management

The Brace Centre for Water Resources Management spans two faculties, the Faculty of Engineering and the Faculty of Agriculture and Environmental Sciences, whose members carry out advanced multidisciplinary research related to addressing today's complex water challenges. The centre is also a local chapter of the Quebec water research network, CentrEau. The centre's members engage in research, teaching, and specialized training, and draw on a wide range of facilities available within the University and the Montreal region. More information is available at [mcgill.ca/brace](http://mcgill.ca/brace).

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## 3 About Agricultural & Environmental Sciences (Undergraduate)

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### 3.1 Location

McGill University, Macdonald Campus  
21, 111 Lakeshore Road  
Sainte-Anne-de-Bellevue QC H9X 3V9  
Canada  
Telephone: 514-398-7925  
Website: [mcgill.ca/macdonald](http://mcgill.ca/macdonald)

The Faculty of Agricultural and Environmental Sciences and the School of Human Nutrition are located on the Macdonald Campus of McGill University, at the western end of the island of Montreal. Served by public transport (STM [www.stm.info](http://www.stm.info), bus, and train), it is easily reached from the McGill Downtown Campus and from the Pierre Elliott Trudeau International Airport. Special arrangements can be made for prospective students to use the McGill inter-campus [shuttle bus service](#). The shuttle service is available to all registered students who attend classes on both campuses.

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### 3.2 The Faculty of Agricultural and Environmental Sciences, including School of Human Nutrition (Undergraduate)

The Faculty of Agricultural and Environmental Sciences and the School of Human Nutrition are located on McGill University's Macdonald Campus, which occupies 650 hectares in a beautiful waterfront setting on the western tip of the island of Montreal.

Students can earn internationally recognized degrees in the fields of agricultural sciences and applied biosciences, food and nutritional sciences, environmental sciences, and bioresource engineering. Students have the opportunity, in all programs, to study abroad in places such as Panama, Barbados, or Africa. Students may also have the opportunity to participate in internships.

Macdonald is a very diverse and international campus. Students are taught by outstanding professors who are among the top in their fields. The campus has excellent facilities for teaching and research, including well-equipped laboratories, experimental farm and field facilities, and the Morgan Arboretum. The campus is surrounded by the Ottawa and St. Lawrence rivers.

The Faculty is at the forefront of advances in the basic sciences and engineering associated with food supply, human health and nutrition, and the environment; and it is a world leader in plant and animal biotechnology, bioproducts and bioprocessing, bioinformatics, food safety and food quality, environmental engineering, water management, soils, parasitology, microbiology, and ecosystem science and management.

The Macdonald Campus is an exciting place to live, work, study, learn, and discover. Its very intimate collegial and residential setting allows for strong interaction between staff and students, and for enriched student activity and participation in extracurricular activities. A hallmark of our undergraduate programs is the ability to provide hands-on learning experiences in the field and labs, and the smaller class sizes.

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### 3.3 Faculty Admission Requirements

For information about admission requirements and application deadlines for this Faculty, please refer to the *Undergraduate Admissions Guide* found at [mcgill.ca/applying](http://mcgill.ca/applying).

Applications are submitted directly online at [mcgill.ca/applying](http://mcgill.ca/applying). Please note that the same application is used for all undergraduate programs at McGill and two program choices can be entered. For further information, contact:

Student Affairs Office  
Macdonald Campus of McGill University  
21,111 Lakeshore Road  
Sainte-Anne-de-Bellevue QC H9X 3V9  
Telephone: 514-398-7925

Email: [studentinfo.macdonald@mcgill.ca](mailto:studentinfo.macdonald@mcgill.ca)

Website: [mcgill.ca/macdonald/prospective](http://mcgill.ca/macdonald/prospective)

For information about interfaculty transfers, see [University Regulations and Resources](#) > [Undergraduate](#) > [Registration](#) > [Interfaculty Transfer](#).

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## 3.4 Student Information

Friendly staff are on hand to answer your questions about academics, residence, athletics, student life, health concerns, and much more.

### 3.4.1 Student Rights and Responsibilities

The regulations and policies governing student rights and responsibilities at McGill University are published jointly by the Dean of Students' Office and the Secretariat, and they can be found at [mcgill.ca/secretariat/policies-and-regulations](http://mcgill.ca/secretariat/policies-and-regulations).

### 3.4.2 The Student Affairs Office

The Student Affairs Office—located in Laird Hall, Room 106—provides a wide variety of academic services. These include information about admission (prerequisites and program requirements), transfer credits, Academic Standing, examinations (deferrals, conflicts, rereads), exchange programs, interfaculty transfers, program changes, registration (course change, withdrawals), scholarships (in-course), second degrees, second majors, minors, study away, and graduation (convocation).

Website: [mcgill.ca/macdonald/studentinfo/sao](http://mcgill.ca/macdonald/studentinfo/sao).

### 3.4.3 Student Services

Please see [University Regulations and Resources](#) > [Undergraduate](#) > [Student Services](#) > [Student Services – Macdonald Campus](#). Further information is also available on our website: [mcgill.ca/macdonald-studentservices](http://mcgill.ca/macdonald-studentservices).

All *eligible* McGill students are entitled to use the Student Services located on both campuses, regardless of the faculty they are enrolled in.

### 3.4.4 Macdonald Campus Residences

Please see [University Regulations and Resources](#) > [Undergraduate](#) > [Residential Facilities](#) > [University Residences – Macdonald Campus](#); [mcgill.ca/students/housing/residence-options/macdonald](http://mcgill.ca/students/housing/residence-options/macdonald); or email [residences.macdonald@mcgill.ca](mailto:residences.macdonald@mcgill.ca).

### 3.4.5 Student Life

All undergraduate and Farm Management and Technology students are members of the [Macdonald Campus Students' Society](#) (MCSS). The MCSS, through the Students' Council, is involved in numerous campus activities such as social events, academic affairs, and the coordination of clubs and organizations.

The [Macdonald Campus Graduate Students' Society](#) (MCGSS) represents graduate students on the Macdonald Campus. MCGSS is part of McGill's [Post-Graduate Students' Society](#) (PGSS) which represents all graduate students at McGill.

### 3.4.6 Fees

Please refer to the [Student Accounts](#) website for information and step-by-step instructions regarding fees.

#### 3.4.6.1 Tuition Fees

Detailed information about your fees are on your e-bill and account summary by term on which can be found on Minerva.

General information on tuition and other fees is found in [University Regulations & Resources](#) > [Undergraduate](#) > [Fees](#).

#### 3.4.6.2 Other Expenses

In addition to tuition fees and the cost of accommodation and meals, you should be prepared to spend a minimum of \$1,000 (depending on your program) on prescribed textbooks and classroom supplies. The Macdonald Campus bookstore is open from 10:00 am to 5:00 pm, Monday to Friday. In addition to clothing and stationery, you can also purchase course materials online and pick them up at the Macdonald Campus Bookstore.

Uniforms are required for food laboratories. If you are in the B.Sc.(Nutr.Sc.) program, you will be advised of the uniform requirements on acceptance or promotion.

### 3.4.7 Immunization for Dietetics Majors

As a student in the Dietetics Major, you are required to initiate and complete the Compulsory Immunization Program for Health Care Students in Fall of U1, in the NUTR 208 Professional Practice Stage 1A course. Students will meet with our health nurse at the beginning of U1 and should have all previous vaccination records available at that time. Participation in any further Professional Practice (Stage) courses in the Dietetics program will only be permitted if all immunization requirements are complete. Updates to your immunizations may be required during your program. For full details, see [mcgill.ca/wellness-hub/hub-clinical-services/medical-notes-and-immunization-reviews](http://mcgill.ca/wellness-hub/hub-clinical-services/medical-notes-and-immunization-reviews).

### 3.4.8 Language Requirement for Professions

Quebec law requires that candidates seeking admission to provincially recognized Quebec professional corporations or *Ordres* have a working knowledge of the French language, i.e., be able to communicate verbally and in writing in that language. Agrologists, chemists, dietitians, and engineers are among those within this group.

For additional information, see [University Regulations and Resources > Undergraduate > Admission to Professional and Graduate Studies > : Language Requirements for Professions](#).

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## 3.5 Faculty Information and Regulations

Each student in the Faculty of Agricultural and Environmental Sciences must be aware of the Faculty Regulations as stated in this publication. While departmental and faculty advisors and staff are always available to give advice and guidance, the ultimate responsibility for completeness and correctness of your course selection and registration, for compliance with, and completion of your program and degree requirements, and for the observance of regulations and deadlines, *rests with you*. It is your responsibility to seek guidance if in any doubt; misunderstanding or misapprehension will not be accepted as cause for dispensation from any regulation, deadline, program, or degree requirement.

### 3.5.1 Minimum Credit Requirement

You must complete the minimum credit requirement for your degree as specified in your letter of admission.

Students are normally admitted to a four-year program requiring the completion of 120 credits, but Advanced Standing of up to 30 credits may be granted if you obtain satisfactory results in the Diploma of Collegial Studies, International Baccalaureate, French Baccalaureate, Advanced Levels, and Advanced Placement tests.

Normally, Quebec students who have completed the *Diplôme d'études collégiales* (DEC) or equivalent diploma are admitted to the first year of a program requiring the completion of a minimum of 90 credits, 113 credits for Bioresource Engineering, 115 credits for Dietetics, and 122 credits for the Concurrent Degrees in Food Science and Nutritional Sciences, including any missing basic science prerequisites.

Students from outside Quebec who are admitted on the basis of a high school diploma enter the Major Freshman/Foundation Year program, which comprises 30 credits (see [section 5.1: Major Freshman/Foundation Year](#) in this publication).

You will not receive credit toward your degree for any course that overlaps in content with a course successfully completed at McGill, at another university, at CEGEP, or Advanced Placement exams, Advanced Level results, International Baccalaureate Diploma, or French Baccalaureate.

Students transferring from another university must complete a minimum of 60 McGill credits in order to receive a McGill degree. A minimum of 72 McGill credits is required for the B.Eng.(Bioresource Engineering) degree.

If you are a student in the B.Sc.(Ag.Env.Sc.) and in the Diploma in Environment (AES), you must take a minimum of two-thirds of your course credits within the Faculty of Agricultural and Environmental Sciences.

### 3.5.2 Minimum Grade Requirement

You must obtain grades of C or better in any required, complementary, or Freshman/Foundation Year courses used to fulfill program requirements. You may not register in a course for which you have not passed all the prerequisite courses with a grade of C or better, except by written permission of the Departmental Chair concerned.

### 3.5.3 Academic Advisors

Upon entering the Faculty and before registering, you must consult with the [academic advisor of your program](#) for selection and scheduling of required, complementary, and elective courses. The academic advisor will normally continue to act in this capacity for the duration of your studies in the Faculty.

A Faculty advisor is also available in the Student Affairs Office to assist you with student record related matters.



### 3.5.4 Categories of Students

#### 3.5.4.1 Full-time Students

Full-time students in Satisfactory Standing take a minimum of 12 credits per academic term. A normal course load is considered to be 15 credits per term. The maximum number of credits allowed per academic term is 18 credits. Students who wish to be considered for Faculty in-course scholarships must be registered for 27 graded credits during the fall/winter academic year.

Students in Probationary Standing are not permitted to take more than 14 credits per term. In exceptional circumstances, the Committee on Academic Standing may give permission to attempt more.

#### 3.5.4.2 Part-time Students

Part-time students take fewer than 12 credits per term.

### 3.5.5 Academic Standing

You must prove that you can master the material of lectures and laboratories. Examinations are normally held at the end of each course, but other methods of evaluation may also be used. The grade assigned for a course represents your Academic Standing in all the coursework.

The following rules apply to your Academic Standing:

1. When your CGPA (or TGPA in the first term of the program) falls below 2.00, your Academic Standing becomes Probationary.
2. If you are in Probationary Standing, you may register for no more than 14 credits per term.
3. While in Probationary Standing, you must achieve a TGPA of 2.50 to continue in Probationary Standing or a CGPA of 2.00 in order to return to Satisfactory Standing. Failure to meet at least one of these conditions will result in Unsatisfactory Standing. In the case of Fall term, this will be Interim Unsatisfactory Standing and the rules for Probationary Standing will apply.
4. When your CGPA (or TGPA in the first term of the program) falls below 1.50, your Academic Standing becomes Unsatisfactory and you must withdraw. In the case of Fall term, the Standing will be Interim Unsatisfactory Standing and the rules for Probationary Standing will apply.
5. If you are in Unsatisfactory Standing, you may not continue in your program. You may apply for readmission only after your registration has been interrupted for at least one term (not including Summer term).
6. Readmission will be in the Standing Unsatisfactory/Readmit and a CGPA of 2.00 must be achieved to return to Satisfactory Standing or a TGPA of 2.50 must be achieved for Probationary Standing. If you fail to meet at least one of these conditions, you will be required to withdraw permanently.
7. Students in the School of Human Nutrition have additional standards in place for the professional program (Dietetics). See [section 5.5.1: Bachelor of Science \(Nutritional Sciences\) \(B.Sc.\(Nutr.Sc.\)\) - Major Dietetics \(115 credits\)](#).

#### 3.5.5.1 Committee on Academic Standing

The Faculty's Committee on Academic Standing, consisting of academic staff, administrative staff, and a student representative, reviews special requests made by students regarding their academic life. Please inquire at the Student Affairs Office, Laird Hall 106, to obtain an application.

### 3.5.6 Credit System

The credit assigned to a course reflects the effort it demands of you. Typically, one credit corresponds to three hours of work per week for one term. This includes lecture hours, other contact hours (like labs and tutorials), problem periods as well as personal study hours. For a standard 3-credit course, students should expect to invest nine hours of work weekly.

Refer to [University Regulations and Resources > Undergraduate > Student Records > : Credit System](#).

#### 3.5.6.1 School of Continuing Studies Courses

Not all School of Continuing Studies credit courses are recognized for credit within Faculty degree programs. Please contact the Faculty advisor in the Student Affairs Office before registering for such courses.

### 3.5.7 Academic Credit Transfer

Transfer credits based on courses taken at other institutions (completed with a grade that is equal to or higher than the grade/CGPA required to graduate from the host university) before entrance to this Faculty are calculated and assigned after you are accepted, and you have accepted the offer of admission.

Transfer credits may also be granted for courses taken at other university-level institutions (completed with a grade that is equal to or higher than the grade/CGPA required to graduate from the host university) while you are attending McGill University. You must secure permission to apply such credits to your program in this Faculty before you begin the work. Grades obtained in such courses do not enter into calculations of grade point averages (GPA).

Exemption from a required or complementary course on the basis of work completed at another institution must be approved by both the instructor of the appropriate McGill course and the academic advisor.

As a full-time degree student, you may register, with approval of the Student Affairs Office, for course(s) at any university in the province of Quebec through BCI (*Bureau de coopération interuniversitaire*, previously known as CREPUQ). Those courses successfully completed with a minimum grade of C (according

to the standards of the university giving the course) will be recognized for the purpose of your degree, but the grades obtained will not enter into your GPA calculations.

For universities outside Quebec, it is your responsibility to ensure that the host institution sends an official transcript to the Student Affairs Office. You must submit all documents required for approval of your transfer credits with your faculty at McGill within one month of completing your exchange program or study away. If you are studying at another Quebec university on an Inter-University Transfer (IUT) agreement, the host university sends your grade(s) to McGill automatically.

For further details, consult [University Regulations and Resources > Undergraduate > Student Records > : Transfer Credits](#) and [Undergraduate > Registration > : Quebec Inter-University Transfer Agreement](#), or go to [www.bci-qc.ca](http://www.bci-qc.ca) to access the online application.

### 3.5.8 Second Academic Majors

While registered in a major in the Faculty of Agricultural and Environmental Sciences, you may pursue a second set of courses of greater scope than a minor (e.g., faculty program, major, honours program, major concentration) in either this Faculty or another faculty. Application for a second academic major must be made to the Associate Dean (Student Affairs) in the Student Affairs Office, Laird Hall, Room 106.

Following are the regulations and procedures for second academic major:

1. You must be in Satisfactory Academic Standing with a minimum CGPA of 3.00 in order to apply for a second academic major.
2. In consultation with the appropriate authority associated with each major (academic advisor, Associate Dean), you must construct a proposal showing all the courses that are to be taken to satisfy the entrance and program requirements of both the first and second academic majors.
3. A minimum of 36 credits must be unique to the Second Major (i.e., not part of the required or complementary courses taken for the First Major).
4. You must obtain prior approval for all proposed second academic majors from your academic advisor and the Student Affairs Office and from the Associate Dean, advisor, or appropriate committee of the other faculty concerned.
5. Normally, proposals for second academic majors will be initiated before completion of U1 year of the First Academic Major.
6. The academic standards applicable to each major will be respected.

#### 3.5.8.1 Procedures for Minor Programs

If you want to register for a Minor program, you must complete a [Minor Approval form](#) (usually at the beginning of your U2 year), and return it duly completed and signed to the Student Affairs Office ([saoadvisor.macdonald@mcgill.ca](mailto:saoadvisor.macdonald@mcgill.ca)). The Minor program will then be added to your record and will automatically continue each year unless you officially cancel it in writing. If you want to cancel the Minor, you must notify both the Minor advisor and complete the program change form. The program change form must be submitted to the Student Affairs Office ([saoadvisor.macdonald@mcgill.ca](mailto:saoadvisor.macdonald@mcgill.ca)). The Minor Approval form and the Program Change form are available on the Faculty website and in the Student Affairs Office, Laird Hall, Room 106.

### 3.5.9 Course Change Information

1. **Courses:** please refer to [University Regulations and Resources > Undergraduate > Registration > : Course Change Period](#), and the [Important Dates website](#).
2. **Course withdrawal** (Transcript notation of “W”): please refer to [University Regulations and Resources > Undergraduate > Registration > : Course Withdrawal](#), and the [Important Dates website](#).
3. **Other changes:** information about changes may be obtained from the Student Affairs Office of the Faculty.

### 3.5.10 Graduate Courses Available to Undergraduates

Undergraduates who want to take graduate courses must have a cumulative grade point average (CGPA) of at least 3.2. Final approval must be obtained from Enrolment Services. Be advised that graduate courses taken for credit toward an undergraduate degree will not be credited toward a graduate program.

Please see a Faculty advisor in the [Student Affairs Office](#), Laird Hall, 106 for more information.

### 3.5.11 Attendance and Conduct in Class

Matters of discipline connected with, or arising from, the general arrangement for teaching are under the jurisdiction of the Dean of the Faculty.

Students may be admonished by a professor or instructor for dishonest or improper conduct. If disciplinary action is required, it must be reported to the Associate Dean (Student Affairs).

Punctual attendance at all classes, laboratory periods, tests, etc., is expected of all students.

### 3.5.12 Incomplete Grades

Please refer to [University Regulations and Resources > Undergraduate > Student Records > : Incomplete Courses](#).

### 3.5.13 Examinations

You should refer to [University Regulations and Resources > Undergraduate > : Examinations: General Information](#) for information about final examinations and deferred examinations. Examination schedules are posted on the McGill [website](#); normally 4 weeks after the start of classes for the **Tentative** Exam Schedule, and 6 weeks after the start of classes for the **Final** Exam Schedule.

Every student has a right to write essays, examinations, and theses in English or in French except in courses where knowledge of a language is one of the objectives of the course.

Oral presentations made as part of course requirements are in English.

#### 3.5.13.1 Reassessments and Rereads

Please refer to [University Regulations and Resources > Undergraduate > Examinations: General Information > Final Examinations > : Reassessments and Rereads: Faculty of Agricultural and Environmental Sciences](#).

#### 3.5.13.2 Deferred Examinations

Please refer to [University Regulations and Resources > Undergraduate > Examinations: General Information > Final Examinations > : Final Examinations: Deferred Examinations](#).

### 3.5.14 Degree Requirements

To be eligible for a B.Eng.(Bioresource), B.Sc.(Ag.Env.Sc.), B.Sc.(F.Sc.), or Concurrent B.Sc.(F.Sc.) and B.Sc.(Nutr.Sc.) degree, you must have passed—or achieved exemption—with a minimum grade of C in all required and complementary courses of the program. You must also have a CGPA of at least 2.00.

In addition, if you are a student in the Dietetics program, you must have completed the Stages of professional formation requiring a CGPA of 3.00.

You must have completed all Faculty and program requirements; see [section 3.5.1: Minimum Credit Requirement](#) in this publication.

In order to qualify for a McGill degree, you must complete a minimum residency requirement of 60 credits at McGill. If you are in the B.Sc.(Ag.Env.Sc.), you must take a minimum of two-thirds of your course credits within the Faculty of Agricultural and Environmental Sciences.



**Note for B.Eng.(Bioresource) students:** If you are completing a B.Eng.(Bioresource) degree, you must complete a minimum residency requirement of 72 credits at McGill. Note that the total credits for your program (143 credits) includes those associated with the Year 0 (Freshman/Foundation Year) courses.

### 3.5.15 Graduation Honours

For information on the designation of graduation honours and awards, see [University Regulations and Resources > Undergraduate > Graduation > : Graduation Honours](#).

### 3.5.16 Scholarships, Bursaries, Prizes, and Medals

Various scholarships, bursaries, prizes, and medals are open to entering, in-course, and graduating students. No application is required. Full details see [mcgill.ca/macdonald/studentinfo/undergrads/scholarships](http://mcgill.ca/macdonald/studentinfo/undergrads/scholarships).

## 4 Overview of Programs Offered

The Faculty of Agricultural and Environmental Sciences and the School of Human Nutrition offer degrees, certificates, and diplomas in:

- Bachelor of Engineering (Bioresource Engineering)
- Bachelor of Science (Agricultural and Environmental Sciences)
- Bachelor of Science (Food Science)
- Bachelor of Science (Nutritional Sciences)
- Concurrent degree in Food Science and Nutritional Sciences
- Certificate in Ecological Agriculture
- Certificate in Food Science
- Diploma in Environment
- Diploma of Collegial Studies in Farm Management and Technology

The Faculty of Agricultural and Environmental Sciences is one of the four faculties in partnership with the Bieler School of Environment.

Several programs offered by the Faculty and School can lead to professional accreditation. These include:

- the Agricultural Economics Major and the Agro-Environmental Sciences Major – membership in the *Ordre des agronomes du Québec* and other provincial Institutes of Agriculture;
- Bioresource Engineering – membership as a professional engineer in any province of Canada and the *Ordre des agronomes du Québec*;
- the Dietetics Major – membership in the Dietitians of Canada and the *Ordre des diététistes-nutritionnistes du Québec (ODNQ)*, previously named *Ordre professionnel des diététistes du Québec*;
- Food Science – accreditation by the Institute of Food Technologists and professional accreditation by the *Ordre des chimistes du Québec*.

Professional Practice experiences to complete the Dietetics practicum are provided in the McGill teaching hospitals and in a wide variety of health, education, business, government, and community agencies.

The Faculty also offers M.Sc. and Ph.D. programs in a variety of areas. Further information about these programs is available in the Faculty of Agricultural and Environmental Studies [Graduate and Postdoctoral Studies](#) section.

#### Programs Offered by the Faculty of Agricultural and Environmental Sciences

[section 5.2: Bachelor of Science \(Agricultural and Environmental Sciences\) – B.Sc.\(Ag.Env.Sc.\)](#)

[section 5.3: Bachelor of Engineering \(Bioresource\) – B.Eng.\(Bioresource\)](#)

[section 5.4: Bachelor of Science \(Food Science\) - B.Sc.\(F.Sc.\)](#)

[section 5.5: Bachelor of Science \(Nutritional Sciences\) – B.Sc.\(Nutr.Sc.\)](#)

[section 4.7: Concurrent Bachelor of Science in Food Science – B.Sc.\(F.Sc.\) and Bachelor of Science in Nutritional Sciences – B.Sc.\(Nutr.Sc.\) \(Overview\)](#)

[section 4.8: Honours Programs \(Overview\)](#)

[section 4.9: Minor Programs \(Overview\)](#)

[section 4.10: Post-Baccalaureate Certificate Programs \(Overview\)](#)

[section 4.11: Diploma Program \(Undergraduate\) \(Overview\)](#)

[section 4.12: Diploma in Collegial Studies \(Overview\)](#)

[section 4.13: Environmental Sciences Programs \(Overview\)](#)

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## 4.1 Internship Opportunities

Internships allow students to gain practical, hands-on experience and develop skill sets that are frequently in high demand by employers. Internships involve a work placement where you are exposed to the main areas of operation of your employer. Each work placement is unique, and you benefit from a program developed exclusively for you by your employer and your instructor.

### 4.1.1 FAES 200 / FAES 300 Internship Program

As a full-time undergraduate student (with a CGPA of 2.7 or higher) in the Faculty of Agricultural and Environmental Sciences, you have the opportunity to participate in the Internship program.

The internship should be a minimum length of 10 weeks, with the student working 35 hours a week or more. **FAES 200** is a non-credit (pass or fail) course. **FAES 300** is a 3-credit course, and you will receive a final grade on your transcript. The internship should be related to your field of study.

### 4.1.2 AGRI 310 Internship in Agriculture/Environment

The objective of AGRI 310 is to give you experience working in an enterprise that is related to your field of study, and to find out how your studies can contribute to your understanding and performance in the workplace environment. The internship should be a minimum length of 12 weeks. Through observations of the enterprise's functioning, the decision-making process, and the economic constraints, you should obtain a better understanding of the technical, economic, and social challenges faced by enterprises in your field of study. AGRI 310 is a 3-credit course.

### 4.1.3 AGRI 410D1 and AGRI 410D2 Agrology Internship

As a qualified student in the B.Sc.(Ag.Env.Sc.), you have the opportunity to participate in a 420-hour-minimum internship related to your field of study.

**AGRI 410** is part of the Professional Agrology Specialization and constitutes practical training as required by the *Ordre des agronomes du Québec*. Each internship placement must be approved by the instructor.

#### 4.1.4 AGRI 499 Agricultural Development Internship

**AGRI 499** is a supervised internship which provides practical experience working on agricultural issues related to international development. The internship can take many forms, including work in a developing country, for an agency that focuses on international development, or on a research project that aims at solving problems faced by developing populations. Each internship placement must be approved by the instructor.

#### 4.2 Exchange Programs (Overview)

The Faculty of Agricultural and Environmental Sciences participates in all University-wide student exchange programs available at McGill and also has Faculty-specific exchange programs. For more information, see [Study Abroad & Field Studies > Undergraduate > : Exchange Programs](#), and [mcgill.ca/macdonald/studentinfo/undergrads/studying-away-mcgill](http://mcgill.ca/macdonald/studentinfo/undergrads/studying-away-mcgill).

#### 4.3 Bachelor of Science in Agricultural and Environmental Sciences – B.Sc.(Ag.Env.Sc.) (Overview)

Students register in one **major** and at least one **specialization**. They may design their own program by choosing any major, and at least one specialization (see notes below for the majors in Environment and specializations in Agricultural Economics). By choosing two different specializations, students have the option of developing their own interdisciplinary interests. They may also choose to do a minor. The multidisciplinary specialization is designed for those interested in broad training.



**Note:** Students choosing the major in Environment will select a concentration instead of a specialization.



**Note:** Specializations in the Agricultural Economics major are restricted to Agricultural Economics students.

All the required and complementary courses for the major must be completed in full. Within each specialization, at least 18 credits must be unique, i.e., they only count for that specialization and do not overlap with either the major or a second specialization. At least 12 credits must be from 400-level courses or higher.

These programs are also available as **honours** programs for students after they have completed their U2 year if they meet the requirements. See individual programs for details.

##### 4.3.1 Majors and Honours

Graduates of programs marked with an asterisk (\*) can be eligible for membership in the *Ordre des agronomes du Québec* and other provincial institutes of agriculture.

- Agricultural Economics \*
- Agro-environmental Sciences \*
- Environmental Biology
- Global Food Security
- Life Sciences (Biological and Agricultural)
- Environment – see [Bieler School of Environment > Undergraduate > : Major in Environment - B.Sc.\(Ag.Env.Sc.\) and B.Sc.](#)

Full program descriptions are listed at [section 5.2.1: B.Sc.\(Ag.Env.Sc.\) Major and Honours Programs](#).



**Note:** In the program description for each major is a suggested list of specializations that complement that major.

##### 4.3.2 Specializations

Each specialization consists of 24 credits of courses (required and complementary) that provide a coherent package designed to prepare students for a future in a given discipline. Students will select at least one specialization. However, students wishing to broaden their training have the option of choosing to do two. Although the list of suggested specializations appears under each major in the programs section, students interested in other specializations should consult with their academic advisor.

The following are specializations for the major programs listed above in Agricultural Economics, Agro-Environmental Sciences, Environmental Biology, Global Food Security, and Life Sciences (Biological and Agricultural).

Full program descriptions are also listed at [section 5.2.2: Specializations](#).

- Agribusiness, [section 5.2.2.1: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Agribusiness \(24 credits\)](#)

- Animal Biology, [section 5.2.2.2: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Animal Biology \(24 credits\)](#)
- Animal Health and Disease, [section 5.2.2.3: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Animal Health and Disease \(24 credits\)](#)
- Animal Production, [section 5.2.2.4: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Animal Production \(24 credits\)](#)
- Applied Ecology, [section 5.2.2.5: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Applied Ecology \(24 credits\)](#)
- Ecological Agriculture, [section 5.2.2.6: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Ecological Agriculture \(24 credits\)](#)
- Environmental Economics, [section 5.2.2.7: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Environmental Economics \(24 credits\)](#)
- International Agriculture, [section 5.2.2.8: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - International Agriculture \(24 credits\)](#)
- Life Sciences (Multidisciplinary), [section 5.2.2.9: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Life Sciences \(Multidisciplinary\) \(24 credits\)](#)
- Microbiology and Molecular Biotechnology, [section 5.2.2.10: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Microbiology and Molecular Biotechnology \(24 credits\)](#)
- Plant Biology, [section 5.2.2.11: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Plant Biology \(24 credits\)](#)
- Plant Production, [section 5.2.2.12: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Plant Production \(24 credits\)](#)
- Professional Agrology, [section 5.2.2.13: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Professional Agrology \(24 credits\)](#)
- Professional Agrology for Agribusiness, [section 5.2.2.14: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Professional Agrology for Agribusiness \(24 credits\)](#)
- Wildlife Biology, [section 5.2.2.16: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Wildlife Biology \(24 credits\)](#)

#### 4.4 Bachelor of Engineering in Bioresource Engineering – B.Eng.(Bioresource) (Overview)

Bioresource engineering is a unique branch of engineering encompassing biological, agricultural, food, and environmental engineering disciplines, as well as many traditional engineering fields; its focus is the application of professional engineering skills to biological systems. The fundamental basis of bioresource engineering is the transdisciplinary interaction between engineering science and design, with biological, physical, chemical, and other natural sciences. Bioresource engineers strive to design and implement solutions for food sustainability and the well-being of society while maintaining the high-quality of the environment for generations to come.

Together with other B.Eng. programs offered by peer engineering departments in the Faculty of Engineering, Bioresource Engineering is accredited through the Canadian Engineering Accreditation Board. Therefore, graduates of the bachelor bioresource engineering program are eligible for registration as professional engineers (P.Eng.) in any province in Canada, as well as some international jurisdictions. The optional Bioresource Engineering Professional Agrology program qualifies graduates to apply for registration to the *Ordre des agronomes du Québec* and similar licensing bodies in other provinces in addition to the P.Eng. license.

The complementary portion of the Bioresource Engineering curriculum is organized according to three non-restrictive streams, including: Bio-Environmental Engineering, Bio-Process Engineering, and Bio-Production Engineering.

Students who follow the **Bio-Environmental Engineering** stream will learn to be responsible stewards of the environment and natural resources. This stream includes the study of soil and water quality management and conservation, organic waste treatment, urban and rural ecology, sustainability engineering, biodiversity preservation, climate change adaptation, and many other related topics.

Students who follow the **Bio-Production Engineering** stream use natural sciences and engineering skills to design systems and machines for the production of different types of crops, animal-based products, and biomass. Students learn about the design of machines and structures, different production systems and technologies, instrumentation and controls, geospatial data management, precision agriculture, and emerging intelligent bio-production concepts.

Through the **Bio-Process Engineering** stream, students apply engineering principles to transform agricultural commodities and biomass into products such as food, fiber, fuel, and biochemicals. Topics include the engineering of foods and food processes, physical properties of biological materials, post-harvest technology, fermentation and bio-processing, the management of organic wastes, biotechnology, the design of machinery for bioprocessing, etc.

In addition, students may choose to follow the Bioresource Engineering **Professional Agrology** as well as the Bioresource Engineering Honors Program. Multiple minors are also available. For details related to curriculum options and to select the most suitable stream, please refer to the Departmental website at [mcgill.ca/bioeng](http://mcgill.ca/bioeng).

All required and complementary courses must be passed with a minimum grade of C. Bioresource Engineering students spend one term on the Downtown Campus of McGill University taking courses from the Faculty of Engineering.

Students can also pursue a minor. Several possibilities are: Agricultural Production, Environment, Ecological Agriculture, Biotechnology, Computer Science, Construction Engineering and Management, Entrepreneurship, and Environmental Engineering. Details of some of these minors can be found under [Faculty of Engineering > Undergraduate > Browse Academic Units & Programs > : Minor Programs](#). To complete a minor, it is necessary to spend at least one extra term beyond the normal requirements of the B.Eng.(Bioresource) program.



**Note:** If you are completing a B.Eng.(Bioresource) degree, you must complete a minimum residency requirement of 72 credits at McGill. The total credits for your program (143 credits) include those associated with the Year 0 (Freshman/Foundation Year) courses.

See [section 5.3: Bachelor of Engineering \(Bioresource\) – B.Eng.\(Bioresource\)](#) for a list of B.Eng.(Bioresource) programs offered.

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#### 4.5 Bachelor of Science in Food Science – B.Sc.(F.Sc.) (Overview)

Refer to [section 5.4: Bachelor of Science \(Food Science\) - B.Sc.\(F.Sc.\)](#) for a full list of B.Sc.(F.Sc.) programs offered.

##### Food Science

- Food Chemistry Option
- Food Science Option

The Food Science program has been designed to combine the basic sciences—particularly chemistry—with specialty courses that are directly related to the discipline.

For academic advising, please consult [mcgill.ca/macdonald/studentinfo/advising](http://mcgill.ca/macdonald/studentinfo/advising).

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#### 4.6 Bachelor of Science in Nutritional Sciences – B.Sc.(Nutr.Sc.) (Overview)

##### Nutritional Sciences Majors

- Dietetics (professional program leading to professional licensing as Dietitian/Nutritionist)
- Nutrition (available in four concentrations):
  - Food Function and Safety
  - Global Nutrition
  - Health and Disease
  - Sports Nutrition
- Food Science/Nutritional Sciences (concurrent degree)

Refer to [section 5.5: Bachelor of Science \(Nutritional Sciences\) – B.Sc.\(Nutr.Sc.\)](#) for a full list of B.Sc.(Nutr.Sc.) programs offered.

For academic advising, please consult [mcgill.ca/macdonald/studentinfo/advising](http://mcgill.ca/macdonald/studentinfo/advising).

Freshman/Foundation Year advisor  
Christine Gurekian  
Macdonald-Stewart Building, Room MS2-019  
Telephone: 514-398-7842  
Email: [christinenadia.gurekian@mcgill.ca](mailto:christinenadia.gurekian@mcgill.ca)

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#### 4.7 Concurrent Bachelor of Science in Food Science – B.Sc.(F.Sc.) and Bachelor of Science in Nutritional Sciences – B.Sc.(Nutr.Sc.) (Overview)

Please refer to [section 5.4.4: About the Concurrent B.Sc.\(F.Sc.\) and B.Sc.\(Nutr.Sc.\)](#) for details.

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#### 4.8 Honours Programs (Overview)

##### Honours Programs

- [section 5.2.1.2: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Honours Agricultural Economics \(42 credits\)](#)
- [section 5.2.1.4: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Honours Agro-Environmental Sciences \(54 credits\)](#)
- [section 5.2.1.6: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Honours Environmental Biology \(54 credits\)](#)
- [section 5.2.1.8: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Honours Global Food Security \(54 credits\)](#)
- [section 5.2.1.10: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Honours Life Sciences \(Biological and Agricultural\) \(54 credits\)](#)
- [section 5.3.2: Bachelor of Engineering \(Bioresource\) \(B.Eng.\(Bioresource\)\) - Honours Bioresource Engineering \(113 credits\)](#)
- [section 5.4.2: Bachelor of Science \(Food Science\) \(B.Sc.\(F.Sc.\)\) - Honours Food Science - Food Science Option \(90 credits\)](#)
- [section 5.5.7: Bachelor of Science \(Nutritional Sciences\) \(B.Sc.\(Nutr.Sc.\)\) - Honours in Nutrition \(90 credits\)](#)
- [section 5.4.4.2: Concurrent Bachelor of Science in Food Science \(B.Sc.\(F.Sc.\)\) and Bachelor of Science Nutritional Sciences \(B.Sc.\(Nutr.Sc.\)\) - Food Science/Nutritional Science Honours \(Concurrent\) \(122 credits\)](#)

- : [Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Honours Environment \(69 credits\)](#), listed under the [Bieler School of Environment](#)

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#### 4.9 Minor Programs (Overview)

##### Minor Programs

- Agribusiness Entrepreneurship – [section 5.6.2: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor Agribusiness Entrepreneurship \(18 credits\)](#)
- Agricultural Economics – [section 5.6.3: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor Agricultural Economics \(24 credits\)](#)
- Agricultural Production – [section 5.6.4: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor Agricultural Production \(24 credits\)](#)
- Animal Biology – [section 5.6.5: Bachelor of Engineering \(Bioresource\) \(B.Eng.\(Bioresource\)\) - Minor Animal Biology \(24 credits\)](#)
- Animal Health and Disease – [section 5.6.6: Bachelor of Engineering \(Bioresource\) \(B.Eng.\(Bioresource\)\) - Minor Animal Health and Disease \(24 credits\)](#)
- Applied Ecology – [section 5.6.7: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor Applied Ecology \(24 credits\)](#)
- Ecological Agriculture – [section 5.6.8: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor Ecological Agriculture \(24 credits\)](#)
- Environmental Engineering – [section 5.6.9: Minor in Environmental Engineering](#)
- Human Nutrition – [section 5.6.10: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor Human Nutrition \(24 credits\)](#)
- International Agriculture – [section 5.6.11: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor International Agriculture \(24 credits\)](#)
- Environment – listed under [Bieler School of Environment > Undergraduate > Minor in Environment > : Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) or Bachelor of Science \(B.Sc.\) - Minor Environment \(18 credits\)](#)
- Some minors of interest to FAES students can also be found at : [Minor for Non-Management Students](#) – listed under [Desautels Faculty of Management](#)

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#### 4.10 Post-Baccalaureate Certificate Programs (Overview)

The Faculty offers the following post-baccalaureate certificate programs.

##### Post-Baccalaureate Certificate Programs

- Ecological Agriculture
- Food Science

Please refer to [section 5.7: Post-Baccalaureate Certificate Programs](#) for program descriptions and details.

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#### 4.11 Diploma Program (Undergraduate) (Overview)

##### Diploma Program (Undergraduate)

- Diploma in Environment – see [Bieler School of Environment > Undergraduate > Diploma in Environment > : Diploma \(Dip.\) Environment \(30 credits\)](#)

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#### 4.12 Diploma in Collegial Studies (Overview)

##### Diploma in Collegial Studies

- [section 6.3: Farm Management and Technology Program](#)



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## 4.13 Environmental Sciences Programs (Overview)

### 4.13.1 Bieler School of Environment

The Bieler School of Environment is a joint initiative of the Faculty of Agricultural and Environmental Sciences, the Faculty of Arts, and the Faculty of Science. It offers a B.Sc.(Ag.Env.Sc.) Major in Environment, a B.Sc. Major in Environment, a B.A. & Sc. Interfaculty Program in Environment, a B.A. Faculty Program in Environment, a Minor in Environment, and a Diploma in Environment. These programs allow you to choose to study on both the Macdonald and Downtown campuses.

### 4.13.2 Environmental Programs on the Macdonald Campus

A number of integrated environmental science programs are offered on the Macdonald Campus, particularly within the B.Sc.(Ag.Env.Sc.) and B.Eng.(Bioresource) degrees. The objective of these interdepartmental programs is to provide a well-rounded training in a specific interdisciplinary subject as well as a basis for managing natural resources. For a complete list of the programs, see [section 4: Overview of Programs Offered](#).

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## 4.14 Graduate Programs

Graduate work may be undertaken on the Macdonald Campus, through the following academic units:

- [Animal Science](#)
- [Bioresource Engineering](#)
- [Food Science and Agricultural Chemistry](#)
- [School of Human Nutrition](#)
- [Natural Resource Sciences](#)
- [Institute of Parasitology](#)
- [Plant Science](#)

The advanced courses of study offered lead to the degrees of Master of Science, Master of Science Applied, and Doctor of Philosophy.

Information on these programs and related fellowships is available from the Graduate and Postdoctoral Studies office, Macdonald Campus of McGill University, 2111 Lakeshore Road, Macdonald-Stewart Building, Sainte-Anne-de-Bellevue QC H9X 3V9 or by contacting [gradstudies.macdonald@mcgill.ca](mailto:gradstudies.macdonald@mcgill.ca).

Further information including full program lists is offered in the Faculty of Agricultural and Environmental Sciences [Graduate and Postdoctoral Studies section](#), and details regarding theses, registration, fellowships, etc., can be accessed at [mcgill.ca/gps](http://mcgill.ca/gps).

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## 5 Browse Academic Programs

Degree programs at the undergraduate level in the Faculty may lead to a B.Sc. degree in Agricultural and Environmental Sciences (Ag.Env.Sc.), a B.Sc. in Food Science (F.Sc.), a B.Sc. in Nutritional Sciences (Nutr.Sc.), a B.Eng. in Bioresource Engineering or concurrent B.Sc. in both Food Science and Nutritional Sciences. The Faculty also offers post-baccalaureate undergraduate Certificate programs in Food Science and Ecological Agriculture as well as a Diploma in Environment.

The Bieler School of Environment also offers several B.Sc.(Ag.Env.Sc.) programs; for more information, please visit the [Bieler School of Environment](#) section.

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### 5.1 Major Freshman/Foundation Year

#### Program Director

Dr. David Titley-Peloquin  
Macdonald-Stewart Building, Room 1-022  
Telephone: 514-398-7976

The Freshman/Foundation Year program is designed to provide a basic science foundation to students entering university for the first time from a high school system (outside of the Quebec CEGEP system). The Freshman/Foundation Year program consists of at least 30 credits in fundamental mathematics and science courses in preparation for one of the following degree programs:

- B.Sc. (Agricultural & Environmental Sciences)
- B.Eng. (Bioresource)
- B.Sc. (Nutritional Sciences)
- B.Sc. (Food Science)
- Concurrent B.Sc. (Food Science) and B.Sc. (Nutritional Sciences)

Students who have completed the Diploma of Collegial Studies, Advanced Placement Exams, Advanced Levels, the International Baccalaureate, the French Baccalaureate, and/or McGill placement examinations may receive exemption and/or credit for all or part of the Freshman/Foundation Year courses (basic science courses in biology, chemistry, physics, and mathematics). Students who have completed courses at other universities or colleges may also receive exemptions and/or credits. Students should consult with the Faculty's Student Affairs Office.

### 5.1.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Freshman/Foundation Year (30 credits)

(All majors except Agricultural Economics - see Advising Notes below\*)

If you are entering university for the first time from a high school system, outside of the Quebec CEGEP system, you will be required to complete a Freshman/Foundation year of at least 30 credits as listed below.

Normally, students registered in the Faculty of Agricultural and Environmental Sciences Freshman/Foundation Year program may take a maximum of 8 credits outside the Faculty offerings to meet the requirements of the program. Permission to exceed this limit must be received from the Associate Dean (Student Affairs) prior to registration.

Note: If you are not certain that you have adequate math and/or physics skills to commence the freshman/foundation year you may wish to take preparatory courses prior to the normal Fall semester. You are encouraged to discuss your potential need with your academic adviser. Mathematical skill level will be determined during the first week of classes. Your freshman/foundation year adviser may recommend that you register for an additional weekly Pre-Calculus Lab, of one credit, which may be applied towards the required credits of the degree program.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

#### Required Courses - Fall (14.5 credits)

AEBI 120	(3)	General Biology
AECH 110	(4)	General Chemistry 1
AEMA 101	(3)	Calculus 1
AEPH 112	(4)	Introductory Physics 1
AGRI 195	(.5)	Freshman Seminar 1

#### Required Courses - Winter (12.5 credits)

AECH 111	(4)	General Chemistry 2
AEMA 102	(4)	Calculus 2
AEPH 114	(4)	Introductory Physics 2
AGRI 196	(.5)	Freshman Seminar 2

#### Elective - Winter (3 credits)

#### B.Sc. (Ag. & Env. Sci.) - Agricultural Economics Major - Freshman/Foundation Year (30 cr.)

If you are entering university for the first time from a high school system, outside of the Quebec CEGEP system, you will be required to complete a Freshman/Foundation year of at least 30 credits as listed below.

Note: If you are not certain that you have adequate math and/or physics skills to commence the Freshman/Foundation year you may wish to take preparatory courses prior to the normal Fall semester. You are encouraged to discuss your potential need with your academic adviser. Mathematical skill level will be determined during the first week of classes. Your freshman/foundation year adviser may recommend that you register for an additional weekly Pre-calculus Lab, of one credit, which may be applied towards the required credits of the degree program.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>.

#### Required Courses - Fall (14 credits)

AECH 110	(4)	General Chemistry 1
AEMA 101	(3)	Calculus 1
AEPH 112	(4)	Introductory Physics 1
AGEC 200**	(3)	Principles of Microeconomics

**Required Courses - Winter (10 credits)**

AEBI 122	(3)	Cell Biology
AEHM 205	(3)	Science Literacy
AEMA 102	(4)	Calculus 2

**Complementary Courses - Winter (6 credits)**

One of the following:

BREE 103	(3)	Linear Algebra
NUTR 301	(3)	Psychology

One of the following:

AGEC 201**	(3)	Principles of Macroeconomics
AGEC 231**	(3)	Economic Systems of Agriculture

**Advising Notes:**

\* Freshman/Foundation Year students intending to major in Agricultural Economics in the B.Sc. (Ag. & Env. Sci.) degree program should note that the courses AEBI 120 (General Biology), AECH 111 (General Chemistry 2), and AEPH 114 (Introductory Physics 2) are required for all other majors in the B.Sc. (Ag. & Env. Sci.) degree. Students who are uncertain about their choice of major should be completing the "regular" Agricultural & Environmental Sciences Freshman/ Foundation Year program; the AGEC 200/201 courses would then be taken as part of the "regular" U1 curriculum should they ultimately decide on the Agricultural Economics Major.

\*\* Freshman/Foundation Year students planning to choose the Agricultural Economics Major will still be required to complete 90 credits in the Major. Since AGEC 200 and AGEC 201/AGEC 231 are normally required in the U1 year of the program, students who take these courses in their freshman/foundation year will be required to substitute 6 other credits. Students should discuss suitable replacement courses with their adviser.

**5.1.2 Bachelor of Engineering (Bioresource) (B.Eng.(Bioresource)) - Freshman/Foundation Year (30 credits)**

If you are entering university for the first time from a high school system (outside of the Quebec CEGEP system) you will be required to complete a Freshman/Foundation year of at least 30 credits as listed below.

Normally, students registered in the Faculty of Agricultural and Environmental Sciences Freshman/Foundation Year program may take a maximum of 8 credits outside the Faculty offerings to meet the requirements of the program. Permission to exceed this limit must be received from the Associate Dean (Student Affairs) prior to registration.

Note: If you are not certain that you have adequate math and/or physics skills to commence the freshman/foundation year you may wish to take preparatory courses prior to the normal Fall semester. You are encouraged to discuss your potential need with your academic adviser. Mathematical skill level will be determined during the first week of classes. Your Freshman/Foundation Year adviser may recommend that you register for an additional weekly Pre-calculus Lab, of one credit, which may be applied towards the required credits of the degree program.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

**Required Courses - Fall (14.5 credits)**

AEBI 120	(3)	General Biology
AECH 110	(4)	General Chemistry 1
AEMA 101	(3)	Calculus 1
AEPH 113	(4)	Physics 1
BREE 187	(.5)	Freshman Seminar 1

**Required Courses - Winter (15.5 credits)**

AECH 111	(4)	General Chemistry 2
AEMA 102	(4)	Calculus 2
AEPH 115	(4)	Physics 2
BREE 103	(3)	Linear Algebra
BREE 188	(.5)	Freshman Seminar 2

**5.1.3 Bachelor of Science (Food Science) (B.Sc.(F.Sc.)) - Freshman/Foundation Year (30 credits)**

If you are entering university for the first time from a high school system (outside of the Quebec CEGEP system), you will be required to complete a freshman/foundation year of at least 30 credits as listed below.

Normally, students registered in the Faculty of Agricultural and Environmental Sciences Freshman/Foundation Year program may take a maximum of 8 credits outside the Faculty offerings to meet the requirements of the program. Permission to exceed this limit must be received from the Associate Dean (Student Affairs) prior to registration.

Note: If you are not certain that you have adequate math and/or physics skills to commence the Freshman/Foundation year, you may wish to take preparatory courses prior to the normal Fall semester. You are encouraged to discuss your potential need with your academic adviser. Mathematical skill level will be determined during the first week of classes. Your Freshman/Foundation Year adviser may recommend that you register for an additional weekly Pre-calculus Lab, of one credit, which may be applied towards the required credits of the degree program.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

**Required Courses - Fall (14.5 credits)**

AEBI 120	(3)	General Biology
AECH 110	(4)	General Chemistry 1
AEMA 101	(3)	Calculus 1
AEPH 112	(4)	Introductory Physics 1
AGRI 195	(.5)	Freshman Seminar 1

**Required Courses - Winter (12.5 credits)**

AECH 111	(4)	General Chemistry 2
AEMA 102	(4)	Calculus 2
AEPH 114	(4)	Introductory Physics 2
AGRI 196	(.5)	Freshman Seminar 2

**Elective - Winter (3 credits)****5.1.4 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Freshman/Foundation Year (30 credits)**

The B.Sc.(Nutr.Sc.) Freshman/Foundation Year is designed to provide the required science entrance prerequisites for students entering university for the first time from a high school system (outside of the Quebec CEGEP system).

**Required Courses - Fall (14.5 credits)**

AEBI 120	(3)	General Biology
AECH 110	(4)	General Chemistry 1
AEMA 101	(3)	Calculus 1
AEPH 112	(4)	Introductory Physics 1
AGRI 195	(.5)	Freshman Seminar 1

**Required Courses - Winter (15.5 credits)**

AEBI 122	(3)	Cell Biology
AEMA 102	(4)	Calculus 2
AEPH 114	(4)	Introductory Physics 2
AGRI 196	(.5)	Freshman Seminar 2
FDSC 230	(4)	Organic Chemistry

### 5.1.5 Concurrent Bachelor of Science Food Science (B.Sc. (F.Sc.)) and Bachelor of Science Nutritional Sciences (B.Sc. (Nutr.Sc.)) - Freshman/Foundation Year (Concurrent) (30 credits)

These freshman/foundation year requirements apply to students in the Concurrent Bachelor of Science Food Science (B.Sc. (F.Sc.)) and Bachelor of Science Nutritional Sciences (B.Sc. (Nutr.Sc.)) degree program.

If you are entering university for the first time from a high school system (outside of the Quebec CEGEP system), you will be required to complete a Freshman/Foundation year of at least 30 credits as listed below.

Normally, students registered in the Faculty of Agricultural and Environmental Sciences Freshman/Foundation Year program may take a maximum of 8 credits outside the Faculty offerings to meet the requirements of the program. Permission to exceed this limit must be received from the Associate Dean (Student Affairs) prior to registration.

Note: If you are not certain that you have adequate math and/or physics skills to commence the Freshman/Foundation year, you may wish to take preparatory courses prior to the normal Fall semester. You are encouraged to discuss your potential need with your academic adviser. Mathematical skill level will be determined during the first week of classes. Your freshman/foundation year adviser may recommend that you register for an additional weekly Pre-calculus Lab, of one credit, which may be applied towards the required credits of the degree program.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

#### Required Courses - Fall (14.5 credits)

AEBI 120	(3)	General Biology
AECH 110	(4)	General Chemistry 1
AEMA 101	(3)	Calculus 1
AEPH 112	(4)	Introductory Physics 1
AGRI 195	(.5)	Freshman Seminar 1

#### Required Courses - Winter (15.5 credits)

AEBI 122	(3)	Cell Biology
AEMA 102	(4)	Calculus 2
AEPH 114	(4)	Introductory Physics 2
AGRI 196	(.5)	Freshman Seminar 2
FDSC 230	(4)	Organic Chemistry

## 5.2 Bachelor of Science (Agricultural and Environmental Sciences) – B.Sc.(Ag.Env.Sc.)

Please refer to [section 4.3: Bachelor of Science in Agricultural and Environmental Sciences – B.Sc.\(Ag.Env.Sc.\) \(Overview\)](#) for general rules and other information regarding B.Sc.(Ag.Env.Sc.) programs.

### 5.2.1 B.Sc.(Ag.Env.Sc.) Major and Honours Programs

The faculty offers the following B.Sc.(Ag.Env.Sc.) Major and Honours programs.

The Bieler School of Environment also offers several B.Sc.(Ag.Env.Sc.) programs; for more information, please visit [Bieler School of Environment > Undergraduate > Browse Academic Programs > : Major in Environment - B.Sc.\(Ag.Env.Sc.\) and B.Sc.](#) and [: Honours Environment](#).

**5.2.1.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Major Agricultural Economics (42 credits)**

The B.Sc.(Agr.Env.Sc.); Major in Agricultural Economics is designed to meet the demand for sustainable development as it relates to the environment and resource use, and the economics and management of the global agriculture and food system. This multidisciplinary program in applied economics involves the application of theory and analytical methods to environmental issues and the agricultural and food system. Training in economic theory and applied areas such as marketing, finance, farm management, public policy, ecology, natural resources, and international development.

**Program Prerequisites**

Refer to "Faculty Information and Regulations" > "Minimum Credit Requirements", in this eCalendar for prerequisites and minimum credit requirements.

**Required Courses (36 credits)**

AGEC 200	(3)	Principles of Microeconomics
AGEC 201	(3)	Principles of Macroeconomics
AGEC 231	(3)	Economic Systems of Agriculture
AGEC 320	(3)	Intermediate Microeconomic Theory
AGEC 330	(3)	Agriculture and Food Markets
AGEC 332	(3)	Farm Management and Finance
AGEC 333	(3)	Resource Economics
AGEC 425	(3)	Applied Econometrics
AGEC 430	(3)	Agriculture, Food and Resource Policy
AGEC 442	(3)	Economics of International Agricultural Development
ENVB 210	(3)	The Biophysical Environment
MGCR 211	(3)	Introduction to Financial Accounting

**Complementary Courses (6 credits)**

With the approval of the Academic Adviser, one introductory course in each of the following areas:

Statistics

Written/Oral Communication

**Specialization (24 credits)**

Specializations designed to be taken with the Agricultural Economics Major:

Students taking the Major in Agricultural Economics must take one of the following specializations:

- Agribusiness (24 credits)

- Environmental Economics (24 credits)

Students who take the Specialization in Agribusiness can also take the Specialization in Professional Agrology for Agribusiness (24 credits). Membership to the OAQ requires successful completion of the Agribusiness and Professional Agrology for Agribusiness specializations.

Note: For a complete list of specializations offered for students in the Bachelor of Science in Agricultural and Environmental Sciences, please refer to "Browse Academic Units & Programs > Bachelor of Science (Agricultural and Environmental Sciences) - B.Sc.(Ag.Env.Sc.) > Specializations", in this eCalendar.

**Electives**

To meet the minimum credit requirement for the degree.

**5.2.1.2 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Honours Agricultural Economics (42 credits)**

This program is currently not offered.

Students can use their electives to complete the Honours program. The courses credited to the Honours program must be in addition to any required or complementary courses taken to satisfy the requirements of the student's major and specialization.

In addition to satisfying the research requirements, students must apply for the Honours program in March or April of their U2 year. It is the responsibility of the student to find a professor who is willing to support and supervise the research project. No student will be accepted into the program until a supervisor

has agreed to supervise the student. Applicants must have a minimum CGPA of 3.3 to enter the Honours program and they must earn a B grade (3.0) or higher in the courses making up the Honours program. Students are required to achieve a minimum overall CGPA of 3.3 at graduation to obtain Honours. Students can use their electives to complete the Honours program. The courses credited to the Honours program must be in addition to any required or complementary courses taken to satisfy the requirements of the student's major and specialization.

The Honours program consists of 12 credits of courses that follow one of two plans listed below.

Students who meet all the requirements will have the name of their program changed to include the word "Honours."

A brief description of the research activities involved will be documented and signed by the Program Director of the student's major, the supervisor of the research project, and the student.

### Program Prerequisites

Refer to "Faculty Information and Regulations" > "Minimum Credit Requirements" in this eCalendar for prerequisites and minimum credit requirements.

### Required Courses (33 credits)

AGEC 200	(3)	Principles of Microeconomics
AGEC 201	(3)	Principles of Macroeconomics
AGEC 231	(3)	Economic Systems of Agriculture
AGEC 320	(3)	Intermediate Microeconomic Theory
AGEC 330	(3)	Agriculture and Food Markets
AGEC 333	(3)	Resource Economics
AGEC 425	(3)	Applied Econometrics
AGEC 430	(3)	Agriculture, Food and Resource Policy
AGEC 442	(3)	Economics of International Agricultural Development
AGEC 491	(3)	Research and Methodology
ENVB 210	(3)	The Biophysical Environment

### Honours Courses

Students choose either Plan A or Plan B.

#### Honours Plan A

Two 6-credit Honours research courses in the subject area of the student's major, chosen in consultation with the Program Director of the student's major and the professor who has agreed to supervise the research project.

FAES 401	(6)	Honours Research Project 1
FAES 402	(6)	Honours Research Project 2

#### Honours Plan B

A minimum of two 3-credit Honours courses and 6 credits in 400- or 500-level courses, from the Faculty of Agricultural and Environmental Sciences, selected in consultation with the Program Director of the student's major. The topic of the Honours research project must be on a topic related to their major and selected in consultation with the Program Director of the student's major and the professor who has agreed to supervise the research project.

FAES 405	(3)	Honours Project 1
FAES 406	(3)	Honours Project 2

### Complementary Courses (9 credits)

With the approval of the Academic Adviser, one introductory course in each of the following areas:

- Accounting
- Statistics
- Written/Oral Communication

### Specialization (21 - 24 credits)

Specializations designed to be taken with the Agricultural Economics Major:

- Agribusiness (24 credits)\*
- Environmental Economics (24 credits)
- Professional Agrology (21 credits)\*

\* Membership to the OAQ requires successful completion of these two specializations.

Note: For a complete list of specializations offered for students in the Bachelor of Science in Agricultural and Environmental Sciences, please refer to "Browse Academic Units & Programs" > "Bachelor of Science (Agricultural and Environmental Sciences) - B.Sc.(Ag.Env.Sc.)" > "Specializations" in this eCalendar.

### Electives

To meet the minimum credit requirement for the degree.

#### 5.2.1.3 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Major Agro-Environmental Sciences (42 credits)

This Major is focused on the idea that agricultural landscapes are managed ecosystems, and that humans engaged in agriculture must maintain the highest possible environmental standards while providing food and other bioproducts to the marketplace. The Major core focuses on the basic and applied biology of cultivated plants, domestic animals, arable soils, and the economics of agriculture. Students then choose one or two specializations in these or connected disciplines that reflect their interests and career goals.

The program has a strong field component that includes hands-on laboratories, visits to agricultural enterprises, and opportunities for internships. Classes and laboratories exploit the unique setting and facilities of the Macdonald Campus and Farm, which is a fully functioning farm in an urban setting that exemplifies many of the issues at the forefront of modern agricultural production. Graduates of this program are eligible to become members of the Ordre des agronomes du Québec (OAQ).

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

### Program Prerequisites

Refer to "Faculty Information and Regulations" > "Minimum Credit Requirements" in this eCalendar for prerequisites and minimum credit requirements.

### Required Courses (36 credits)

AEBI 210	(3)	Organisms 1
AEMA 310	(3)	Statistical Methods 1
AGEC 200	(3)	Principles of Microeconomics
AGEC 231	(3)	Economic Systems of Agriculture
AGRI 215	(3)	Agro-Ecosystems Field Course
ANSC 250	(3)	Principles of Animal Science
BREE 329	(3)	Precision Agriculture
ENVB 210	(3)	The Biophysical Environment
LSCI 204	(3)	Genetics
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
SOIL 315	(3)	Soil Nutrient Management

### Complementary Courses (6 credits)

6 credits of complementary courses selected as follows:

One of:

PLNT 300	(3)	Cropping Systems
PLNT 302	(3)	Forage Crops and Pastures

One of:



ANSC 451	(3)	Dairy and Beef Production Management
ANSC 458	(3)	Swine and Poultry Production

### Specialization

Choose at least one specialization of 18-24 credits.

Specializations designed to be taken with the Agro-Environmental Sciences Major:

- Animal Production
- Ecological Agriculture
- Plant Production
- \*Professional Agrology
- Soil and Water Resources

\* Membership to the OAQ requires students successfully complete one of the above specializations in addition to the Professional Agrology Specialization.

### Electives

To meet the minimum credit requirement for the degree.

#### 5.2.1.4 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Honours Agro-Environmental Sciences (54 credits)

Students can use their electives to complete the Honours program. The courses credited to the Honours program must be in addition to any required or complementary courses taken to satisfy the requirements of the student's Major and Specialization.

In addition to satisfying the Honour requirements, students must apply for the Honours program in March or April of their U2 year. It is the responsibility of the student to find a professor who is willing to support and supervise the research project. No student will be accepted into the program until a supervisor has agreed to supervise the student. Applicants must have a minimum CGPA of 3.3 to enter the Honours program and they must earn a B grade (3.0) or higher in the courses making up the Honours program. Students are required to achieve a minimum overall CGPA of 3.3 at graduation to obtain honours. The Honours program consists of 12 credits of courses that follow one of two plans listed below.

Students who meet all the requirements will have the name of their program changed to include the word "Honours."

A brief description of the Honours project activities involved will be documented and signed by the Program Director of the student's Major, the supervisor of the Honours project, and the student.

This Major is focused on the idea that agricultural landscapes are managed ecosystems, and that humans engaged in agriculture must maintain the highest possible environmental standards while providing food and other bioproducts to the marketplace. The Major core focuses on the basic and applied biology of cultivated plants, domestic animals, arable soils, and the economics of agriculture. Students then choose one or two specializations in these or connected disciplines that reflect their interests and career goals.

The program has a strong field component that includes hands-on laboratories, visits to agricultural enterprises, and opportunities for internships. Classes and laboratories exploit the unique setting and facilities of the Macdonald Campus and Farm, which is a fully functioning farm in an urban setting that exemplifies many of the issues at the forefront of modern agricultural production. Graduates of this program are eligible to become members of the Ordre des agronomes du Québec (OAQ).

### Program Prerequisites

Refer to "Faculty Information and Regulations" > "Minimum Credit Requirements" in this eCalendar for prerequisites and minimum credit requirements.

#### Required Courses (36 credits)

AEBI 210	(3)	Organisms 1
AEMA 310	(3)	Statistical Methods 1
AGEC 200	(3)	Principles of Microeconomics
AGEC 231	(3)	Economic Systems of Agriculture
AGRI 215	(3)	Agro-Ecosystems Field Course
ANSC 250	(3)	Principles of Animal Science
BREE 329	(3)	Precision Agriculture
ENVB 210	(3)	The Biophysical Environment
LSCI 204	(3)	Genetics
LSCI 211	(3)	Biochemistry 1

LSCI 230	(3)	Introductory Microbiology
SOIL 315	(3)	Soil Nutrient Management

### Complementary Courses (18 credits)

3 credits from the following:

PLNT 300	(3)	Cropping Systems
PLNT 302	(3)	Forage Crops and Pastures

3 credits from the following:

ANSC 451	(3)	Dairy and Beef Production Management
ANSC 458	(3)	Swine and Poultry Production

### Honours Courses

12 credits of Honours Plan A or Plan B

#### Honours Plan A

12 credits of Honours research courses in the subject area of the student's Major, chosen in consultation with the Program Director of the student's Major and the professor who has agreed to supervise the research project.

AGRI 401	(6)	Honours Research Project 1
AGRI 402	(6)	Honours Research Project 2

#### Honours Plan B

6 credits of Honours project courses in the subject area of the student's Major as well as 6 credits in 400- or 500-level courses, normally selected from the Faculty of Agricultural and Environmental Sciences, in consultation with the Program Director of the student's Major and the professor who has agreed to supervise the project.

AGRI 405	(3)	Honours Project 1
AGRI 406	(3)	Honours Project 2

### Specialization

Choose at least one specialization of 18-24 credits.

Specializations designed to be taken with the Agro-Environmental Sciences Major:

- Animal Production
- Ecological Agriculture
- Plant Production
- Professional Agrology\*

\* Membership to the OAQ requires students successfully complete one of the above specializations in addition to the Professional Agrology Specialization.

### Electives

To meet the minimum credit requirement for the degree.

#### 5.2.1.5 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Major Environmental Biology (42 credits)

The Environmental Biology Major is about the biology, diversity, and ecology of a broad range of organisms, from plant and vertebrate animals to insects, fungi, and microbes. This Major places a strong emphasis on the ecosystems that species inhabit and the constraints imposed by the physical environment and by environmental change. Environmental Biology has significant field components worked into the course sets, and through this experiential learning, biological diversity, and the ways that species interact with their physical environment in a variety of ecosystems will be studied. The Major makes full use

of the unique physical setting and faculty expertise of McGill's Macdonald campus to train students to become ecologists, taxonomists, field biologists, and ecosystem scientists.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

### Program Prerequisites

Please refer to "Faculty Information and Regulations" > "Minimum Credit Requirements", in this eCalendar for information on prerequisites and minimum credit requirements.

### Required Courses (36 credits)

AEBI 210	(3)	Organisms 1
AEBI 211	(3)	Organisms 2
AEBI 212	(3)	Evolution and Phylogeny
AEHM 205	(3)	Science Literacy
AEMA 310	(3)	Statistical Methods 1
ENVB 210	(3)	The Biophysical Environment
ENVB 222	(3)	St. Lawrence Ecosystems
ENVB 305	(3)	Population and Community Ecology
ENVB 410	(3)	Ecosystem Ecology
LSCI 204	(3)	Genetics
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology

### Complementary Courses (6 credits)

6 credits of complementary courses selected from:

ENTO 330	(3)	Insect Biology
ENVB 301	(3)	Meteorology
ENVB 313	(3)	Phylogeny and Biogeography
ENVB 437	(3)	Assessing Environmental Impact
ENVB 497	(3)	Research Project 1
ENVB 498	(3)	Research Project 2
FAES 300	(3)	Internship 2
MICR 331	(3)	Microbial Ecology
PLNT 304	(3)	Biology of Fungi
PLNT 358	(3)	Flowering Plant Diversity
PLNT 460	(3)	Plant Ecology
SOIL 300	(3)	Geosystems
WILD 302	(3)	Fish Ecology
WILD 307	(3)	Natural History of Vertebrates
WOOD 441	(3)	Integrated Forest Management

### Specialization

At least one specialization of 18-24 credits.

Specializations designed to be taken with the Environmental Biology Major:

- Applied Ecology
- Plant Biology

- Wildlife Biology

Note: For a complete list of specializations offered for students in the Bachelor of Science in Agricultural and Environmental Sciences, refer to "Browse Academic Units & Programs" > "Bachelor of Science (Agricultural and Environmental Sciences) - B.Sc.(Ag.Env.Sc.)" > "Specializations", in this eCalendar. Consult the Academic Adviser for approval of specializations other than those listed above.

### Electives

To meet the minimum credit requirement for the degree.

#### 5.2.1.6 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Honours Environmental Biology (54 credits)

Students can use their electives to complete the Honours program. The courses credited to the Honours program must be in addition to any required or complementary courses taken to satisfy the requirements of the student's Major and Specialization.

In addition to satisfying the Honours requirements, students must apply for the Honours program in March or April of their U2 year. It is the responsibility of the student to find a professor who is willing to support and supervise the research project. No student will be accepted into the program until a supervisor has agreed to supervise the student. Applicants must have a minimum CGPA of 3.3 to enter the Honours program and they must earn a B grade (3.0) or higher in the courses making up the Honours program. Students are required to achieve a minimum overall CGPA of 3.3 at graduation to obtain honours.

The Honours program consists of 12 credits of courses that follow one of two plans listed below.

Students who meet all the requirements will have the name of their program changed to include the word "Honours."

A brief description of the Honours project activities involved will be documented and signed by the Program Director of the student's Major, the supervisor of the Honours project, and the student.

The Environmental Biology Major is about the biology, diversity, and ecology of a broad range of organisms, from plant and vertebrate animals to insects, fungi, and microbes. This Major places a strong emphasis on the ecosystems that species inhabit and the constraints imposed by the physical environment and by environmental change. Environmental Biology has significant field components worked into the course sets, and through this experiential learning, biological diversity, and the ways that species interact with their physical environment in a variety of ecosystems will be studied. The Major makes full use of the unique physical setting and faculty expertise of McGill's Macdonald campus to train students to become ecologists, taxonomists, field biologists, and ecosystem scientists.

### Program Prerequisites

Please refer to "Faculty Information and Regulations" > "Minimum Credit Requirements" in this eCalendar for information on prerequisites and minimum credit requirements.

### Required Courses (36 credits)

AEBI 210	(3)	Organisms 1
AEBI 211	(3)	Organisms 2
AEBI 212	(3)	Evolution and Phylogeny
AEHM 205	(3)	Science Literacy
AEMA 310	(3)	Statistical Methods 1
ENVB 210	(3)	The Biophysical Environment
ENVB 222	(3)	St. Lawrence Ecosystems
ENVB 305	(3)	Population and Community Ecology
ENVB 410	(3)	Ecosystem Ecology
LSCI 204	(3)	Genetics
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology

### Complementary Courses (18 credits)

6 credits from the following:

ENTO 330	(3)	Insect Biology
ENVB 301	(3)	Meteorology
ENVB 313	(3)	Phylogeny and Biogeography
ENVB 437	(3)	Assessing Environmental Impact

ENVB 497	(3)	Research Project 1
ENVB 498	(3)	Research Project 2
ENVB 529	(3)	GIS for Natural Resource Management
FAES 300	(3)	Internship 2
MICR 331	(3)	Microbial Ecology
PLNT 304	(3)	Biology of Fungi
PLNT 358	(3)	Flowering Plant Diversity
PLNT 460	(3)	Plant Ecology
SOIL 300	(3)	Geosystems
WILD 302	(3)	Fish Ecology
WILD 307	(3)	Natural History of Vertebrates
WOOD 441	(3)	Integrated Forest Management

### Honours Courses

12 credits of Honours Plan A or Plan B:

#### Honours Plan A

12 credits of Honours research courses in the subject area of the student's Major, chosen in consultation with the Program Director of the student's Major and the professor who has agreed to supervise the research project.

ENVB 401	(6)	Honours Research Project 1
ENVB 402	(6)	Honours Research Project 2

OR

#### Honours Plan B

6 credits of Honours project courses in the subject area of the student's Major as well as 6 credits in 400- or 500-level courses, normally selected from the Faculty of Agricultural and Environmental Sciences, in consultation with the Program Director of the student's Major and the professor who has agreed to supervise the project.

ENVB 405	(3)	Honours Project 1
ENVB 406	(3)	Honours Project 2

### Specialization

At least one specialization of 18-24 credits.

Specializations designed to be taken with the Environmental Biology Major:

- Applied Ecology
- Plant Biology
- Wildlife Biology

Note: For a complete list of specializations offered for students in the Bachelor of Science in Agricultural and Environmental Sciences, refer to "Browse Academic Units & Programs" > "Bachelor of Science (Agricultural and Environmental Sciences) - B.Sc.(Ag.Env.Sc.)" > "Specializations" in this eCalendar. Consult the Academic Adviser for approval of specializations other than those listed above.

### Electives

To meet the minimum credit requirement for the degree.

#### 5.2.1.7 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Major Global Food Security (42 credits)

The program provides a global perspective on agriculture and food security, and addresses issues related to rural development, malnutrition, poverty and food safety with special emphasis on the developing world. Using a multidimensional and multidisciplinary approach, the program provides students with a comprehensive set of courses at McGill in combination with hands-on experience through structured internships and study abroad opportunities. The field

experience (short courses, internships or full semester) includes project development in local communities, observing subsistence agriculture in situ and participating in various activities which sensitize students to the challenges that countries face to feed their people. Students will have the opportunity to develop the knowledge base needed for successful careers in government, non-government and international institutions in the areas of international and sustainable development, international research and project management, agri-business, and food and agriculture policy analysis.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

### Program Prerequisites

Refer to "Faculty Information and Regulations" > "Minimum Credit Requirements", in this publication for prerequisites and minimum credit requirements.

### Required Courses (33 credits)

AEBI 210	(3)	Organisms 1
AEMA 310	(3)	Statistical Methods 1
AGEC 200	(3)	Principles of Microeconomics
AGEC 442	(3)	Economics of International Agricultural Development
AGRI 411	(3)	Global Issues on Development, Food and Agriculture
AGRI 493	(3)	International Project Management
ANSC 250	(3)	Principles of Animal Science
ENVB 210	(3)	The Biophysical Environment
INTD 200	(3)	Introduction to International Development
NUTR 207	(3)	Nutrition and Health
NUTR 341	(3)	Global Food Security

### Complementary Courses (9 credits)

AGRI 215	(3)	Agro-Ecosystems Field Course
AGRI 340	(3)	Principles of Ecological Agriculture
AGRI 499	(3)	Agricultural Development Internship
ANSC 420	(3)	Animal Biotechnology
BREE 217	(3)	Hydrology and Water Resources
FDSC 310	(3)	Post Harvest Fruit and Vegetable Technology
NRSC 221	(3)	Environment and Health
NUTR 501	(3)	Nutrition in Developing Countries
PLNT 300	(3)	Cropping Systems
PLNT 435	(3)	Plant Breeding
SOIL 315	(3)	Soil Nutrient Management
SOIL 326	(3)	Soils in a Changing Environment

### Specialization (24 credits)

Students must also complete at least one Specialization of 24 credits.

#### 5.2.1.8 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Honours Global Food Security (54 credits)

Students can use their electives to complete the Honours program. The courses credited to the Honours program must be in addition to any required or complementary courses taken to satisfy the requirements of the student's Major and Specialization.

In addition to satisfying the Honours requirements, students must apply for the Honours program in March or April of their U2 year. It is the responsibility of the student to find a professor who is willing to support and supervise the research project. No student will be accepted into the program until a supervisor has agreed to supervise the student. Applicants must have a minimum CGPA of 3.3 to enter the Honours program and they must earn a B grade (3.0) or higher in the courses making up the Honours program. Students are required to achieve a minimum overall CGPA of 3.3 at graduation to obtain honours.

Students can use their electives to complete the Honours program. The courses credited to the Honours program must be in addition to any required or complementary courses taken to satisfy the requirements of the student's major and specialization.

The Honours program consists of 12 credits of courses that follow one of two plans listed below.

Students who meet all the requirements will have the name of their program changed to include the word "Honours."

A brief description of the Honours project activities involved will be documented and signed by the Program Director of the student's Major, the supervisor of the Honours project, and the student.

The program provides a global perspective on agriculture and food security, and addresses issues related to rural development, malnutrition, poverty and food safety with special emphasis on the developing world. Using a multidimensional and multidisciplinary approach, the program provides students with a comprehensive set of courses at McGill in combination with hands-on experience through structured internships and study abroad opportunities. The field experience (short courses, internships, or full semester) includes project development in local communities, observing subsistence agriculture in situ, and participating in various activities which sensitize students to the challenges that countries face to feed their people. Students will have the opportunity to develop the knowledge base needed for successful careers in government, non-government, and international institutions in the areas of international and sustainable development, international research and project management, agri-business, and food and agriculture policy analysis.

### Program Prerequisites

Refer to "Faculty Information and Regulations" > "Minimum Credit Requirements" in this eCalendar for prerequisites and minimum credit requirements.

### Required Courses (33 credits)

AEBI 210	(3)	Organisms 1
AEMA 310	(3)	Statistical Methods 1
AGEC 200	(3)	Principles of Microeconomics
AGEC 442	(3)	Economics of International Agricultural Development
AGRI 411	(3)	Global Issues on Development, Food and Agriculture
AGRI 493	(3)	International Project Management
ANSC 250	(3)	Principles of Animal Science
ENVB 210	(3)	The Biophysical Environment
INTD 200	(3)	Introduction to International Development
NUTR 207	(3)	Nutrition and Health
NUTR 341	(3)	Global Food Security

### Complementary Courses (21 credits)

9 credits from the following:

AGRI 215	(3)	Agro-Ecosystems Field Course
AGRI 340	(3)	Principles of Ecological Agriculture
AGRI 499	(3)	Agricultural Development Internship
ANSC 420	(3)	Animal Biotechnology
BREE 217	(3)	Hydrology and Water Resources
FDSC 310	(3)	Post Harvest Fruit and Vegetable Technology
NRSC 221	(3)	Environment and Health
NUTR 501	(3)	Nutrition in Developing Countries
PLNT 300	(3)	Cropping Systems
PLNT 435	(3)	Plant Breeding
SOIL 315	(3)	Soil Nutrient Management
SOIL 326	(3)	Soils in a Changing Environment

### Honours Courses

12 credits of Honours Plan A or Plan B:

### Honours Plan A

Two 6-credit Honours research courses in the subject area of the student's major, chosen in consultation with the Program Director of the student's major and the professor who has agreed to supervise the research project.

FAES 401	(6)	Honours Research Project 1
FAES 402	(6)	Honours Research Project 2

OR

### Honours Plan B

A minimum of two 3-credit Honours courses and 6 credits in 400- or 500-level courses, from the Faculty of Agricultural and Environmental Sciences, selected in consultation with the Program Director of the student's major. The topic of the Honours research project must be on a topic related to their major and selected in consultation with the Program Director of the student's major and the professor who has agreed to supervise the research project.

FAES 405	(3)	Honours Project 1
FAES 406	(3)	Honours Project 2

### Specialization (24 credits)

Students must also complete at least one Specialization of 24 credits.

#### 5.2.1.9 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Major Life Sciences (Biological and Agricultural) (42 credits)

The Life Sciences (Biological and Agricultural) Major provides a strong foundation in the basic biological sciences. It will prepare graduates for careers in the agricultural, environmental, health, and biotechnological fields. Graduates with high academic achievement may go on to postgraduate studies in research, or professional programs in the biological, veterinary, medical, and health sciences fields.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

### Program Prerequisites

Please refer to "Faculty Information and Regulations" > "Minimum Credit Requirements", in this eCalendar for prerequisites and minimum credit requirements.

Default Specialization: Students who do not select a Specialization will automatically be assigned to the Life Sciences (Multidisciplinary) Specialization upon entering U2.

### Required Courses (33 credits)

\* Other appropriate Statistics courses may be approved as substitutes by the Program Director.

AEBI 210	(3)	Organisms 1
AEBI 211	(3)	Organisms 2
AEBI 212	(3)	Evolution and Phylogeny
AEHM 205	(3)	Science Literacy
AEMA 310*	(3)	Statistical Methods 1
ANSC 400	(3)	Eukaryotic Cells and Viruses
LSCI 202	(3)	Molecular Cell Biology
LSCI 204	(3)	Genetics
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
PARA 438	(3)	Immunology

### Complementary Courses (9 credits)

9 credits of the complementary courses selected from:



ANSC 234	(3)	Biochemistry 2
ANSC 250	(3)	Principles of Animal Science
ANSC 312	(3)	Animal Health and Disease
ANSC 323	(3)	Mammalian Physiology
ANSC 324	(3)	Developmental Biology and Reproduction
ANSC 326	(3)	Fundamentals of Population Genetics
ANSC 420	(3)	Animal Biotechnology
BINF 511	(3)	Bioinformatics for Genomics
BTEC 306	(3)	Experiments in Biotechnology
ENVB 210	(3)	The Biophysical Environment
ENVB 222	(3)	St. Lawrence Ecosystems
FAES 300	(3)	Internship 2
LSCI 451	(3)	Research Project 1
LSCI 452	(3)	Research Project 2
MICR 331	(3)	Microbial Ecology
MICR 338	(3)	Bacterial Molecular Genetics
MICR 341	(3)	Mechanisms of Pathogenicity
MICR 450	(3)	Environmental Microbiology
NRSC 333	(3)	Pollution and Bioremediation
PARA 410	(3)	Environment and Infection
PARA 424	(3)	Fundamental Parasitology
PLNT 304	(3)	Biology of Fungi
PLNT 353	(3)	Plant Structure and Function
PLNT 426	(3)	Plant Ecophysiology
PLNT 435	(3)	Plant Breeding

### Specialization

At least one specialization of 18-24 credits from:

Specializations designed to be taken with the Life Sciences (Biological and Agricultural) Major:

- Animal Biology
- Animal Health and Disease
- Life Sciences (Multidisciplinary)
- Microbiology and Molecular Biotechnology

Note: For a complete list of specializations offered for students in the Bachelor of Science in Agricultural and Environmental Sciences, please refer to "Browse Academic Units & Programs" > "Bachelor of Science (Agricultural and Environmental Sciences) - B.Sc.(Ag.Env.Sc.)" > "Specializations" in this eCalendar.

### Electives

To meet the minimum credit requirement for the degree.

#### 5.2.1.10 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Honours Life Sciences (Biological and Agricultural) (54 credits)

Students must apply for the Honours program in March or April of their U2 year. It is the responsibility of the student to find a professor who is willing to support and supervise the research project. No student will be accepted into the program until a supervisor has agreed to supervise the student. Applicants must have a minimum CGPA of 3.3 to enter the Honours program and they must earn a B grade (3.0) or higher in the courses making up the Honours program. Students are required to achieve a minimum overall CGPA of 3.3 at graduation to obtain Honours.

Students who meet all the requirements will have the name of their program changed to include the word "Honours."

A brief description of the Honours project activities involved will be documented and signed by the Program Director of the student's Major, the supervisor of the Honours project, and the student.

The Life Sciences (Biological and Agricultural) Major provides a strong foundation in the basic biological sciences. It will prepare graduates for careers in the agricultural, environmental, health, and biotechnological fields. Graduates with high academic achievement may go on to postgraduate studies in research, or professional programs in the biological, veterinary, medical, and health sciences fields.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

### Program Prerequisites

Please refer to "Faculty Information and Regulations" > "Minimum Credit Requirements" in this eCalendar for prerequisites and minimum credit requirements.

### Required Courses (45 credits)

\* Other appropriate Statistics courses may be approved as substitutes by the Program Director.

AEBI 210	(3)	Organisms 1
AEBI 211	(3)	Organisms 2
AEBI 212	(3)	Evolution and Phylogeny
AEHM 205	(3)	Science Literacy
AEMA 310*	(3)	Statistical Methods 1
ANSC 400	(3)	Eukaryotic Cells and Viruses
LSCI 202	(3)	Molecular Cell Biology
LSCI 204	(3)	Genetics
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
LSCI 401	(6)	Honours Research Project 1
LSCI 402	(6)	Honours Research Project 2
PARA 438	(3)	Immunology

### Complementary Courses (9 credits)

9 credits of the complementary courses selected from:

ANSC 234	(3)	Biochemistry 2
ANSC 250	(3)	Principles of Animal Science
ANSC 312	(3)	Animal Health and Disease
ANSC 323	(3)	Mammalian Physiology
ANSC 324	(3)	Developmental Biology and Reproduction
ANSC 326	(3)	Fundamentals of Population Genetics
ANSC 420	(3)	Animal Biotechnology
BINF 511	(3)	Bioinformatics for Genomics
BTEC 306	(3)	Experiments in Biotechnology
ENVB 210	(3)	The Biophysical Environment
ENVB 222	(3)	St. Lawrence Ecosystems
LSCI 451	(3)	Research Project 1
LSCI 452	(3)	Research Project 2
MICR 331	(3)	Microbial Ecology
MICR 338	(3)	Bacterial Molecular Genetics
MICR 341	(3)	Mechanisms of Pathogenicity
MICR 450	(3)	Environmental Microbiology

NRSC 333	(3)	Pollution and Bioremediation
PARA 410	(3)	Environment and Infection
PARA 424	(3)	Fundamental Parasitology
PLNT 304	(3)	Biology of Fungi
PLNT 353	(3)	Plant Structure and Function
PLNT 426	(3)	Plant Ecophysiology
PLNT 435	(3)	Plant Breeding

### Specialization

At least one specialization of 18-24 credits from:

Specializations designed to be taken with the Life Sciences (Biological and Agricultural) Major:

- Animal Biology
- Animal Health and Disease
- Life Sciences (Multidisciplinary)
- Microbiology and Molecular Biotechnology
- Plant Science

Note: For a complete list of specializations offered for students in the Bachelor of Science in Agricultural and Environmental Sciences, please refer to "Browse Academic Units & Programs" > "Bachelor of Science (Agricultural and Environmental Sciences) - B.Sc.(Ag.Env.Sc.)" > "Specializations" in this eCalendar.

### Electives

To meet the minimum credit requirement for the degree.

## 5.2.2 Specializations

The faculty offers the following specializations, to be paired with a B.Sc.(Ag.Env.Sc.) major. Each major program description has a list of suggested specializations. A different specialization may be selected following a consultation with your academic advisor.

### 5.2.2.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Agribusiness (24 credits)

The development of commercial agriculture relies on a large supporting sector of manufacturing and service companies involved in the supply of inputs to farming and the transportation, processing, and marketing of agricultural and food products.

This 24-credit specialization includes courses in agricultural sciences, agribusiness, and courses at the Desautels Faculty of Management.

This specialization is limited to students in the Major in Agricultural Economics.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

#### Required Courses (12 credits)

AEBI 210	(3)	Organisms 1
AGEC 450	(3)	Agribusiness Management
AGEC 491	(3)	Research and Methodology
ANSC 250	(3)	Principles of Animal Science

#### Complementary Courses (12 credits)

9 credits chosen from the following list:

ACCT 361	(3)	Management Accounting
AGRI 310	(3)	Internship in Agriculture/Environment
BUSA 364	(3)	Business Law 1
MGCR 222	(3)	Introduction to Organizational Behaviour

MGCR 331	(3)	Information Technology Management
MGCR 341	(3)	Introduction to Finance
MGCR 352	(3)	Principles of Marketing
MGCR 382	(3)	International Business
ORGB 321	(3)	Leadership

3 credits of a course in Animal Production or Plant Production approved by the Adviser.

#### 5.2.2.2 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Animal Biology (24 credits)

The specialization in Animal Biology is intended for students who wish to further their studies in the basic biology of large mammals and birds. Successful completion of the program should enable students to qualify for application to most veterinary colleges in North America, to study in a variety of postgraduate biology programs, and to work in many laboratory settings.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

##### Required Courses (15 credits)

ANSC 312	(3)	Animal Health and Disease
ANSC 323	(3)	Mammalian Physiology
ANSC 324	(3)	Developmental Biology and Reproduction
ANSC 420	(3)	Animal Biotechnology
PARA 438	(3)	Immunology

##### Complementary Courses (9 credits)

9 credits selected from:

ANSC 234	(3)	Biochemistry 2
ANSC 251	(3)	Comparative Anatomy
ANSC 326	(3)	Fundamentals of Population Genetics
ANSC 400	(3)	Eukaryotic Cells and Viruses
ANSC 424	(3)	Metabolic Endocrinology
ANSC 433	(3)	Animal Nutrition and Metabolism
ANSC 555	(3)	The Use and Welfare of Animals
ANSC 560	(3)	Biology of Lactation
ANSC 565	(3)	Applied Information Systems
LSCI 451	(3)	Research Project 1

#### 5.2.2.3 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Animal Health and Disease (24 credits)

This specialization is offered for students wishing to understand general animal physiology and function; the susceptibility of animals to various diseases; methods for limiting and controlling potential outbreaks; and the resulting implications for the animal, the consumer and the environment. It is an ideal choice for students interested in the care of animals, or in working in laboratories where diseases are being researched.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

##### Required Courses (18 credits)

ANSC 312	(3)	Animal Health and Disease
ANSC 323	(3)	Mammalian Physiology
ANSC 350	(3)	Food-Borne Pathogens

ANSC 424	(3)	Metabolic Endocrinology
MICR 341	(3)	Mechanisms of Pathogenicity
PARA 424	(3)	Fundamental Parasitology

#### Complementary Courses (6 credits)

6 credits of complementary courses selected from:

ANSC 234	(3)	Biochemistry 2
ANSC 251	(3)	Comparative Anatomy
ANSC 303	(2)	Farm Livestock Internship
ANSC 324	(3)	Developmental Biology and Reproduction
ANSC 433	(3)	Animal Nutrition and Metabolism
ANSC 555	(3)	The Use and Welfare of Animals
FAES 371	(1)	Special Topics 01

#### 5.2.2.4 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Animal Production (24 credits)

The B.Sc.(Ag.Env.Sc.); Specialization in Animal Production focuses on the improved efficiency of livestock production at the national and international levels including animal nutrition, physiology, and breeding in a context that respects environmental concerns and animal-welfare issues.

When taken in conjunction with the Major Agro-Environmental Sciences and the Specialization in Professional Agriculture, this program conforms with the eligibility requirements of the Ordre des agronomes du Québec.

The credits within this Specialization may not count towards the student's Major or other Specialization. All of the 24 credits count only for this Specialization.

#### Required Courses (21 credits)

ANSC 234	(3)	Biochemistry 2
ANSC 301	(3)	Principles of Animal Breeding
ANSC 312	(3)	Animal Health and Disease
ANSC 323	(3)	Mammalian Physiology
ANSC 324	(3)	Developmental Biology and Reproduction
ANSC 433	(3)	Animal Nutrition and Metabolism
ANSC 555	(3)	The Use and Welfare of Animals

#### Complementary Courses (3 credits)

3 credits from the following:

ANSC 451	(3)	Dairy and Beef Production Management
ANSC 458	(3)	Swine and Poultry Production

#### 5.2.2.5 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Applied Ecology (24 credits)

Food, water, air, the materials we use, and much of the diversity of life and recreation we enjoy are products of ecological systems. We manage ecosystems to provide these services and our use and mis-use often degrades the ability of ecosystems to provide the benefits and services we value. In the Applied Ecology specialization you will develop your ability to understand how ecosystems function. You will apply systems thinking to the challenge of managing ecosystems for agriculture, forestry, fisheries, protected areas and urban development. You will learn concepts and tools that help you to deal with the complexity that an ecosystem perspective brings. The goal of this specialization is to provide students with an opportunity to further develop their understanding of the ecosystem processes, ecology, and systems thinking necessary to understand, design and manage our interaction with the environment.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

#### Required Courses (9 credits)

ENVB 305	(3)	Population and Community Ecology
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ENVB 437	(3)	Assessing Environmental Impact
ENVB 529	(3)	GIS for Natural Resource Management

**Complementary Courses (15 credits)**

15 credits selected from the following:

AGRI 340	(3)	Principles of Ecological Agriculture
AGRI 435	(3)	Soil and Water Quality Management
BREE 327	(3)	Bio-Environmental Engineering
ENTO 330	(3)	Insect Biology
ENTO 340	(3)	Field Entomology
ENVB 301	(3)	Meteorology
ENVB 313	(3)	Phylogeny and Biogeography
ENVB 415	(3)	Ecosystem Management
ENVB 500	(3)	Advanced Topics in Ecotoxicology
ENVB 506	(3)	Quantitative Methods: Ecology
ENVB 530	(3)	Advanced GIS for Natural Resource Management
MICR 331	(3)	Microbial Ecology
MICR 450	(3)	Environmental Microbiology
PLNT 304	(3)	Biology of Fungi
PLNT 426	(3)	Plant Ecophysiology
PLNT 460	(3)	Plant Ecology
SOIL 300	(3)	Geosystems
SOIL 326	(3)	Soils in a Changing Environment
SOIL 535	(3)	Soil Ecology
WILD 302	(3)	Fish Ecology
WILD 307	(3)	Natural History of Vertebrates
WILD 350	(3)	Mammalogy
WILD 420	(3)	Ornithology
WILD 421	(3)	Wildlife Conservation

**5.2.2.6 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Ecological Agriculture (24 credits)**

This specialization focuses on the principles underlying the practice of ecological agriculture. When coupled with the Major in Environmental Biology, agriculture as a managed ecosystem that responds to the laws of community ecology is examined; when combined with the Major Agro-Environmental Sciences and the specialization in Professional Agrology, this specialization focuses more directly on the practice of ecological agriculture and conforms with the eligibility requirements of the Ordre des agronomes du Québec. It is suitable for students wishing to farm and do extension and government work, and those intending to pursue postgraduate work in this field.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

**Required Courses (12 credits)**

AGEC 430	(3)	Agriculture, Food and Resource Policy
AGRI 215	(3)	Agro-Ecosystems Field Course
AGRI 340	(3)	Principles of Ecological Agriculture
SOIL 535	(3)	Soil Ecology

**Complementary Courses (12 credits)**

Minimum of 6 agronomic credits from:

AGRI 310	(3)	Internship in Agriculture/Environment
AGRI 411	(3)	Global Issues on Development, Food and Agriculture
ANSC 312	(3)	Animal Health and Disease
BREE 327	(3)	Bio-Environmental Engineering
ENTO 352	(3)	Biocontrol of Pest Insects
PLNT 307	(3)	Agroecology of Vegetables and Fruits
PLNT 312	(3)	Urban Horticulture
PLNT 434	(3)	Weed Biology and Control

Other complementary courses:

MICR 331	(3)	Microbial Ecology
NUTR 341	(3)	Global Food Security
PLNT 302	(3)	Forage Crops and Pastures
PLNT 460	(3)	Plant Ecology
WOOD 441	(3)	Integrated Forest Management

**5.2.2.7 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Environmental Economics (24 credits)**

This specialization integrates environmental sciences and decision making with the economics of environment and sustainable development. It is designed to prepare students for careers in natural resource management and the analysis of environmental problems and policies.

This specialization is limited to students in the Major Agricultural Economics.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

**Required Courses (12 credits)**

AGEC 491	(3)	Research and Methodology
ENVB 305	(3)	Population and Community Ecology
ENVB 437	(3)	Assessing Environmental Impact
ENVB 506	(3)	Quantitative Methods: Ecology

**Complementary Courses (12 credits)**

12 credits chosen from the following list:

AGRI 310	(3)	Internship in Agriculture/Environment
BREE 217	(3)	Hydrology and Water Resources
BREE 327	(3)	Bio-Environmental Engineering
ECON 225	(3)	Economics of the Environment
ECON 326	(3)	Ecological Economics
ECON 405	(3)	Natural Resource Economics
ENVB 222	(3)	St. Lawrence Ecosystems
ENVB 301	(3)	Meteorology
ENVB 529	(3)	GIS for Natural Resource Management
ENVR 203	(3)	Knowledge, Ethics and Environment

MGPO 440	(3)	Strategies for Sustainability
MICR 331	(3)	Microbial Ecology
NRSC 333	(3)	Pollution and Bioremediation
WILD 421	(3)	Wildlife Conservation

#### 5.2.2.8 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - International Agriculture (24 credits)

Students enter this specialization to acquire a global and applied understanding of agriculture as a fundamental tool to help rural development, alleviate poverty and reach food security, especially in the developing world. This program provides students with a combination of coursework at McGill together with a hands-on experience in a developing country, meeting locals and attending courses with McGill professors and/or local instructors. The costs of these field experiences may vary. The field experience (semester, short course or internship) includes developing projects in local communities, observing subsistence agriculture in situ and participating in various activities which contribute to sensitizing the students to the challenges that developing countries face. Students study water resources, sustainable development, nutrition, planning and development, and a host of other fascinating topics, allowing them to sharpen their skills for future career opportunities.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

#### Required Courses (6 credits)

AGEC 442	(3)	Economics of International Agricultural Development
AGRI 411	(3)	Global Issues on Development, Food and Agriculture

#### Complementary Courses (18 credits)

Students select either Option A or Option B.

##### Option A

18 credits from the following:

AGEC 333	(3)	Resource Economics
AGEC 430	(3)	Agriculture, Food and Resource Policy
AGRI 215	(3)	Agro-Ecosystems Field Course
AGRI 325	(3)	Sustainable Agriculture and Food Security
AGRI 499	(3)	Agricultural Development Internship
BREE 510	(3)	Watershed Systems Management
ENVB 437	(3)	Assessing Environmental Impact
FDSC 525	(3)	Food Quality Assurance
NUTR 501	(3)	Nutrition in Developing Countries
PARA 410	(3)	Environment and Infection
PARA 515	(3)	Water, Health and Sanitation
PLNT 300	(3)	Cropping Systems

##### Option B

15 credits from any of the McGill Field Study Semesters

African Field Study Semester

Barbados Field Study Semester

Barbados Interdisciplinary Tropical Studies Field Semester

Panama Field Study Semester

3 credits from the list in Option A



**5.2.2.9 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Life Sciences (Multidisciplinary) (24 credits)**

Students taking this specialization have a wide variety of Life Sciences course offerings to choose from, which allow them to target their program to their own interests in the field. Course choices are balanced between "fundamentals" and "applications." Depending upon the courses chosen, the resulting program may be relatively specialized or very broad, spanning several disciplines. Such a broad background in Life Sciences will open up employment opportunities in a variety of diverse bioscience industries; students with an appropriate CGPA may proceed to a wide variety of postgraduate programs or professional schools.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

**Complementary Courses (24 credits)**

24 credits selected from the following list:

ANSC 312	(3)	Animal Health and Disease
ANSC 323	(3)	Mammalian Physiology
ANSC 324	(3)	Developmental Biology and Reproduction
ANSC 326	(3)	Fundamentals of Population Genetics
ANSC 350	(3)	Food-Borne Pathogens
ANSC 420	(3)	Animal Biotechnology
ANSC 424	(3)	Metabolic Endocrinology
ANSC 433	(3)	Animal Nutrition and Metabolism
ANSC 560	(3)	Biology of Lactation
ANSC 565	(3)	Applied Information Systems
BINF 511	(3)	Bioinformatics for Genomics
BTEC 306	(3)	Experiments in Biotechnology
BTEC 535	(3)	Functional Genomics in Model Organisms
BTEC 555	(3)	Structural Bioinformatics
ENTO 330	(3)	Insect Biology
ENTO 352	(3)	Biocontrol of Pest Insects
ENVB 301	(3)	Meteorology
ENVB 305	(3)	Population and Community Ecology
ENVB 313	(3)	Phylogeny and Biogeography
ENVB 506	(3)	Quantitative Methods: Ecology
ENVB 529	(3)	GIS for Natural Resource Management
FDSC 442	(3)	Food Microbiology
MICR 331	(3)	Microbial Ecology
MICR 338	(3)	Bacterial Molecular Genetics
MICR 341	(3)	Mechanisms of Pathogenicity
MICR 450	(3)	Environmental Microbiology
NUTR 337	(3)	Nutrition Through Life
NUTR 512	(3)	Herbs, Foods and Phytochemicals
PARA 410	(3)	Environment and Infection
PARA 424	(3)	Fundamental Parasitology
PARA 515	(3)	Water, Health and Sanitation
PLNT 304	(3)	Biology of Fungi
PLNT 305	(3)	Plant Pathology
PLNT 310	(3)	Plant Propagation

PLNT 353	(3)	Plant Structure and Function
PLNT 358	(3)	Flowering Plant Diversity
PLNT 426	(3)	Plant Ecophysiology
PLNT 434	(3)	Weed Biology and Control
PLNT 435	(3)	Plant Breeding
PLNT 460	(3)	Plant Ecology

#### 5.2.2.10 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Microbiology and Molecular Biotechnology (24 credits)

Students following this specialization receive education and training in fundamental principles and applied aspects of microbiology. Complementary courses allow students to focus on basic microbial sciences or applied areas such as biotechnology. Successful graduates may work in university, government and industrial research laboratories, in the pharmaceutical, fermentation and food industries, and with an appropriate CGPA proceed to post-graduate studies or professional biomedical schools.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

#### Required Courses (18 credits)

BTEC 306	(3)	Experiments in Biotechnology
MICR 331	(3)	Microbial Ecology
MICR 338	(3)	Bacterial Molecular Genetics
MICR 341	(3)	Mechanisms of Pathogenicity
MICR 450	(3)	Environmental Microbiology
PARA 424	(3)	Fundamental Parasitology

#### Complementary Courses and Suggested Electives (6 credits)

ANSC 350	(3)	Food-Borne Pathogens
ANSC 420	(3)	Animal Biotechnology
BINF 511	(3)	Bioinformatics for Genomics
BTEC 501	(3)	Bioinformatics
BTEC 535	(3)	Functional Genomics in Model Organisms
BTEC 555	(3)	Structural Bioinformatics
FDSC 442	(3)	Food Microbiology
MIMM 324	(3)	Fundamental Virology
PLNT 304	(3)	Biology of Fungi

#### 5.2.2.11 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Plant Biology (24 credits)

This specialization emphasizes the study of plants from the cellular to the organismal level. The structure, physiology, development, evolution, and ecology of plants will be studied. Most courses offer laboratory classes that expand on the lecture material and introduce students to the latest techniques in plant biology. Many laboratory exercises use the excellent research and field facilities at the Morgan Arboretum, McGill Herbarium, Emile A. Lods Agronomy Research Centre, the Horticultural Centre and the Plant Science greenhouses as well as McGill field stations. Students may undertake a research project under the guidance of a member of the Plant Science Department as part of their studies. Graduates with the specialization may continue in post-graduate study or work in the fields of botany, mycology, molecular biology, ecology, conservation, or environmental science.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

#### Required Courses (9 credits)

PLNT 353	(3)	Plant Structure and Function
PLNT 358	(3)	Flowering Plant Diversity
PLNT 426	(3)	Plant Ecophysiology

**Complementary Courses (15 credits)**

15 credits of complementary courses selected from:

ANSC 326	(3)	Fundamentals of Population Genetics
BINF 511	(3)	Bioinformatics for Genomics
ENVB 313	(3)	Phylogeny and Biogeography
PLNT 304	(3)	Biology of Fungi
PLNT 305	(3)	Plant Pathology
PLNT 310	(3)	Plant Propagation
PLNT 435	(3)	Plant Breeding
PLNT 460	(3)	Plant Ecology

**5.2.2.12 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Plant Production (24 credits)**

This specialization provides students with the knowledge and skills relating to the biology and physiology, breeding, propagation, and management of domesticated plants. The plant industry, in both rural and urban settings, is a sector of growing importance to Canadian and global economies. Graduates are prepared for employment in horticulture or in field crop development, production, and management, in government services, extension, teaching and consulting; or for graduate and postgraduate studies. When taken in conjunction with the Major Agro-Environmental Sciences and the specialization in Professional Agrology, this specialization conforms with the eligibility requirements for the Ordre des agronomes du Québec.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

**Required Courses (18 credits)**

PLNT 300	(3)	Cropping Systems
PLNT 305	(3)	Plant Pathology
PLNT 310	(3)	Plant Propagation
PLNT 353	(3)	Plant Structure and Function
PLNT 434	(3)	Weed Biology and Control
PLNT 435	(3)	Plant Breeding

**Complementary Courses (6 credits)**

6 credits of complementary courses selected from:

AGRI 340	(3)	Principles of Ecological Agriculture
ENTO 352	(3)	Biocontrol of Pest Insects
PLNT 302	(3)	Forage Crops and Pastures
PLNT 307	(3)	Agroecology of Vegetables and Fruits
PLNT 312	(3)	Urban Horticulture
PLNT 322	(3)	Greenhouse Management
SOIL 535	(3)	Soil Ecology

**5.2.2.13 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Professional Agrology (24 credits)**

This Specialization is required for students who wish to qualify for membership in the Ordre des agronomes du Québec (OAQ). It cannot be taken alone; it must be taken with the Major Agro-Environmental Sciences and a Second specialization in Animal Production, Ecological Agriculture, Plant Production, or Soil and Water Resources. This Specialization focuses on working in the professional agrology industry and covers agricultural legislation as well as professional conduct.

The credits within this specialization may not count towards the student's Major or other Specialization. All of the 24 credits count only for this Specialization.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>.

**Required Courses (15 credits)**

AGRI 330	(1)	Agricultural Legislation
AGRI 410D1	(3)	Agrology Internship
AGRI 410D2	(3)	Agrology Internship
AGRI 430	(2)	Professional Practice in Agrology
AGRI 490	(3)	Agri-Food Industry Project
PLNT 430	(3)	Pesticides in Agriculture

### Complementary Courses (9 credits)

Students choose 9 complementary credits, approved by the Academic Adviser, in agricultural sciences or applied agriculture to meet the requirements of the OAQ.

#### 5.2.2.14 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Professional Agrology for Agribusiness (24 credits)

This Specialization is required for students who wish to qualify for membership in the Ordre des agronomes du Québec (OAQ). It cannot be taken alone; it must be taken with the Major in Agricultural Economics and the Agribusiness Specialization. This Specialization focuses on working in the professional agribusiness industry and covers agricultural legislation as well as professional conduct.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>.

### Required Courses (12 credits)

AGRI 330	(1)	Agricultural Legislation
AGRI 410D1	(3)	Agrology Internship
AGRI 410D2	(3)	Agrology Internship
AGRI 430	(2)	Professional Practice in Agrology
AGRI 490	(3)	Agri-Food Industry Project

### Complementary Courses (12 credits)

6 credits from:

AEBI 212	(3)	Evolution and Phylogeny
LSCI 202	(3)	Molecular Cell Biology
LSCI 204	(3)	Genetics
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology

3 credits from:

ANSC 451	(3)	Dairy and Beef Production Management
ANSC 458	(3)	Swine and Poultry Production

3 credits from:

PLNT 300	(3)	Cropping Systems
PLNT 302	(3)	Forage Crops and Pastures
PLNT 434	(3)	Weed Biology and Control

#### 5.2.2.15 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Soil and Water Resources (24 credits)

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

This specialization will interest students who want to understand how soils and water interact within managed ecosystems such as urban or agricultural landscapes. The conservation and management of agricultural soils, issues affecting watershed management and decision making, and the remediation of contaminated soils will be examined. When taken with the Agro-Environmental Sciences Major and the specialization in Professional Agrology, this specialization conforms with the eligibility requirements for the Ordre des agronomes du Québec.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

#### Required Courses (15 credits)

AGRI 435	(3)	Soil and Water Quality Management
BREE 217	(3)	Hydrology and Water Resources
SOIL 326	(3)	Soils in a Changing Environment
SOIL 331	(3)	Environmental Soil Physics
SOIL 535	(3)	Soil Ecology

#### Complementary Courses (9 credits)

\* Note: Students may take BREE 529 or ENVB 529, but not both.

BREE 322	(3)	Organic Waste Management
BREE 327	(3)	Bio-Environmental Engineering
BREE 510*	(3)	Watershed Systems Management
BREE 529*	(3)	GIS for Natural Resource Management
ENVB 529*	(3)	GIS for Natural Resource Management
NRSC 333	(3)	Pollution and Bioremediation
SOIL 300	(3)	Geosystems
SOIL 510	(3)	Environmental Soil Chemistry

#### 5.2.2.16 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Wildlife Biology (24 credits)

This specialization focuses on the ecology of vertebrate animals, their biological and physical environment, and the interactions that are important in the management of ecological communities and wildlife species. Students have access to local wildlife resources including the Avian Science and Conservation Centre, the McGill Arboretum, the Stonycroft Wildlife Area, the Molson Reserve, and the Ecomuseum.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

#### Required Courses (15 credits)

ENVB 529	(3)	GIS for Natural Resource Management
WILD 307	(3)	Natural History of Vertebrates
WILD 350	(3)	Mammalogy
WILD 401	(3)	Fisheries and Wildlife Management
WILD 420	(3)	Ornithology

#### Complementary Courses (9 credits)

9 credits from the following:

BIOL 307	(3)	Behavioural Ecology
BIOL 427	(3)	Herpetology
ENVB 437	(3)	Assessing Environmental Impact
ENVB 506	(3)	Quantitative Methods: Ecology
PARA 424	(3)	Fundamental Parasitology
PLNT 358	(3)	Flowering Plant Diversity

WILD 302	(3)	Fish Ecology
WILD 421	(3)	Wildlife Conservation
WILD 475	(3)	Desert Ecology

### 5.3 Bachelor of Engineering (Bioresource) – B.Eng.(Bioresource)

For more information on this major, please see [section 4.4: Bachelor of Engineering in Bioresource Engineering – B.Eng.\(Bioresource\) \(Overview\)](#).

#### 5.3.1 Bachelor of Engineering (Bioresource) (B.Eng.(Bioresource)) - Major Bioresource Engineering (113 credits)

The B.Eng.(Bioresource); Major in Bioresource Engineering program focuses on biological, agricultural, food, environmental areas, and applying professional engineering skills to biological systems. The design and implementation of technology for the creation of bio-based products, including food, fiber, fuel, and biomaterials, while sustaining a healthful environment. Graduates of this program are eligible for registration as professional engineers in any province across Canada, as well as in some international jurisdictions.

#### Required Courses (62 credits)

AEMA 202	(3)	Intermediate Calculus
AEMA 305	(3)	Differential Equations
BREE 205	(3)	Engineering Design 1
BREE 210	(3)	Mechanical Analysis and Design
BREE 216	(3)	Bioresource Engineering Materials
BREE 252	(3)	Computing for Engineers
BREE 301	(3)	Biothermodynamics
BREE 305	(3)	Fluid Mechanics
BREE 312	(3)	Electric Circuits and Machines
BREE 319	(3)	Engineering Mathematics
BREE 327	(3)	Bio-Environmental Engineering
BREE 341	(3)	Mechanics of Materials
BREE 415	(3)	Design of Machines and Structural Elements
BREE 420	(3)	Engineering for Sustainability
BREE 451	(1)	Undergraduate Seminar 1 - Oral Presentation
BREE 452	(1)	Undergraduate Seminar 2 Poster Presentation
BREE 453	(1)	Undergraduate Seminar 3 - Scientific Writing
BREE 485	(1)	Senior Undergraduate Seminar
BREE 490	(3)	Engineering Design 2
BREE 495	(3)	Engineering Design 3
BREE 504	(3)	Instrumentation and Control
FACC 250	(0)	Responsibilities of the Professional Engineer
FACC 300	(3)	Engineering Economy
FACC 400	(1)	Engineering Professional Practice
MECH 289	(3)	Design Graphics

#### Complementary Courses (51 credits)

##### Set A

3 credits from the following:

AEMA 310	(3)	Statistical Methods 1
CIVE 302	(3)	Probabilistic Systems

3 credits from the following:

CHEE 315	(3)	Heat and Mass Transfer
MECH 346	(3)	Heat Transfer

### Set B - Natural Sciences and Mathematics

Minimum of 3 credits chosen from the following list:

AEBI 210	(3)	Organisms 1
AEBI 211	(3)	Organisms 2
ENVB 210	(3)	The Biophysical Environment
ENVB 305	(3)	Population and Community Ecology
LSCI 202	(3)	Molecular Cell Biology
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
MICR 331	(3)	Microbial Ecology
PLNT 300	(3)	Cropping Systems

With 6 credits chosen in consultation with the Academic Adviser.

### Set C - Social Sciences

Minimum of 3 credits from the following list:

ENVR 201	(3)	Society, Environment and Sustainability
ENVR 203	(3)	Knowledge, Ethics and Environment
SEAD 530	(3)	Economics for Sustainability in Engineering and Design
SOCI 235	(3)	Technology and Society

Note: ENVR courses have limited enrolment.

Plus 6 credits of Social Sciences, Management Studies, Humanities, or Law courses at the U1 undergraduate level or higher with approval of the Academic Adviser.

Note: these 6 credits may include one 3-credit language course other than the student's normal spoken languages.

### Set D - Engineering

27 credits from the following list, with the option (and approval of the Academic Adviser) of taking a maximum of 6 credits from other courses offered in the Faculty of Engineering:

BREE 214	(3)	Geomatics
BREE 217	(3)	Hydrology and Water Resources
BREE 314	(3)	Agri-Food Buildings
BREE 322	(3)	Organic Waste Management
BREE 325	(3)	Food Process Engineering
BREE 329	(3)	Precision Agriculture
BREE 403	(3)	Biological Material Properties
BREE 412	(3)	Machinery Systems Engineering
BREE 416	(3)	Engineering for Land Development

BREE 419	(3)	Structural Design
BREE 497	(3)	Bioresource Engineering Project
BREE 501	(3)	Simulation and Modelling
BREE 502	(3)	Drainage/Irrigation Engineering
BREE 505	(3)	Life Cycle Assessment for Sustainable Agrifood Systems
BREE 509	(3)	Hydrologic Systems and Modelling.
BREE 510	(3)	Watershed Systems Management
BREE 515	(3)	Soil Hydrologic Modelling
BREE 518	(3)	Ecological Engineering
BREE 519	(3)	Advanced Food Engineering
BREE 520	(3)	Food, Fibre and Fuel Elements
BREE 522	(3)	Bio-Based Polymers
BREE 529	(3)	GIS for Natural Resource Management
BREE 530	(3)	Fermentation Engineering
BREE 531	(3)	Post-Harvest Drying
BREE 532	(3)	Post-Harvest Storage
BREE 533	(3)	Water Quality Management
BREE 535	(3)	Food Safety Engineering

### 5.3.2 Bachelor of Engineering (Bioresource) (B.Eng.(Bioresource)) - Honours Bioresource Engineering (113 credits)

The B.Eng.(Bioresource); Honours in Bioresource Engineering program focuses on biological, agricultural, food, environmental areas, and applying professional engineering skills to biological systems. The design and implementation of technology for the creation of bio-based products, including food, fibre, fuel, and biomaterials, while sustaining a healthful environment. Graduates of this program are eligible for registration as professional engineers in any province across Canada, as well as in some international jurisdictions.

#### Required Courses (62 credits)

AEMA 202	(3)	Intermediate Calculus
AEMA 305	(3)	Differential Equations
BREE 205	(3)	Engineering Design 1
BREE 210	(3)	Mechanical Analysis and Design
BREE 216	(3)	Bioresource Engineering Materials
BREE 252	(3)	Computing for Engineers
BREE 301	(3)	Biothermodynamics
BREE 305	(3)	Fluid Mechanics
BREE 312	(3)	Electric Circuits and Machines
BREE 319	(3)	Engineering Mathematics
BREE 327	(3)	Bio-Environmental Engineering
BREE 341	(3)	Mechanics of Materials
BREE 415	(3)	Design of Machines and Structural Elements
BREE 420	(3)	Engineering for Sustainability
BREE 451	(1)	Undergraduate Seminar 1 - Oral Presentation
BREE 452	(1)	Undergraduate Seminar 2 Poster Presentation
BREE 453	(1)	Undergraduate Seminar 3 - Scientific Writing
BREE 485	(1)	Senior Undergraduate Seminar



BREE 490	(3)	Engineering Design 2
BREE 495	(3)	Engineering Design 3
BREE 504	(3)	Instrumentation and Control
FACC 250	(0)	Responsibilities of the Professional Engineer
FACC 300	(3)	Engineering Economy
FACC 400	(1)	Engineering Professional Practice
MECH 289	(3)	Design Graphics

### Complementary Courses (51 credits)

#### Honours Courses

Students choose either Plan A or Plan B

#### Honours Plan A

12 credits of Honours research courses in the subject area of the student's major in consultation with the Program Director of the student's major and the professor who has agreed to supervise the research project.

12 credits from:

FAES 401	(6)	Honours Research Project 1
FAES 402	(6)	Honours Research Project 2

OR

#### Honours Plan B

A minimum of 6 credits of Honours courses and 6 credits in 500-level BREE courses, selected in consultation with the Program Director of the student's major. The topic of the Honours research project must be on a topic related to their major and selected in consultation with the program Director of the student's major and the professor who has agreed to supervise the research project.

6 credits from:

FAES 405	(3)	Honours Project 1
FAES 406	(3)	Honours Project 2

Plus 6 credits of BREE courses at the 500 level.

#### Set A

3 credits from the following:

AEMA 310	(3)	Statistical Methods 1
CIVE 302	(3)	Probabilistic Systems

3 credits from the following:

CHEE 315	(3)	Heat and Mass Transfer
MECH 346	(3)	Heat Transfer

#### Set B - Natural Sciences and Mathematics

3 credits chosen from the list below:

AEBI 210	(3)	Organisms 1
AEBI 211	(3)	Organisms 2

ENVB 210	(3)	The Biophysical Environment
ENVB 305	(3)	Population and Community Ecology
LSCI 202	(3)	Molecular Cell Biology
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
MICR 331	(3)	Microbial Ecology
PLNT 300	(3)	Cropping Systems

Plus 6 credits chosen in consultation with the Academic Adviser.

### Set C - Social Sciences

Minimum of 3 credits from the following list:

ENVR 201	(3)	Society, Environment and Sustainability
ENVR 203	(3)	Knowledge, Ethics and Environment
SEAD 530	(3)	Economics for Sustainability in Engineering and Design
SOCI 235	(3)	Technology and Society

Note: ENVR courses have limited enrolment.

Plus 6 credits of social sciences, management studies, humanities, or law courses at the U1 undergraduate level or higher with approval of the Academic Adviser. Note: these 6 credits may include one 3-credit language course other than the student's normal spoken languages.

### Set D - Engineering

15 credits from the following list, with the option (and approval of the Academic Adviser) of taking a maximum of 6 credits from other courses offered in the Faculty of Engineering:

BREE 214	(3)	Geomatics
BREE 217	(3)	Hydrology and Water Resources
BREE 314	(3)	Agri-Food Buildings
BREE 322	(3)	Organic Waste Management
BREE 325	(3)	Food Process Engineering
BREE 329	(3)	Precision Agriculture
BREE 403	(3)	Biological Material Properties
BREE 412	(3)	Machinery Systems Engineering
BREE 416	(3)	Engineering for Land Development
BREE 419	(3)	Structural Design
BREE 497	(3)	Bioresource Engineering Project
BREE 501	(3)	Simulation and Modelling
BREE 502	(3)	Drainage/Irrigation Engineering
BREE 505	(3)	Life Cycle Assessment for Sustainable Agrifood Systems
BREE 509	(3)	Hydrologic Systems and Modelling.
BREE 510	(3)	Watershed Systems Management
BREE 515	(3)	Soil Hydrologic Modelling
BREE 518	(3)	Ecological Engineering
BREE 519	(3)	Advanced Food Engineering
BREE 520	(3)	Food, Fibre and Fuel Elements
BREE 522	(3)	Bio-Based Polymers
BREE 529	(3)	GIS for Natural Resource Management

BREE 530	(3)	Fermentation Engineering
BREE 531	(3)	Post-Harvest Drying
BREE 532	(3)	Post-Harvest Storage
BREE 533	(3)	Water Quality Management
BREE 535	(3)	Food Safety Engineering

### 5.3.3 Bachelor of Engineering (Bioresource) (B.Eng.(Bioresource)) - Major Bioresource Engineering - Professional Agrology (113 credits)

The B.Eng.(Bioresource); Major in Bioresource Engineering; Professional Agrology program focuses on biological, agricultural, food, environmental areas, and applying professional engineering skills to biological systems. The design and implementation of technology for the creation of bio-based products, including food, fibre, fuel, and biomaterials, while sustaining a healthful environment. Graduates of this program are eligible for registration as professional engineers in any province across Canada, as well as in some international jurisdictions. This program qualifies graduates to apply for registration in the Ordre des agronomes du Québec and similar licensing bodies in other provinces in addition to the professional engineer licensing.

#### Required Courses (65 credits)

AEMA 202	(3)	Intermediate Calculus
AEMA 305	(3)	Differential Equations
AGRI 330	(1)	Agricultural Legislation
AGRI 430	(2)	Professional Practice in Agrology
BREE 205	(3)	Engineering Design 1
BREE 210	(3)	Mechanical Analysis and Design
BREE 216	(3)	Bioresource Engineering Materials
BREE 252	(3)	Computing for Engineers
BREE 301	(3)	Biothermodynamics
BREE 305	(3)	Fluid Mechanics
BREE 312	(3)	Electric Circuits and Machines
BREE 319	(3)	Engineering Mathematics
BREE 327	(3)	Bio-Environmental Engineering
BREE 341	(3)	Mechanics of Materials
BREE 415	(3)	Design of Machines and Structural Elements
BREE 420	(3)	Engineering for Sustainability
BREE 451	(1)	Undergraduate Seminar 1 - Oral Presentation
BREE 452	(1)	Undergraduate Seminar 2 Poster Presentation
BREE 453	(1)	Undergraduate Seminar 3 - Scientific Writing
BREE 485	(1)	Senior Undergraduate Seminar
BREE 490	(3)	Engineering Design 2
BREE 495	(3)	Engineering Design 3
BREE 504	(3)	Instrumentation and Control
FACC 250	(0)	Responsibilities of the Professional Engineer
FACC 300	(3)	Engineering Economy
FACC 400	(1)	Engineering Professional Practice
MECH 289	(3)	Design Graphics

#### Complementary Courses (48 credits)

48 credits of the complementary courses selected as follows:

**Set A**

3 credits from the following:

AEMA 310	(3)	Statistical Methods 1
CIVE 302	(3)	Probabilistic Systems

3 credits from the following:

CHEE 315	(3)	Heat and Mass Transfer
MECH 346	(3)	Heat Transfer

**Set B - Natural Sciences**

Group 1 - Biology

6 credits from the following list:

AEBI 210	(3)	Organisms 1
AEBI 211	(3)	Organisms 2
LSCI 202	(3)	Molecular Cell Biology
LSCI 204	(3)	Genetics
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology

Group 2 - Agricultural Sciences

6 credits from the following list:

ANSC 250	(3)	Principles of Animal Science
ANSC 433	(3)	Animal Nutrition and Metabolism
ANSC 451	(3)	Dairy and Beef Production Management
ANSC 458	(3)	Swine and Poultry Production
PLNT 300	(3)	Cropping Systems
PLNT 302	(3)	Forage Crops and Pastures
PLNT 307	(3)	Agroecology of Vegetables and Fruits
PLNT 312	(3)	Urban Horticulture
PLNT 322	(3)	Greenhouse Management
PLNT 430	(3)	Pesticides in Agriculture

**Set C - Social Sciences**

3 credits from the following list:

ENVR 201	(3)	Society, Environment and Sustainability
ENVR 203	(3)	Knowledge, Ethics and Environment
SEAD 530	(3)	Economics for Sustainability in Engineering and Design
SOCI 235	(3)	Technology and Society

Note: ENVR courses have limited enrolment.

**Set D - Engineering**

27 credits from Group 1, Group 2, and Group 3.

Minimum of 6 credits from each of Group 1, Group 2 and Group 3 with the option (and approval of the Academic Adviser) of taking 6 credits from courses offered in the Faculty of Engineering.

#### Group 1 - Soil and Water

BREE 214	(3)	Geomatics
BREE 217	(3)	Hydrology and Water Resources
BREE 322	(3)	Organic Waste Management
BREE 329	(3)	Precision Agriculture
BREE 416	(3)	Engineering for Land Development
BREE 502	(3)	Drainage/Irrigation Engineering
BREE 509	(3)	Hydrologic Systems and Modelling.
BREE 510	(3)	Watershed Systems Management
BREE 515	(3)	Soil Hydrologic Modelling
BREE 518	(3)	Ecological Engineering
BREE 529	(3)	GIS for Natural Resource Management
BREE 533	(3)	Water Quality Management

#### Group 2 - Food Processing

BREE 325	(3)	Food Process 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

#### Group 3 - Other Engineering

BREE 314	(3)	Agri-Food Buildings
BREE 403	(3)	Biological Material Properties
BREE 412	(3)	Machinery Systems Engineering
BREE 419	(3)	Structural Design
BREE 497	(3)	Bioresource Engineering Project
BREE 501	(3)	Simulation and Modelling
BREE 505	(3)	Life Cycle Assessment for Sustainable Agrifood Systems
BREE 522	(3)	Bio-Based Polymers

### 5.3.4 Bachelor of Engineering (Bioresource) – B.Eng.(Bioresource) Related Programs

#### 5.3.4.1 Minor in Environmental Engineering

For more information, see [section 5.6.9: Minor in Environmental Engineering](#).

#### 5.3.4.2 Barbados Field Study Semester

For more information, see [Study Abroad & Field Studies > Undergraduate > Barbados Field Semester](#).

**5.3.4.3 Internship Opportunities**

For more information, see [section 4.1: Internship Opportunities](#).

**5.4 Bachelor of Science (Food Science) - B.Sc.(F.Sc.)**

Please refer to [section 4.5: Bachelor of Science in Food Science – B.Sc.\(F.Sc.\) \(Overview\)](#) for advising and other information on these B.Sc.(F.Sc.) programs.

**5.4.1 Bachelor of Science (Food Science) (B.Sc.(F.Sc.)) - Major Food Science - Food Science Option (90 credits)**

This program is intended for those students interested in the multidisciplinary field of food science. The courses are integrated to acquaint the student with food processing, food chemistry, quality assurance, analytical procedures, food products, standards, and regulations. The program prepares graduates for employment as scientists in industry or government, in regulatory, research, quality assurance, or product development capacities.

Graduates have the academic qualifications for membership in the Canadian Institute of Food Science and Technology (CIFST). Graduates of the Food Science Major with Food Science Option can also qualify for recognition by the Institute of Food Technologists (IFT).

The Food Science Option is completed to 90 credits with free elective courses.

Refer to "Faculty Information and Regulations" > "Minimum Credit Requirements" in this eCalendar for prerequisites and minimum credit requirements.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

**Required Courses (51 credits)**

Note: If an introductory CEGEP-level Organic Chemistry course has not been completed, then FDSC 230 (Organic Chemistry) must be completed as a replacement.

AEMA 310	(3)	Statistical Methods 1
AGRI 510	(3)	Professional Practice
BREE 324	(3)	Elements of Food Engineering
FDSC 200	(3)	Introduction to Food Science
FDSC 213	(3)	Analytical Chemistry 1
FDSC 251	(3)	Food Chemistry 1
FDSC 300	(3)	Principles of Food Analysis 1
FDSC 310	(3)	Post Harvest Fruit and Vegetable Technology
FDSC 319	(3)	Food Commodities
FDSC 330	(3)	Food Processing
FDSC 400	(3)	Food Packaging
FDSC 442	(3)	Food Microbiology
FDSC 495D1	(1.5)	Food Science Seminar
FDSC 495D2	(1.5)	Food Science Seminar
FDSC 525	(3)	Food Quality Assurance
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
NUTR 207	(3)	Nutrition and Health

**Additional Required Courses - Food Science Option (21 credits)**

FDSC 233	(3)	Physical Chemistry
FDSC 305	(3)	Food Chemistry 2
FDSC 315	(3)	Separation Techniques in Food Analysis 1
FDSC 334	(3)	Analysis of Food Toxins and Toxicants

FDSC 405	(3)	Food Product Development
FDSC 516	(3)	Flavour Chemistry
FDSC 540	(3)	Sensory Evaluation of Foods

### Elective Courses (18 credits)

Electives are selected in consultation with an academic adviser, to meet the minimum 90-credit requirement for the degree. A portion of these credits should be in the humanities/social sciences.

### 5.4.2 Bachelor of Science (Food Science) (B.Sc.(F.Sc.)) - Honours Food Science - Food Science Option (90 credits)

Students can use their electives to complete the Honours program. The courses credited to the Honours program must be in addition to any required or complementary courses taken to satisfy the requirements of the student's major and specialization.

In addition to satisfying the research requirements, students must apply for the Honours program in March or April of their U2 year. It is the responsibility of the student to find a professor who is willing to support and supervise the research project. No student will be accepted into the program until a supervisor has agreed to supervise the student. Applicants must have a minimum CGPA of 3.3 to enter the Honours program and they must earn a B grade (3.0) or higher in the courses making up the Honours program. Students are required to achieve a minimum overall CGPA of 3.3 at graduation to obtain honours. Students can use their electives to complete the Honours program. The courses credited to the Honours program must be in addition to any required or complementary courses taken to satisfy the requirements of the student's major and specialization.

The Honours program consists of 12 credits of courses that follow one of two plans listed below.

Students who meet all the requirements will have the name of their program changed to include the word "Honours."

A brief description of the research activities involved will be documented and signed by the Program Director of the student's major, the supervisor of the research project, and the student.

This program is intended for those students interested in the multidisciplinary field of food science. The courses are integrated to acquaint the student with food processing, food chemistry, quality assurance, analytical procedures, food products, standards, and regulations. The program prepares graduates for employment as scientists in industry or government, in regulatory, research, quality assurance, or product development capacities.

Graduates have the academic qualifications for membership in the Canadian Institute of Food Science and Technology (CIFST). Graduates of the Food Science Major with Food Science Option can also qualify for recognition by the Institute of Food Technologists (IFT).

The Food Science Option is completed after 90 credits with free elective courses.

Refer to "Faculty Information and Regulations" > "Minimum Credit Requirements" in this eCalendar for prerequisites and minimum credit requirements.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

### Required Courses (51 credits)

Note: If an introductory CEGEP-level Organic Chemistry course has not been completed, then FDSC 230 (Organic Chemistry) must be completed as a replacement.

AEMA 310	(3)	Statistical Methods 1
AGRI 510	(3)	Professional Practice
BREE 324	(3)	Elements of Food Engineering
FDSC 200	(3)	Introduction to Food Science
FDSC 213	(3)	Analytical Chemistry 1
FDSC 251	(3)	Food Chemistry 1
FDSC 300	(3)	Principles of Food Analysis 1
FDSC 310	(3)	Post Harvest Fruit and Vegetable Technology
FDSC 319	(3)	Food Commodities
FDSC 330	(3)	Food Processing
FDSC 400	(3)	Food Packaging
FDSC 442	(3)	Food Microbiology
FDSC 495D1	(1.5)	Food Science Seminar
FDSC 495D2	(1.5)	Food Science Seminar
FDSC 525	(3)	Food Quality Assurance
LSCI 211	(3)	Biochemistry 1

LSCI 230	(3)	Introductory Microbiology
NUTR 207	(3)	Nutrition and Health

**Additional Required Courses - Food Science Option (21 credits)**

FDSC 233	(3)	Physical Chemistry
FDSC 305	(3)	Food Chemistry 2
FDSC 315	(3)	Separation Techniques in Food Analysis 1
FDSC 334	(3)	Analysis of Food Toxins and Toxicants
FDSC 405	(3)	Food Product Development
FDSC 516	(3)	Flavour Chemistry
FDSC 540	(3)	Sensory Evaluation of Foods

**Honours Courses**

Students choose either Plan A or Plan B.

**Honours Plan A**

Two 6-credit Honours research courses in the subject area of the student's major, chosen in consultation with the Program Director of the student's major and the professor who has agreed to supervise the research project.

FAES 401	(6)	Honours Research Project 1
FAES 402	(6)	Honours Research Project 2

**Honours Plan B**

A minimum of two 3-credit Honours courses and 6 credits in 400- or 500-level courses, from the Faculty of Agricultural and Environmental Sciences, selected in consultation with the Program Director of the student's major. The topic of the Honours research project must be on a topic related to their major and selected in consultation with the Program Director of the student's major and the professor who has agreed to supervise the research project.

FAES 405	(3)	Honours Project 1
FAES 406	(3)	Honours Project 2

**Elective Courses (6 credits)**

Electives are selected in consultation with an academic adviser, to meet the minimum 90-credit requirement for the degree. A portion of these credits should be in the humanities/social sciences.

**5.4.3 Bachelor of Science (Food Science) (B.Sc.(F.Sc.)) - Major Food Science - Food Chemistry Option (90 credits)**

This program is intended for those students interested in the multidisciplinary field of food science. The courses are integrated to acquaint the student with food processing, food chemistry, quality assurance, analytical procedures, food products, standards, and regulations. The program prepares graduates for employment as scientists in industry or government, in regulatory, research, quality assurance, or product development capacities.

Graduates have the academic qualifications for membership in the Canadian Institute of Food Science and Technology (CIFST). Graduates of the Food Science Major with Food Chemistry Option can also qualify for recognition by the Institute of Food Technologists (IFT) and the Ordre des chimistes du Québec (OCQ). Food Chemistry Option is completed to 90 credits with free elective courses.

Please refer to "Faculty Information and Regulations" > "Minimum Credit Requirements" in this eCalendar for prerequisites and minimum credit requirements.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

**Required Courses (54 credits)**

Note: If an introductory CEGEP-level Organic Chemistry course has not been completed, then FDSC 230 (Organic Chemistry) must be completed as a replacement.

AEMA 310	(3)	Statistical Methods 1
AGRI 510	(3)	Professional Practice



BREE 324	(3)	Elements of Food Engineering
FDSC 200	(3)	Introduction to Food Science
FDSC 213	(3)	Analytical Chemistry 1
FDSC 251	(3)	Food Chemistry 1
FDSC 300	(3)	Principles of Food Analysis 1
FDSC 310	(3)	Post Harvest Fruit and Vegetable Technology
FDSC 319	(3)	Food Commodities
FDSC 330	(3)	Food Processing
FDSC 400	(3)	Food Packaging
FDSC 442	(3)	Food Microbiology
FDSC 495D1	(1.5)	Food Science Seminar
FDSC 495D2	(1.5)	Food Science Seminar
FDSC 525	(3)	Food Quality Assurance
FDSC 540	(3)	Sensory Evaluation of Foods
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
NUTR 207	(3)	Nutrition and Health

#### Additional Required Courses - Food Chemistry Option (30 credits)

Note: Graduates of this program are qualified for recognition by the Institute of Food Technologists (IFT) and the Ordre des chimistes du Québec (OCQ).

FDSC 233	(3)	Physical Chemistry
FDSC 305	(3)	Food Chemistry 2
FDSC 315	(3)	Separation Techniques in Food Analysis 1
FDSC 334	(3)	Analysis of Food Toxins and Toxicants
FDSC 405	(3)	Food Product Development
FDSC 490	(3)	Research Project 1
FDSC 491	(3)	Research Project 2
FDSC 515	(3)	Enzymology
FDSC 516	(3)	Flavour Chemistry
FDSC 520	(3)	Biophysical Chemistry of Food

#### Electives (6 credits)

Electives are selected in consultation with an academic adviser, to meet the minimum 90-credit requirement for the degree. A portion of these credits should be in the humanities/social sciences.

#### 5.4.4 About the Concurrent B.Sc.(F.Sc.) and B.Sc.(Nutr.Sc.)

Unique in North America, the concurrent degree program in Food Science and Nutritional Science allows students to complete two degrees at once while offering the best education in these complementary fields. This program opens the door to a multitude of career paths in the nutrition and food industries.

The **Food Science** component of the program focuses on the chemistry of food and the scientific principles underlying food safety, preservation, processing, and packaging, to provide consumers with quality foods. The **Nutritional Science** component deals with the science of human nutrient metabolism and the nutritional aspects of food. The program has been carefully structured to ensure that students receive the training that the industry demands, including a stage placement in the Nutrition or Food Industry.

**5.4.4.1 Concurrent Bachelor of Science in Food Science (B.Sc.(F.Sc.)) and Bachelor of Science Nutritional Sciences (B.Sc.(Nutr.Sc.)) - Food Science/Nutritional Science Major (Concurrent) (122 credits)**

The concurrent program B.Sc.(F.Sc.) and B.Sc.(Nutr.Sc.) is designed to give motivated students the opportunity to combine the two fields. The two disciplines complement each other with Food Science providing the scientific foundation in the fundamentals of food science and its application in the food system, while Nutritional Sciences brings the fundamental knowledge in the nutritional aspects of food and metabolism. The program aims to train students with the fundamental knowledge in both disciplines to promote the development of healthy food products for human consumption. The overall program is structured and closely integrated to satisfy the academic requirements of both degrees as well as the professional training or exposure to industry.

Refer to "Faculty Information and Regulations" > "Minimum Credit Requirements" in this publication for prerequisites and minimum credit requirements.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

**Required Courses (80 credits)**

AEMA 310	(3)	Statistical Methods 1
ANSC 234	(3)	Biochemistry 2
ANSC 323	(3)	Mammalian Physiology
ANSC 424	(3)	Metabolic Endocrinology
FDSC 200	(3)	Introduction to Food Science
FDSC 213	(3)	Analytical Chemistry 1
FDSC 251	(3)	Food Chemistry 1
FDSC 300	(3)	Principles of Food Analysis 1
FDSC 305	(3)	Food Chemistry 2
FDSC 310	(3)	Post Harvest Fruit and Vegetable Technology
FDSC 315	(3)	Separation Techniques in Food Analysis 1
FDSC 319	(3)	Food Commodities
FDSC 330	(3)	Food Processing
FDSC 334	(3)	Analysis of Food Toxins and Toxicants
FDSC 400	(3)	Food Packaging
FDSC 442	(3)	Food Microbiology
FDSC 497	(1.5)	Professional Seminar: Food
FDSC 525	(3)	Food Quality Assurance
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
NUTR 207	(3)	Nutrition and Health
NUTR 214	(4)	Food Fundamentals
NUTR 307	(3)	Metabolism and Human Nutrition
NUTR 337	(3)	Nutrition Through Life
NUTR 344	(4)	Clinical Nutrition 1
NUTR 497	(1.5)	Professional Seminar: Nutrition
NUTR 512	(3)	Herbs, Foods and Phytochemicals

**Complementary Courses (30 credits)**

Complementary courses are selected as follows:

At least 9 credits from the following:

AGEC 200	(3)	Principles of Microeconomics
AGEC 201	(3)	Principles of Macroeconomics

AGEC 330	(3)	Agriculture and Food Markets
AGEC 430	(3)	Agriculture, Food and Resource Policy
AGEC 442	(3)	Economics of International Agricultural Development
AGEC 450	(3)	Agribusiness Management
NUTR 342	(3)	Applied Human Resources

At least 9 credits from the following:

ANSC 551	(3)	Carbohydrate and Lipid Metabolism
ANSC 552	(3)	Protein Metabolism and Nutrition
ENVR 203	(3)	Knowledge, Ethics and Environment
FDSC 516	(3)	Flavour Chemistry
FDSC 536	(3)	Food Traceability
FDSC 537	(3)	Nutraceutical Chemistry
NUTR 322	(3)	Applied Sciences Communication
NUTR 341	(3)	Global Food Security
NUTR 503	(3)	Nutrition and Exercise

12 credits from the following:

FDSC 480	(12)	Food Industry Internship
NUTR 480	(12)	Nutrition Industry Internship

### Elective Courses (12 credits)

Electives are selected in consultation with an academic adviser.

\* Not all courses may be offered every year, please consult with your adviser when planning your program.

#### 5.4.4.2 Concurrent Bachelor of Science in Food Science (B.Sc.(F.Sc.)) and Bachelor of Science Nutritional Sciences (B.Sc.(Nutr.Sc.)) - Food Science/Nutritional Science Honours (Concurrent) (122 credits)

Students can use their electives to complete the Honours program. The courses credited to the Honours program must be in addition to any required or complementary courses taken to satisfy the requirements of the student's major and specialization.

In addition to satisfying the research requirements, students must apply for the Honours program in March or April of their U3 year. It is the responsibility of the student to find a professor who is willing to support and supervise the research project. No student will be accepted into the program until a supervisor has agreed to supervise the student. Applicants must have a minimum CGPA of 3.3 to enter the Honours program and they must earn a B grade (3.0) or higher in the courses making up the Honours program. Students are required to achieve a minimum overall CGPA of 3.3 at graduation to obtain honours. Students can use their electives to complete the Honours program. The courses credited to the Honours program must be in addition to any required or complementary courses taken to satisfy the requirements of the student's major and specialization.

The Honours program consists of 12 credits of courses that follow one of two plans listed below.

Students who meet all the requirements will have the name of their program changed to include the word "Honours."

A brief description of the research activities involved will be documented and signed by the Program Director of the student's major, the supervisor of the research project, and the student.

The concurrent program B.Sc.(F.Sc.) and B.Sc.(Nutr.Sc.) is designed to give motivated students the opportunity to combine the two fields. The two disciplines complement each other with Food Science providing the scientific foundation in the fundamentals of food science and its application in the food system, while Nutritional Sciences brings the fundamental knowledge in the nutritional aspects of food and metabolism. The program aims to train students with the fundamental knowledge in both disciplines to promote the development of healthy food products for human consumption. The overall program is structured and closely integrated to satisfy the academic requirements of both degrees as well as the professional training or exposure to industry.

Refer to "Faculty Information and Regulations" > "Minimum Credit Requirements" in this eCalendar for prerequisites and minimum credit requirements.

### Required Courses (80 credits)

AEMA 310	(3)	Statistical Methods 1
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ANSC 234	(3)	Biochemistry 2
ANSC 323	(3)	Mammalian Physiology
ANSC 424	(3)	Metabolic Endocrinology
FDSC 200	(3)	Introduction to Food Science
FDSC 213	(3)	Analytical Chemistry 1
FDSC 251	(3)	Food Chemistry 1
FDSC 300	(3)	Principles of Food Analysis 1
FDSC 305	(3)	Food Chemistry 2
FDSC 310	(3)	Post Harvest Fruit and Vegetable Technology
FDSC 315	(3)	Separation Techniques in Food Analysis 1
FDSC 319	(3)	Food Commodities
FDSC 330	(3)	Food Processing
FDSC 334	(3)	Analysis of Food Toxins and Toxicants
FDSC 400	(3)	Food Packaging
FDSC 442	(3)	Food Microbiology
FDSC 497	(1.5)	Professional Seminar: Food
FDSC 525	(3)	Food Quality Assurance
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
NUTR 207	(3)	Nutrition and Health
NUTR 214	(4)	Food Fundamentals
NUTR 307	(3)	Metabolism and Human Nutrition
NUTR 337	(3)	Nutrition Through Life
NUTR 344	(4)	Clinical Nutrition 1
NUTR 497	(1.5)	Professional Seminar: Nutrition
NUTR 512	(3)	Herbs, Foods and Phytochemicals

### Honours Courses

Students choose either Plan A or Plan B.

#### Honours Plan A

Two 6-credit Honours research courses in the subject area of the student's major, chosen in consultation with the Program Director of the student's major and the professor who has agreed to supervise the research project.

FAES 401	(6)	Honours Research Project 1
FAES 402	(6)	Honours Research Project 2

#### Honours Plan B

A minimum of two 3-credit Honours courses and 6 credits in 400- or 500-level courses, from the Faculty of Agricultural and Environmental Sciences, selected in consultation with the Program Director of the student's major. The topic of the Honours research project must be on a topic related to their major and selected in consultation with the Program Director of the student's major and the professor who has agreed to supervise the research project.

FAES 405	(3)	Honours Project 1
FAES 406	(3)	Honours Project 2

### Complementary Courses (30 credits)

Complementary courses are selected as follows:

At least 9 credits from the following:

AGEC 200	(3)	Principles of Microeconomics
AGEC 201	(3)	Principles of Macroeconomics
AGEC 330	(3)	Agriculture and Food Markets
AGEC 430	(3)	Agriculture, Food and Resource Policy
AGEC 442	(3)	Economics of International Agricultural Development
AGEC 450	(3)	Agribusiness Management

At least 9 credits from the following:

AGEC 242	(3)	Management Theories and Practices
ENVR 203	(3)	Knowledge, Ethics and Environment
NUTR 301	(3)	Psychology
NUTR 322	(3)	Applied Sciences Communication
NUTR 342	(3)	Applied Human Resources

12 credits from the following:

FDSC 480	(12)	Food Industry Internship
NUTR 480	(12)	Nutrition Industry Internship

### Elective Courses (12 credits)

Electives are selected in consultation with an academic adviser.

## 5.4.5 Bachelor of Science (Food Science) – B.Sc.(F.Sc.) Related Programs

### 5.4.5.1 Certificate in Food Science

Detailed information on this certificate program can be found under [section 5.7.2: Certificate \(Cert.\) Food Science \(30 credits\)](#) in this publication.

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## 5.5 Bachelor of Science (Nutritional Sciences) – B.Sc.(Nutr.Sc.)

Please refer to [section 4.6: Bachelor of Science in Nutritional Sciences – B.Sc.\(Nutr.Sc.\) \(Overview\)](#) for advising and other information regarding the Dietetics and Nutrition majors.

### 5.5.1 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Dietetics (115 credits)

The B.Sc.(Nutr.Sc.) Major in Dietetics is a 3.5 year program that includes 40 weeks of internship Professional Practice (Stage) integrated in each year in a planned sequence to provide the academic and practical training for a career as a dietitian-nutritionist. The program includes innovative courses to promote food and nutrition expertise, leadership, communication skills, management skills and critical thinking. Graduates of the program are eligible to be registered as a professional dietitian in province(s) of Canada.

This program is accredited by the Partnership for Dietetic Education and Practice (PDEP) and it is recognized in Quebec by the Ordre des diététistes-nutritionnistes du Québec (ODNQ) and meets all the standards and requirements of this professional order.

#### Required Courses (112 credits)

Required courses and Professional Practice (Stage) courses are sequenced in a specific order over nine terms (3.5-year program). See <https://www.mcgill.ca/nutrition/programs/undergraduate/dietetics> for detailed information regarding the undergraduate program plan.

AEMA 310	(3)	Statistical Methods 1
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ANSC 234	(3)	Biochemistry 2
ANSC 323	(3)	Mammalian Physiology
ANSC 424	(3)	Metabolic Endocrinology
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
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
NUTR 207	(3)	Nutrition and Health
NUTR 208*	(2)	Professional Practice Stage 1A
NUTR 209*	(2)	Professional Practice Stage 1B
NUTR 214	(4)	Food Fundamentals
NUTR 217	(4)	Application: Food Fundamentals
NUTR 307	(3)	Metabolism and Human Nutrition
NUTR 310*	(2)	Professional Practice Stage 2A
NUTR 311*	(5)	Professional Practice Stage 2B
NUTR 322	(3)	Applied Sciences Communication
NUTR 337	(3)	Nutrition Through Life
NUTR 341	(3)	Global Food Security
NUTR 342	(3)	Applied Human Resources
NUTR 343	(3)	Financial Management and Accounting
NUTR 344	(4)	Clinical Nutrition 1
NUTR 345	(3)	Food Service Systems Management
NUTR 346	(3)	Applied Food Service Management
NUTR 408*	(1)	Professional Practice Stage 3A
NUTR 409*	(9)	Professional Practice Stage 3B
NUTR 438	(3)	Interviewing and Counselling
NUTR 450	(3)	Research Methods: Human Nutrition
NUTR 505	(3)	Public Health Nutrition
NUTR 508*	(7)	Professional Practice Stage 4A
NUTR 509*	(7)	Professional Practice Stage 4B
NUTR 511	(3)	Nutrition and Behaviour
NUTR 545	(4)	Clinical Nutrition 2
NUTR 546	(4)	Clinical Nutrition 3

### Elective Courses (3 credits)

Students who need to improve their proficiency in either English or French are strongly encouraged to choose their electives for that purpose. Students who wish to take language courses should check with the French Language Centre, Faculty of Arts, as placement testing may be required.

Elective choice may include, but is not limited to:

FRSL 219	(3)	Français intermédiaire 1 : diététique et nutrition
NUTR 501	(3)	Nutrition in Developing Countries
NUTR 503	(3)	Nutrition and Exercise

NUTR 520 (3) Indigenous Peoples' Nutrition

#### Compulsory Immunization

A compulsory immunization program exists at McGill which is required for Dietetics students. Students should complete their immunization upon commencing Year 1 of the Dietetics Major. 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):

The School firmly applies prerequisite requirements for registration in all required courses in the Dietetics Major. All required courses must be passed with a minimum grade of C. Undergraduate registration for all Professional Practice (Stage) courses is restricted to students in the Dietetics Major with a CGPA greater than or equal to 3.00. The CGPA requirement is firmly applied. Students in the Dietetics Major who have a CGPA below 3.0 for two consecutive years will not be permitted to continue in the program. Successful completion of each rotation of each level of Stage (Professional Practice) is required to pass that level of Stage. Each level is a prerequisite for the next level. If a student fails one level of Stage, certain conditions will apply to have the option to repeat the Stage and this may include an interview to assess suitability for the profession, and potential to successfully complete the program. Students are reminded that ethical conduct on Professional Practice (Stage) rotations is required. The Faculty reserves the right to require the withdrawal of any student if at any time the Faculty feels the student has displayed unprofessional conduct or demonstrates incompetence.

### 5.5.2 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Nutrition - Food Function and Safety (90 credits)

This Major offers a core emphasis on the scientific fundamentals of nutrition and metabolism throughout the lifespan from the molecular to the organismal level. The concentration in food function and safety covers the ranges from health effects of phytochemicals and food toxicants, food chemistry and analysis, food safety, product development and influence of constituents of food on health. This degree does not lead to professional licensure as a Dietitian/Nutritionist. Graduates are qualified for careers in the biotechnology field, pharmaceutical and/or food industries, government laboratories, and the health science communications field. Graduates often continue on to graduate studies preparing for careers in research, medicine, and dentistry or as specialists in nutrition.

Refer to "Faculty Information and Regulations" > "Minimum Credit Requirements", in this eCalendar for prerequisites and minimum credit requirements.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

#### Required Courses (63 credits)

All required courses must be passed with a minimum grade of C.

AEMA 310	(3)	Statistical Methods 1
ANSC 234	(3)	Biochemistry 2
ANSC 323	(3)	Mammalian Physiology
ANSC 424	(3)	Metabolic Endocrinology
FDSC 200	(3)	Introduction to Food Science
FDSC 251	(3)	Food Chemistry 1
FDSC 300	(3)	Principles of Food Analysis 1
FDSC 305	(3)	Food Chemistry 2
FDSC 525	(3)	Food Quality Assurance
LSCI 204	(3)	Genetics
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
NUTR 207	(3)	Nutrition and Health
NUTR 214	(4)	Food Fundamentals
NUTR 307	(3)	Metabolism and Human Nutrition
NUTR 322	(3)	Applied Sciences Communication
NUTR 337	(3)	Nutrition Through Life
NUTR 344	(4)	Clinical Nutrition 1
NUTR 401	(1)	Emerging Issues in Nutrition
NUTR 450	(3)	Research Methods: Human Nutrition
NUTR 512	(3)	Herbs, Foods and Phytochemicals

**Complementary Courses (12 credits)**

12 credits of complementary courses are selected as follows:

**Common Complementary Courses**

6 credits from the following courses:

ANSC 433	(3)	Animal Nutrition and Metabolism
ANSC 560	(3)	Biology of Lactation
FDSC 537	(3)	Nutraceutical Chemistry
FDSC 545	(3)	Advances in Food Microbiology
NUTR 501	(3)	Nutrition in Developing Countries
NUTR 503	(3)	Nutrition and Exercise
NUTR 505	(3)	Public Health Nutrition
NUTR 507	(3)	Advanced Nutritional Biochemistry
NUTR 511	(3)	Nutrition and Behaviour
NUTR 537	(3)	Advanced Human Metabolism
NUTR 545	(4)	Clinical Nutrition 2
NUTR 546	(4)	Clinical Nutrition 3
NUTR 551	(3)	Analysis of Nutrition Data
PARA 438	(3)	Immunology

6 credits from the following courses:

AGRI 510	(3)	Professional Practice
ANSC 350	(3)	Food-Borne Pathogens
FDSC 315	(3)	Separation Techniques in Food Analysis 1
FDSC 319	(3)	Food Commodities
FDSC 330	(3)	Food Processing
FDSC 334	(3)	Analysis of Food Toxins and Toxicants
FDSC 405	(3)	Food Product Development
FDSC 442	(3)	Food Microbiology
FDSC 516	(3)	Flavour Chemistry
FDSC 520	(3)	Biophysical Chemistry of Food
FDSC 537	(3)	Nutraceutical Chemistry
FDSC 540	(3)	Sensory Evaluation of Foods
NUTR 430	(3)	Directed Studies: Dietetics and Nutrition 1

**Elective Courses (15 credits)**

15 credits of electives are taken to meet the minimum credit requirement for the degree. Reciprocal agreement allows all students to take a limited number of electives at any Quebec university. With prior approval students can take electives at any Canadian or international university.

**5.5.3 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Nutrition - Global Nutrition (90 credits)**

This Major covers many aspects of human nutrition and food and their impact on health and society at the community and international level. It offers a core emphasis on the scientific fundamentals of nutrition and metabolism throughout the lifespan. The specialization in global nutrition emphasizes the importance of the interaction of nutrition, diet, water, environment, and infection. This degree does not lead to professional licensure as a Dietitian/Nutritionist. Graduates are qualified for careers in national and international governmental and non-governmental food and health agencies, in world development programs, in the



food sector, and the health science communications field. Graduates often continue on to graduate studies preparing for careers in public health, epidemiology, research, medicine, and dentistry or as specialists in nutrition.

Please refer to "Faculty Information and Regulations" > "Minimum Credit Requirements" in this eCalendar for prerequisites and minimum credit requirements.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

### Required Courses (63 credits)

All required courses must be passed with a minimum grade of C.

AEMA 310	(3)	Statistical Methods 1
ANSC 234	(3)	Biochemistry 2
ANSC 323	(3)	Mammalian Physiology
ANSC 424	(3)	Metabolic Endocrinology
FDSC 200	(3)	Introduction to Food Science
FDSC 251	(3)	Food Chemistry 1
FDSC 305	(3)	Food Chemistry 2
LSCI 204	(3)	Genetics
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
NUTR 207	(3)	Nutrition and Health
NUTR 214	(4)	Food Fundamentals
NUTR 307	(3)	Metabolism and Human Nutrition
NUTR 322	(3)	Applied Sciences Communication
NUTR 337	(3)	Nutrition Through Life
NUTR 344	(4)	Clinical Nutrition 1
NUTR 401	(1)	Emerging Issues in Nutrition
NUTR 450	(3)	Research Methods: Human Nutrition
NUTR 501	(3)	Nutrition in Developing Countries
NUTR 505	(3)	Public Health Nutrition
NUTR 512	(3)	Herbs, Foods and Phytochemicals

### Complementary Courses (12 credits)

12 credits of complementary courses are selected as follows:

#### Common Complementary Courses

6 credits selected from:

ANSC 433	(3)	Animal Nutrition and Metabolism
ANSC 560	(3)	Biology of Lactation
FDSC 537	(3)	Nutraceutical Chemistry
FDSC 545	(3)	Advances in Food Microbiology
NUTR 503	(3)	Nutrition and Exercise
NUTR 507	(3)	Advanced Nutritional Biochemistry
NUTR 511	(3)	Nutrition and Behaviour
NUTR 537	(3)	Advanced Human Metabolism
NUTR 545	(4)	Clinical Nutrition 2
NUTR 546	(4)	Clinical Nutrition 3

NUTR 551	(3)	Analysis of Nutrition Data
PARA 438	(3)	Immunology

6 credits selected from:

AGEC 330	(3)	Agriculture and Food Markets
AGEC 442	(3)	Economics of International Agricultural Development
AGRI 340	(3)	Principles of Ecological Agriculture
AGRI 411	(3)	Global Issues on Development, Food and Agriculture
ANSC 560	(3)	Biology of Lactation
ANTH 302	(3)	New Horizons in Medical Anthropology
GEOG 303	(3)	Health Geography
GEOG 403	(3)	Global Health and Environmental Change
NUTR 341	(3)	Global Food Security
NUTR 430	(3)	Directed Studies: Dietetics and Nutrition 1
NUTR 506	(3)	Qualitative Methods in Nutrition
NUTR 520	(3)	Indigenous Peoples' Nutrition
PARA 410	(3)	Environment and Infection
PARA 515	(3)	Water, Health and Sanitation
PPHS 501	(3)	Population Health and Epidemiology
PPHS 511	(3)	Fundamentals of Global Health
PPHS 529	(3)	Global Environmental Health and Burden of Disease

#### Elective Courses (15 credits)

15 credits of Electives are taken to meet the minimum credit requirement for the degree. Reciprocal agreement allows all students to take a limited number of electives at any Quebec university. With prior approval students can take electives at any Canadian or international university.

#### 5.5.4 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Nutrition - Health and Disease (90 credits)

This Major offers a core emphasis on the scientific fundamentals of nutrition and metabolism throughout the lifespan. This concentration emphasizes the influence of diet and nutrition on human health and the pathophysiology of chronic disease. This degree does not lead to professional licensure as a dietitian/nutritionist. Graduates are qualified for careers in health research, pharmaceutical and/or food industries, government laboratories, and the health science communications field. Graduates often continue on to graduate studies preparing for careers in research, medicine, and dentistry or as specialists in nutrition.

Refer to "Faculty Information and Regulations" > "Minimum Credit Requirements", in this eCalendar for prerequisites and minimum credit requirements.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

#### Required Courses (60 credits)

All required courses must be passed with a minimum grade of C.

AEMA 310	(3)	Statistical Methods 1
ANSC 234	(3)	Biochemistry 2
ANSC 323	(3)	Mammalian Physiology
ANSC 424	(3)	Metabolic Endocrinology
FDSC 200	(3)	Introduction to Food Science
FDSC 251	(3)	Food Chemistry 1
FDSC 305	(3)	Food Chemistry 2
LSCI 204	(3)	Genetics

LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
NUTR 207	(3)	Nutrition and Health
NUTR 214	(4)	Food Fundamentals
NUTR 307	(3)	Metabolism and Human Nutrition
NUTR 322	(3)	Applied Sciences Communication
NUTR 337	(3)	Nutrition Through Life
NUTR 344	(4)	Clinical Nutrition 1
NUTR 401	(1)	Emerging Issues in Nutrition
NUTR 450	(3)	Research Methods: Human Nutrition
NUTR 512	(3)	Herbs, Foods and Phytochemicals
PARA 438	(3)	Immunology

### Complementary Courses (15 credits)

15 credits of complementary courses are selected as follows:

#### Common Complementary Courses

At least 6 credits from the following:

ANSC 433	(3)	Animal Nutrition and Metabolism
ANSC 551	(3)	Carbohydrate and Lipid Metabolism
ANSC 552	(3)	Protein Metabolism and Nutrition
ANSC 560	(3)	Biology of Lactation
FDSC 537	(3)	Nutraceutical Chemistry
FDSC 545	(3)	Advances in Food Microbiology
NUTR 501	(3)	Nutrition in Developing Countries
NUTR 503	(3)	Nutrition and Exercise
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

At least 9 credits from the following courses:

ANAT 214	(3)	Systemic Human Anatomy
ANAT 261	(4)	Introduction to Dynamic Histology
ANSC 312	(3)	Animal Health and Disease
ANSC 560	(3)	Biology of Lactation
MICR 341	(3)	Mechanisms of Pathogenicity
MIMM 414	(3)	Advanced Immunology
NUTR 430	(3)	Directed Studies: Dietetics and Nutrition 1
NUTR 551	(3)	Analysis of Nutrition Data
PARA 424	(3)	Fundamental Parasitology
PATH 300	(3)	Human Disease
PHAR 300	(3)	Drug Action

PHAR 301	(3)	Drugs and Disease
PHAR 303	(3)	Principles of Toxicology
PHGY 311	(3)	Channels, Synapses and Hormones
PHGY 312	(3)	Respiratory, Renal, and Cardiovascular Physiology
PHGY 313	(3)	Blood, Gastrointestinal, and Immune Systems Physiology

### Elective Courses (15 credits)

15 credits of electives are taken to meet the minimum credit requirement for the degree. A reciprocal agreement allows all students to take a limited number of electives at any Quebec university. With prior approval students can take electives at any Canadian or international university.

### 5.5.5 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Nutrition - Metabolism, Health and Disease (90 credits)

This Major offers a core emphasis on the scientific fundamentals of nutrition and metabolism throughout the lifespan from the molecular to the organismal level. This concentration emphasizes the influence of diet and nutrition on human health and the pathophysiology of inherited and acquired chronic disease. The links of nutrigenomics, nutrigenetics, and biotechnology with human health and regulation of metabolism are explored. This program does not lead to professional licensure as a dietitian/nutritionist.

### Required Courses (63 credits)

All required courses must be passed with a minimum grade of C.

AEMA 310	(3)	Statistical Methods 1
ANSC 234	(3)	Biochemistry 2
ANSC 323	(3)	Mammalian Physiology
ANSC 424	(3)	Metabolic Endocrinology
FDSC 200	(3)	Introduction to Food Science
FDSC 251	(3)	Food Chemistry 1
FDSC 305	(3)	Food Chemistry 2
LSCI 204	(3)	Genetics
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
NUTR 207	(3)	Nutrition and Health
NUTR 214	(4)	Food Fundamentals
NUTR 307	(3)	Metabolism and Human Nutrition
NUTR 322	(3)	Applied Sciences Communication
NUTR 337	(3)	Nutrition Through Life
NUTR 344	(4)	Clinical Nutrition 1
NUTR 401	(1)	Emerging Issues in Nutrition
NUTR 450	(3)	Research Methods: Human Nutrition
NUTR 507	(3)	Advanced Nutritional Biochemistry
NUTR 512	(3)	Herbs, Foods and Phytochemicals
NUTR 537	(3)	Advanced Human Metabolism

### Complementary Courses (12 credits)

12 credits of complementary courses are selected as follows:

#### Common Complementary Courses

6 credits from the following:

ANSC 433	(3)	Animal Nutrition and Metabolism
ANSC 560	(3)	Biology of Lactation
FDSC 537	(3)	Nutraceutical Chemistry
FDSC 545	(3)	Advances in Food Microbiology
NUTR 501	(3)	Nutrition in Developing Countries
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
PARA 438	(3)	Immunology

6 credits from the following courses:

ANAT 214	(3)	Systemic Human Anatomy
ANAT 261	(4)	Introduction to Dynamic Histology
ANAT 262	(3)	Introductory Molecular and Cell Biology
ANAT 322	(3)	Neuroendocrinology
ANSC 312	(3)	Animal Health and Disease
ANSC 324	(3)	Developmental Biology and Reproduction
ANSC 400	(3)	Eukaryotic Cells and Viruses
ANSC 560	(3)	Biology of Lactation
BIOL 300	(3)	Molecular Biology of the Gene
BTEC 306	(3)	Experiments in Biotechnology
MICR 341	(3)	Mechanisms of Pathogenicity
NUTR 430	(3)	Directed Studies: Dietetics and Nutrition 1
PARA 424	(3)	Fundamental Parasitology
PATH 300	(3)	Human Disease
PHAR 300	(3)	Drug Action
PHAR 301	(3)	Drugs and Disease
PHAR 303	(3)	Principles of Toxicology
PHGY 311	(3)	Channels, Synapses and Hormones
PHGY 312	(3)	Respiratory, Renal, and Cardiovascular Physiology
PHGY 313	(3)	Blood, Gastrointestinal, and Immune Systems Physiology

#### Elective Courses (15 credits)

15 credits of electives are taken to meet the minimum credit requirement for the degree. A reciprocal agreement allows all students to take a limited number of electives at any Quebec university. With prior approval students can take electives at any Canadian or international university.

#### 5.5.6 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Nutrition - Sports Nutrition (90 credits)

This Major offers a core emphasis on the scientific fundamentals of nutrition and metabolism throughout the lifespan from the molecular to the organismal level. The concentration in sports nutrition integrates the influence of exercise and physical activity on health and chronic disease prevention. This degree does not lead to professional licensure as a Dietitian/Nutritionist. Graduates are qualified for careers in the biotechnology field, pharmaceutical and/or food

industries, government laboratories, and the health science communications field. Graduates often continue on to graduate studies preparing for careers in research, medicine, and dentistry or as specialists in nutrition.

Refer to "Faculty Information and Regulations" > "Minimum Credit Requirements", in this eCalendar for prerequisites and minimum credit requirements.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

### Required Courses (63 credits)

All required courses must be passed with a minimum grade of C.

AEMA 310	(3)	Statistical Methods 1
ANSC 234	(3)	Biochemistry 2
ANSC 323	(3)	Mammalian Physiology
ANSC 424	(3)	Metabolic Endocrinology
EDKP 395	(3)	Exercise Physiology
FDSC 200	(3)	Introduction to Food Science
FDSC 251	(3)	Food Chemistry 1
FDSC 305	(3)	Food Chemistry 2
LSCI 204	(3)	Genetics
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
NUTR 207	(3)	Nutrition and Health
NUTR 214	(4)	Food Fundamentals
NUTR 307	(3)	Metabolism and Human Nutrition
NUTR 322	(3)	Applied Sciences Communication
NUTR 337	(3)	Nutrition Through Life
NUTR 344	(4)	Clinical Nutrition 1
NUTR 401	(1)	Emerging Issues in Nutrition
NUTR 450	(3)	Research Methods: Human Nutrition
NUTR 503	(3)	Nutrition and Exercise
NUTR 512	(3)	Herbs, Foods and Phytochemicals

### Complementary Courses (12 credits)

12 credits of complementary courses are selected as follows:

#### Common Complementary Courses

6 credits from the following:

ANSC 433	(3)	Animal Nutrition and Metabolism
ANSC 560	(3)	Biology of Lactation
FDSC 537	(3)	Nutraceutical Chemistry
FDSC 545	(3)	Advances in Food Microbiology
NUTR 501	(3)	Nutrition in Developing Countries
NUTR 505	(3)	Public Health Nutrition
NUTR 507	(3)	Advanced Nutritional Biochemistry
NUTR 511	(3)	Nutrition and Behaviour
NUTR 537	(3)	Advanced Human Metabolism
NUTR 545	(4)	Clinical Nutrition 2

NUTR 546	(4)	Clinical Nutrition 3
NUTR 551	(3)	Analysis of Nutrition Data
PARA 438	(3)	Immunology

6 credits from:

ANAT 214	(3)	Systemic Human Anatomy
EDKP 261	(3)	Motor Development
EDKP 330	(3)	Physical Activity and Public Health
EDKP 445	(3)	Exercise Metabolism
EDKP 446	(3)	Physical Activity and Ageing
EDKP 448	(3)	Exercise and Health Psychology
EDKP 449	(3)	Neuromuscular and Inflammatory Pathophysiology
EDKP 485	(3)	Cardiopulmonary Exercise Pathophysiology
EDKP 495	(3)	Scientific Principles of Training
EDKP 542	(3)	Environmental Exercise Physiology
NUTR 430	(3)	Directed Studies: Dietetics and Nutrition 1
NUTR 551	(3)	Analysis of Nutrition Data

#### Elective Courses (15 credits)

15 credits of electives are taken to meet the minimum credit requirement for the degree. Reciprocal agreement allows all students to take a limited number of electives at any Quebec university. With prior approval, students can take electives at any Canadian or international university.

#### 5.5.7 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Honours in Nutrition (90 credits)

B.Sc.(Nutr.Sc.); Honours in Nutrition is intended for students who are interested in gaining a concentrated research experience in Human Nutrition. Students in the B.Sc.(Nutr.Sc.) Nutrition Major program who have a CGPA of at least 3.6, and a grade of at least A- in all NUTR courses can apply to transfer in Winter U2 term. It is the responsibility of each student to find a professor to support and supervise a research project. Graduation requires completion of a minimum of 90 credits, with CGPA of at least 3.6, and a grade of at least A- in all NUTR courses. Students who do not maintain Honours standing may transfer registration to the B.Sc.(Nutr.Sc.) Nutrition Major.

#### Required Courses (75 credits)

AEMA 310	(3)	Statistical Methods 1
ANSC 234	(3)	Biochemistry 2
ANSC 323	(3)	Mammalian Physiology
ANSC 424	(3)	Metabolic Endocrinology
FDSC 200	(3)	Introduction to Food Science
FDSC 251	(3)	Food Chemistry 1
FDSC 305	(3)	Food Chemistry 2
LSCI 204	(3)	Genetics
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
NUTR 207	(3)	Nutrition and Health
NUTR 214	(4)	Food Fundamentals
NUTR 307	(3)	Metabolism and Human Nutrition
NUTR 322	(3)	Applied Sciences Communication
NUTR 337	(3)	Nutrition Through Life

NUTR 344	(4)	Clinical Nutrition 1
NUTR 401	(1)	Emerging Issues in Nutrition
NUTR 450	(3)	Research Methods: Human Nutrition
NUTR 491	(3)	Honours Research 1
NUTR 492	(3)	Honours Research 2
NUTR 493	(3)	Honours Research 3
NUTR 494	(3)	Honours Research 4
NUTR 507	(3)	Advanced Nutritional Biochemistry
NUTR 537	(3)	Advanced Human Metabolism
NUTR 551	(3)	Analysis of Nutrition Data

### Elective Courses (15 credits)

15 credits chosen in consultation with the research supervisor, a limited number of credits may be taken at other Quebec and/or Canadian universities.

## 5.5.8 Bachelor of Science (Nutritional Sciences) – Related Programs

### 5.5.8.1 Minor in Human Nutrition

Detailed information on this Minor can be found under [section 5.6.10: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor Human Nutrition \(24 credits\)](#) in this publication.

### 5.5.8.2 Concurrent Bachelor of Science in Food Science – B.Sc.(F.Sc.) and Bachelor of Science in Nutritional Sciences – B.Sc.(Nutr.Sc.) – Food Science/Nutritional Science Major

Detailed information on this concurrent program can be found under [section 5.4.4.1: Concurrent Bachelor of Science in Food Science \(B.Sc.\(F.Sc.\)\) and Bachelor of Science Nutritional Sciences \(B.Sc.\(Nutr.Sc.\)\) - Food Science/Nutritional Science Major \(Concurrent\) \(122 credits\)](#) in this publication.

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## 5.6 Minor Programs

The Faculty of Agricultural and Environmental Sciences offers a number of minor programs; the following are offered by the FAES Dean's Office, or in partnership with another school or faculty.

For a full list of minors offered by the Faculty of Agricultural and Environmental Sciences, refer to [section 4.9: Minor Programs \(Overview\)](#). For registration information, see [section 3.5.8.1: Procedures for Minor Programs](#).

### 5.6.1 Minor in Environment (Bieler School of Environment)

For information about the Minor in Environment, consult [Bieler School of Environment > Undergraduate > Browse Academic Programs > : Minor in Environment](#).

### 5.6.2 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor Agribusiness Entrepreneurship (18 credits)

This Minor is a collaboration by the Faculty of Agricultural and Environmental Sciences and the Desautels Faculty of Management. It provides students with an understanding of how to conceptualize, develop, and manage successful ventures in the agricultural, ag-tech, bioresource engineering, environmental, and food sectors - including for-profit private companies and social enterprises - and how to champion intrapreneurship activities in larger organizations. The program covers the essentials of management and is interdisciplinary and integrative. Many courses include a diverse set of students from multiple McGill faculties.

Within this Minor, 18 credits must be unique (only count for the Minor and do not overlap with the Major or Specialization), except for students enrolled in programs with more than 72 credits of required and complementary courses, who can count up to 6 credits of courses in the Major or Specialization.

Students in this Minor are not permitted to take the Desautels Minors in Management, Marketing, Finance or Operations Management (for non-Management students).

Minimum requirements: U2 or above; minimum 3.0 CGPA. This Minor has limited enrolment. Students should contact the program director to apply.

### Required Courses (12 credits)



INTG 201	(3)	Integrated Management Essentials 1
INTG 202	(3)	Integrated Management Essentials 2
MGPO 362	(3)	Fundamentals of Entrepreneurship
MGPO 364	(3)	Entrepreneurship in Practice

### Complementary Courses (6 credits)

6 credits from the following:

AGEC 231	(3)	Economic Systems of Agriculture
AGEC 332	(3)	Farm Management and Finance
AGEC 430	(3)	Agriculture, Food and Resource Policy
AGEC 450	(3)	Agribusiness Management
AGRI 411	(3)	Global Issues on Development, Food and Agriculture
AGRI 493	(3)	International Project Management
FAES 300*	(3)	Internship 2
FAES 310	(3)	Agribusiness Entrepreneurship

\* Note: To be counted towards the Minor in Agribusiness Entrepreneurship, the placement in FAES 300 must be approved by the program coordinator as having entrepreneurial focus.

### 5.6.3 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor Agricultural Economics (24 credits)

The Minor in Agricultural Economics will complement a student's education in four ways. First, as a social science, Economics will provide an alternative perspective for students in the Faculty. Second, the Minor will provide an excellent foundation of the workings of the economy at large. Third, it will aid students in understanding the business environment surrounding the agri-food industry. Finally, it will challenge students to analyze the interaction between the agricultural economy and the natural resource base.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

#### Required Courses (12 credits)

AGEC 200	(3)	Principles of Microeconomics
AGEC 201	(3)	Principles of Macroeconomics
AGEC 330	(3)	Agriculture and Food Markets
AGEC 333	(3)	Resource Economics

#### Complementary Courses (12 credits)

12 credits of complementary courses selected from:

AGEC 231	(3)	Economic Systems of Agriculture
AGEC 242	(3)	Management Theories and Practices
AGEC 320	(3)	Intermediate Microeconomic Theory
AGEC 332	(3)	Farm Management and Finance
AGEC 425	(3)	Applied Econometrics
AGEC 430	(3)	Agriculture, Food and Resource Policy
AGEC 442	(3)	Economics of International Agricultural Development
AGEC 450	(3)	Agribusiness Management
AGEC 491	(3)	Research and Methodology
AGEC 492	(3)	Special Topics in Agricultural Economics 01

**5.6.4 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor Agricultural Production (24 credits)**

This Minor program is designed to allow students in non-agricultural production majors to receive credit for courses in agricultural production and to stimulate "cross-over" studies. The Minor can be associated with existing major programs in the Faculty, but in some instances it may require more than 90 credits to meet the requirements of both the Major and the Minor.

Students are advised to consult their major program adviser and the Academic Adviser of the Minor in their first year. At the time of registration for their penultimate year, students must declare their intent to obtain a Minor Agricultural Production. With the agreement of their major program adviser, they must submit their program of courses already taken, and to be taken in their final year, to the Academic Adviser of the Agricultural Production Minor. The Academic Adviser of the Agricultural Production Minor will then certify which courses the student will apply toward the Minor and that the student's program conforms with the requirements of the Minor.

Notes:

1. Most courses listed at the 300 level and higher have prerequisites. Although instructors may waive prerequisite(s) in some cases, students are urged to prepare their program of study well before their final year.
2. Not all courses are offered every year. For information on available courses, consult Class Schedule at <http://www.mcgill.ca/minerva>. Complete listings can be found in the "Courses" section of this eCalendar.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

**General Regulations**

To obtain a Minor in Agricultural Production, students must:

- a) ensure that their academic record at the University includes a C grade or higher in the courses as specified in the course requirements given below.
- b) offer a minimum total of 24 credits from the courses as given below, of which not more than 6 credits may be counted for both the Major and the Minor programs. This restriction does not apply to elective courses in the Major program.

**Required Courses (12 credits)**

AEBI 210	(3)	Organisms 1
ANSC 250	(3)	Principles of Animal Science
ENVB 210	(3)	The Biophysical Environment
PLNT 300	(3)	Cropping Systems

**Complementary Courses (12 credits)**

12 credits chosen from the following list in consultation with the Academic Adviser for the Minor:

AGRI 215	(3)	Agro-Ecosystems Field Course
AGRI 340	(3)	Principles of Ecological Agriculture
ANSC 451	(3)	Dairy and Beef Production Management
ANSC 458	(3)	Swine and Poultry Production
PLNT 302	(3)	Forage Crops and Pastures
PLNT 307	(3)	Agroecology of Vegetables and Fruits

**5.6.5 Bachelor of Engineering (Bioresource) (B.Eng.(Bioresource)) - Minor Animal Biology (24 credits)**

The Minor Animal Biology is intended for students who wish to further their studies in the basic biology of large mammals and birds. Successful completion of the program should provide students with a sound background in the field of biomedical studies and the use of animal models. It should also qualify students to apply to most veterinary colleges in North America, to study in a variety of postgraduate biology programs, and to work in many laboratory settings.

This Minor is not open to students in B.Sc.(Ag.Env.Sc.) programs. These students may register for the specialization in Animal Biology.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

**Required Courses (15 credits)**

ANSC 312	(3)	Animal Health and Disease
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ANSC 323	(3)	Mammalian Physiology
ANSC 324	(3)	Developmental Biology and Reproduction
ANSC 420	(3)	Animal Biotechnology
PARA 438	(3)	Immunology

#### Complementary Courses (9 credits)

9 credits selected from:

ANSC 234	(3)	Biochemistry 2
ANSC 251	(3)	Comparative Anatomy
ANSC 326	(3)	Fundamentals of Population Genetics
ANSC 400	(3)	Eukaryotic Cells and Viruses
ANSC 424	(3)	Metabolic Endocrinology
ANSC 433	(3)	Animal Nutrition and Metabolism
ANSC 555	(3)	The Use and Welfare of Animals
ANSC 560	(3)	Biology of Lactation
ANSC 565	(3)	Applied Information Systems
LSCI 451	(3)	Research Project 1

#### 5.6.6 Bachelor of Engineering (Bioresource) (B.Eng.(Bioresource)) - Minor Animal Health and Disease (24 credits)

The Minor in Animal Health and Disease is offered to students wishing to understand general animal physiology and function, the susceptibility of animals to various diseases, methods for limiting and controlling potential outbreaks, and the resulting implications for the animal, the consumer, and the environment. It is an ideal choice for students who are interested in the care of animals, or in working in laboratories where diseases are being researched. It would also be useful to students who wish to apply to most veterinary colleges in North America.

This Minor is not open to students in B.Sc.(Ag.Env.Sc.) programs. These students may register for the specialization in Animal Health and Disease.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

#### Required Courses (18 credits)

ANSC 312	(3)	Animal Health and Disease
ANSC 323	(3)	Mammalian Physiology
ANSC 350	(3)	Food-Borne Pathogens
ANSC 424	(3)	Metabolic Endocrinology
MICR 341	(3)	Mechanisms of Pathogenicity
PARA 438	(3)	Immunology

#### Complementary Courses (6 credits)

6 credits selected from the following list:

ANSC 234	(3)	Biochemistry 2
ANSC 251	(3)	Comparative Anatomy
ANSC 303	(2)	Farm Livestock Internship
ANSC 324	(3)	Developmental Biology and Reproduction
ANSC 433	(3)	Animal Nutrition and Metabolism
ANSC 555	(3)	The Use and Welfare of Animals

**5.6.7 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor Applied Ecology (24 credits)**

Food, water, air, the materials we use, and much of the diversity of life and recreation we enjoy are products of ecological systems. We manage ecosystems to provide these services and our use and misuse often degrades the ability of ecosystems to provide the benefits and services we value. In the Minor Applied Ecology you will develop your ability to understand how ecosystems function. You will apply systems thinking to the challenge of managing ecosystems for agriculture, forestry, fisheries, protected areas, and urban development. Concepts and tools will be presented that help you to deal with the complexity that an ecosystem perspective brings. The goal of this minor is to provide students with an opportunity to further develop their understanding of the ecosystem processes, ecology, and systems thinking necessary to understand, design, and manage our interaction with the environment.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

To obtain a Minor in Applied Ecology, students must:

- a) Ensure all required and complementary courses are passed with a minimum grade of C;
- b) Select 24 credits from the courses as given below, of which not more than 6 credits may be counted toward the Major and the Minor programs. This restriction does not apply to elective courses in the Major program.

**Required Courses (9 credits)**

ENVB 305	(3)	Population and Community Ecology
ENVB 437	(3)	Assessing Environmental Impact
ENVB 529	(3)	GIS for Natural Resource Management

**Complementary Courses (15 credits)**

15 credits from the following:

AGRI 340	(3)	Principles of Ecological Agriculture
AGRI 435	(3)	Soil and Water Quality Management
BREE 327	(3)	Bio-Environmental Engineering
ENTO 330	(3)	Insect Biology
ENTO 340	(3)	Field Entomology
ENVB 301	(3)	Meteorology
ENVB 313	(3)	Phylogeny and Biogeography
ENVB 415	(3)	Ecosystem Management
ENVB 500	(3)	Advanced Topics in Ecotoxicology
ENVB 506	(3)	Quantitative Methods: Ecology
ENVB 530	(3)	Advanced GIS for Natural Resource Management
MICR 331	(3)	Microbial Ecology
MICR 450	(3)	Environmental Microbiology
PLNT 304	(3)	Biology of Fungi
PLNT 426	(3)	Plant Ecophysiology
PLNT 460	(3)	Plant Ecology
SOIL 300	(3)	Geosystems
SOIL 326	(3)	Soils in a Changing Environment
SOIL 535	(3)	Soil Ecology
WILD 302	(3)	Fish Ecology
WILD 307	(3)	Natural History of Vertebrates
WILD 350	(3)	Mammalogy
WILD 420	(3)	Ornithology
WILD 421	(3)	Wildlife Conservation

### 5.6.8 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor Ecological Agriculture (24 credits)

The Minor Ecological Agriculture is designed to focus on the principles underlying the practice of ecological agriculture and is suitable for students wishing to farm and do extension and government work, and those intending to pursue postgraduate studies in this field.

This Minor can be associated with existing major programs in the Faculty, but in some instances it may require more than 90 credits to meet the requirements of both the Major and the Minor.

Students are advised, during the U1 year, to consult their Major program adviser and the Academic Adviser of the Minor. At the time of registration for the U2 year, students must declare their intent to obtain the Minor. With the agreement of their Major program adviser they must submit their program of courses already taken, and to be taken, to the Academic Adviser of the Minor. The Academic Adviser of the Minor will then certify which courses the student will apply toward the Minor and confirm that the student's program conforms with its requirements.

For information on academic advising, see: [www.mcgill.ca/macdonald/studentinfo/advising](http://www.mcgill.ca/macdonald/studentinfo/advising)

#### General Regulations

To obtain a Minor in Ecological Agriculture, students must:

- Ensure that their academic record at the University includes a C grade or higher in the courses as specified in the course requirements given below.
- Offer a minimum total of 24 credits from the courses as given below, of which not more than 6 credits may be counted for both the Major and the Minor programs. This restriction does not apply to elective courses in the Major program.

#### Required Courses (12 credits)

AGEC 430	(3)	Agriculture, Food and Resource Policy
AGRI 215	(3)	Agro-Ecosystems Field Course
AGRI 340	(3)	Principles of Ecological Agriculture
SOIL 535	(3)	Soil Ecology

#### Complementary Courses (12 credits)

AGRI 310	(3)	Internship in Agriculture/Environment
AGRI 411	(3)	Global Issues on Development, Food and Agriculture
ANSC 312	(3)	Animal Health and Disease
BREE 327	(3)	Bio-Environmental Engineering
ENTO 352	(3)	Biocontrol of Pest Insects
MICR 331	(3)	Microbial Ecology
NUTR 341	(3)	Global Food Security
PLNT 302	(3)	Forage Crops and Pastures
PLNT 307	(3)	Agroecology of Vegetables and Fruits
PLNT 312	(3)	Urban Horticulture
PLNT 434	(3)	Weed Biology and Control
PLNT 460	(3)	Plant Ecology
WOOD 441	(3)	Integrated Forest Management

### 5.6.9 Minor in Environmental Engineering

The Minor program consists of 21 credits in courses that are environment related. This requires the careful selection of complementary courses to permit Bioresource Engineering students to obtain this Minor with a minimum of 12 additional credits.

The Environmental Engineering Minor is administered by the Faculty of Engineering, Department of Civil Engineering (see [Faculty of Engineering > Undergraduate > Browse Academic Units & Programs > Minor Programs > Bachelor of Engineering \(B.Eng.\) - Minor Environmental Engineering \(21 credits\)](#)).

**Courses Available in the Faculty of Agricultural and Environmental Sciences (Partial Listing)**

BREE 217	Hydrology and Water Resources
BREE 322	Organic Waste Management
BREE 416	Engineering for Land Development
BREE 518	Ecological Engineering
MICR 331	Microbial Ecology

For academic advising, please consult [mcgill.ca/macdonald/studentinfo/advising](http://mcgill.ca/macdonald/studentinfo/advising).

**5.6.10 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor Human Nutrition (24 credits)**

The Minor Human Nutrition is intended to complement a student's primary field of study by providing a focused introduction to the metabolic aspects of human nutrition. It is particularly accessible to students in Biochemistry, Biology, Physiology, Anatomy and Cell Biology, Microbiology and Immunology, Animal Science, or Food Science programs. The completion of 24 credits is required, of which at least 18 must not overlap with the primary program. All courses must be taken in the appropriate sequence and passed with a minimum grade of C. Students may declare their intent to follow the Minor program at the beginning of their U2 year. They must then consult with the academic adviser in the School of Human Nutrition to obtain approval for their course selection. Since some courses may not be offered every year and many have prerequisites, students are cautioned to plan their program in advance.

The Minor program does not carry professional recognition; therefore, it is not suitable for students wishing to become nutritionists or dietitians. However, successful completion may enable students to qualify for many postgraduate nutrition programs.

Note:

Most courses listed at the 300 level and higher have prerequisites. Although instructors may waive prerequisite(s) in some cases, students are urged to prepare their program of study well before their final year.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

**Required Courses (6 credits)**

NUTR 337	(3)	Nutrition Through Life
NUTR 450	(3)	Research Methods: Human Nutrition

**Complementary Courses (18 credits)**

18 credits are selected as follows:

3 credits in Biochemistry, one of:

ANSC 234	(3)	Biochemistry 2
BIOC 311	(3)	Metabolic Biochemistry

3 credits in Physiology, one of:

ANSC 323	(3)	Mammalian Physiology
PHGY 210	(3)	Mammalian Physiology 2

3 credits in Nutrition, one of:

ANSC 433	(3)	Animal Nutrition and Metabolism
NUTR 307	(3)	Metabolism and Human Nutrition

9 credits from:

ANSC 551	(3)	Carbohydrate and Lipid Metabolism
ANSC 552	(3)	Protein Metabolism and Nutrition

MIMM 314	(3)	Intermediate Immunology
NUTR 344	(4)	Clinical Nutrition 1
NUTR 430	(3)	Directed Studies: Dietetics and Nutrition 1
NUTR 501	(3)	Nutrition in Developing Countries
NUTR 503	(3)	Nutrition and Exercise
NUTR 505	(3)	Public Health Nutrition
NUTR 512	(3)	Herbs, Foods and Phytochemicals
NUTR 551	(3)	Analysis of Nutrition Data
PARA 438	(3)	Immunology
PATH 300	(3)	Human Disease

### 5.6.11 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor International Agriculture (24 credits)

Students enter this minor to acquire a global and applied understanding of agriculture as a fundamental tool to help rural development, alleviate poverty and reach food security, especially in the developing world. This program provides students with a combination of coursework at McGill together with a hands-on experience in a developing country, meeting locals and attending courses with McGill professors and/or local instructors. The costs of these field experiences may vary. The field experience (semester, short course or internship) includes developing projects in local communities, observing subsistence agriculture in situ and participating in various activities which contribute to sensitizing the students to the challenges that developing countries face. Students study water resources, sustainable development, nutrition, planning and development, and a host of other fascinating topics, allowing them to sharpen their skills for future career opportunities.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

#### Required Courses (6 credits)

AGEC 442	(3)	Economics of International Agricultural Development
AGRI 411	(3)	Global Issues on Development, Food and Agriculture

#### Complementary Courses (18 credits)

Students select 18 credits from either Option A or Option B

##### Option A

18 credits from the following:

AGEC 333	(3)	Resource Economics
AGEC 430	(3)	Agriculture, Food and Resource Policy
AGRI 215	(3)	Agro-Ecosystems Field Course
AGRI 325	(3)	Sustainable Agriculture and Food Security
AGRI 499	(3)	Agricultural Development Internship
BREE 510	(3)	Watershed Systems Management
ENVB 437	(3)	Assessing Environmental Impact
FDSC 525	(3)	Food Quality Assurance
NUTR 501	(3)	Nutrition in Developing Countries
PARA 410	(3)	Environment and Infection
PARA 515	(3)	Water, Health and Sanitation
PLNT 300	(3)	Cropping Systems

##### Option B

15 credits from any of the McGill Field Study Semesters:

Africa Field Study Semester  
 Barbados Field Study Semester  
 Barbados Interdisciplinary Tropical Studies Field Semester  
 Panama Field Study Semester

Plus 3 credits from the list in Option A

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## 5.7 Post-Baccalaureate Certificate Programs

The Faculty offers the following 30-credit post-baccalaureate certificate programs.

### 5.7.1 Certificate (Cert.) Ecological Agriculture (30 credits)

This 30-credit certificate program is very similar to the Minor program and is designed to focus on the principles underlying the practice of ecological agriculture. The certificate may be of special interest to professional agrologists who want further training, as well as formal recognition that they have completed a coherent program of courses beyond their B.Sc. studies.

Students holding a B.Sc. in agriculture or a related area are eligible to register for this program provided that they are otherwise acceptable for admission to the University. Students who have completed the Minor or specialization in Ecological Agriculture are not permitted to register for this program.

For information on academic advising, see: <http://www.mcgill.ca/macdonald/studentinfo/advising>

#### General Regulations

To obtain a certificate in Ecological Agriculture, students must complete a minimum total of 30 credits from the courses as given below.

#### Notes:

1. Most courses listed at the 300 level and higher have prerequisites. Although instructors may waive prerequisite(s) in some cases, students are urged to prepare their program of study to ensure that they have met all conditions.
2. Students using AGRI 310 toward the requirements of the Specialization/Minor/Certificate are limited to an experience on farms or other enterprises that are organic, biodynamic, or practising permaculture. The placement must be approved by the academic adviser for the specialization/Minor/certificate.

#### Required Courses (12 credits)

AGEC 430	(3)	Agriculture, Food and Resource Policy
AGRI 215	(3)	Agro-Ecosystems Field Course
AGRI 340	(3)	Principles of Ecological Agriculture
SOIL 535	(3)	Soil Ecology

#### Complementary Courses (18 credits)

18 credits chosen from the following, in consultation with the Academic Adviser for Ecological Agriculture.

AGRI 310	(3)	Internship in Agriculture/Environment
AGRI 411	(3)	Global Issues on Development, Food and Agriculture
AGRI 435	(3)	Soil and Water Quality Management
ANSC 312	(3)	Animal Health and Disease
ENTO 352	(3)	Biocontrol of Pest Insects
ENVB 305	(3)	Population and Community Ecology
ENVB 415	(3)	Ecosystem Management
MICR 331	(3)	Microbial Ecology
NUTR 341	(3)	Global Food Security
PARA 424	(3)	Fundamental Parasitology
PLNT 302	(3)	Forage Crops and Pastures



PLNT 307	(3)	Agroecology of Vegetables and Fruits
PLNT 434	(3)	Weed Biology and Control
PLNT 460	(3)	Plant Ecology
SOIL 326	(3)	Soils in a Changing Environment
WOOD 441	(3)	Integrated Forest Management

### 5.7.2 Certificate (Cert.) Food Science (30 credits)

This program is geared toward mature students, who have an undergraduate degree in a science-related discipline, to acquire the basic knowledge in the food science area to enter food-related industries or a food science graduate program. Students must complete a core course that introduces them to the basics of the field of food science and then choose complementary courses that allow a broad-based exposure in areas such as food chemistry/analysis, food microbiology/nutrition, quality assurance/safety, processing/engineering, communication skills, and ethics.

#### Required Course (3 credits)

FDSC 200	(3)	Introduction to Food Science
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#### Complementary Courses (27 credits)

27 credits (select no more than two 200-level courses)

AGRI 510	(3)	Professional Practice
BREE 324	(3)	Elements of Food Engineering
BREE 535	(3)	Food Safety Engineering
FDSC 213	(3)	Analytical Chemistry 1
FDSC 251	(3)	Food Chemistry 1
FDSC 300	(3)	Principles of Food Analysis 1
FDSC 305	(3)	Food Chemistry 2
FDSC 310	(3)	Post Harvest Fruit and Vegetable Technology
FDSC 315	(3)	Separation Techniques in Food Analysis 1
FDSC 319	(3)	Food Commodities
FDSC 330	(3)	Food Processing
FDSC 400	(3)	Food Packaging
FDSC 405	(3)	Food Product Development
FDSC 442	(3)	Food Microbiology
FDSC 495D1	(1.5)	Food Science Seminar
FDSC 495D2	(1.5)	Food Science Seminar
FDSC 515	(3)	Enzymology
FDSC 516	(3)	Flavour Chemistry
FDSC 519	(3)	Advanced Food Processing
FDSC 520	(3)	Biophysical Chemistry of Food
FDSC 525	(3)	Food Quality Assurance
FDSC 536	(3)	Food Traceability
FDSC 537	(3)	Nutraceutical Chemistry
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
NUTR 207	(3)	Nutrition and Health

## 5.8 Field Studies

### 5.8.1 Africa Field Study Semester

The Africa Field Studies Semester (AFSS) offers students an opportunity to study in East Africa for a semester starting every January. Courses are offered in both natural science and social science, and are taught in environments ranging from desert to tropical rainforest, from manyattas to urban centers. For more information, please visit the [AFSS web site](#).

### 5.8.2 Barbados Field Study Semester

This program takes place at Bellairs Research Institute in Barbados; it is a full 15-credit program offered each Fall semester. For more information, see [Study Abroad & Field Studies > Undergraduate > Barbados Field Semester](#).

### 5.8.3 Barbados Interdisciplinary Tropical Studies Field Semester

This 15-credit program is offered in collaboration with several partners in Barbados, including the University of the West Indies (UWI) during the summer. McGill students live at the Bellairs Research Institute, while BITS courses are conducted both at UWI and Bellairs. For more information, see [Study Abroad & Field Studies > Undergraduate > Barbados Interdisciplinary Tropical Studies Field Semester](#).

### 5.8.4 Panama Field Study Semester

The Panama Field Study Semester is a joint venture between McGill University and the Smithsonian Tropical Research Institute (STRI) in Panama. It is a 15-credit program offered in the Winter term (January to April).

The program presents a hands-on experience gained through an internship/research project organized around multidisciplinary environmental issues. The nature of the semester will centre on practical environmental problems/questions important for Panama. For more information, please visit the PFSS website: [mcgill.ca/pfss](http://mcgill.ca/pfss).

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## 6 Academic Units

The following are academic units (departments, institutes, schools, etc.) within the Faculty of Agricultural & Environmental Sciences.

- [section 6.1: Department of Animal Science](#)
- [section 6.2: Department of Bioresource Engineering](#)
- [section 6.3: Farm Management and Technology Program](#)
- [section 6.4: Department of Food Science and Agricultural Chemistry](#)
- [section 6.5: School of Human Nutrition](#)
- [section 6.6: Department of Natural Resource Sciences](#)
- [section 6.7: Institute of Parasitology](#)
- [section 6.8: Department of Plant Science](#)

The Bieler School of Environment also offers several B.Sc.(Ag.Env.Sc.) programs; for more information, please visit the [Bieler School of Environment](#) section.

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### 6.1 Department of Animal Science

#### 6.1.1 Location

Macdonald Stewart Building, Room MS1-084  
Telephone: 514-398-7890  
Fax: 514-398-7990  
Email: [animal.science@mcgill.ca](mailto:animal.science@mcgill.ca)  
Website: [mcgill.ca/animal](http://mcgill.ca/animal)

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## 6.1.2 About the Department of Animal Science

The Department of Animal Science has a number of programs for students who wish to study animal science at the undergraduate level. Whether they are interested in the improvement of livestock production from the point of view of nutrition, breeding, reproduction, and welfare; the study of animals in a health context; or even the advancement of biotechnological processes in laboratory research and animal models to better understand human health and disease, there is a specialization that will appeal to their interests.

The Department of Animal Science plays a crucial role in offering four important specializations:

- Animal Biology
- Animal Health and Disease
- Animal Production
- International Agriculture

Each of these specializations must be taken within the context of a major, and will depend on the student's orientation towards animal production management, animal biotechnology, further studies in animal health, international studies, and/or graduate studies.

Any student with an interest in animals who wishes to become a professional agrologist (a member of the *Ordre des agronomes du Québec*), should register in the Agro-Environmental Sciences Major and take the specialization in Animal Production, as well as the obligatory specialization in Professional Agrology.

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## 6.2 Department of Bioresource Engineering

### 6.2.1 Location

Macdonald-Stewart Building, Room MS1-028  
Macdonald Campus of McGill University  
21,111 Lakeshore Road  
Sainte-Anne-de-Bellevue QC H9X 3V9  
Telephone: 514-398-7773  
Website: [mcgill.ca/bioeng](http://mcgill.ca/bioeng)

### 6.2.2 About the Department of Bioresource Engineering

The Bioresource Engineering discipline focuses on the application of engineering principles to biological systems including plants, animals, and ecosystems. Bioresource engineers seek sustainable solutions to enhance the production and processing of food and other biomaterials as well as preserving and regenerating the quality of soil, water, and other natural resources. B.Eng. is an accredited engineering program administered by the Faculty of Agricultural and Environmental Sciences in coordination with the Faculty of Engineering.

In addition to core engineering sciences and design skills, Bioresource Engineering students take courses dedicated to the infrastructure and processes essential to the emerging circular bioeconomy. Students learn to design, construct, operate, maintain, and innovate equipment, structures, processes, and software related to agriculture, forestry, food, environmental protection, ecological management, bioenergy, and other related industries.

For more information on programs associated with this department, see [section 5.3: B.Eng Bioresource](#).

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## 6.3 Farm Management and Technology Program

### 6.3.1 Location

Farm Management and Technology Program  
Faculty of Agricultural and Environmental Sciences  
Macdonald Campus of McGill University  
21,111 Lakeshore Road, Harrison House  
Sainte-Anne-de-Bellevue QC H9X 3V9  
Telephone: 514-398-7814  
Fax: 514-398-7955  
Email: [fmt.macdonald@mcgill.ca](mailto:fmt.macdonald@mcgill.ca)  
Website: [mcgill.ca/fmt](http://mcgill.ca/fmt)

### 6.3.2 About the Farm Management and Technology Program

The Farm Management and Technology (FMT) program is a 3-year academic and practical college program, offered on the Macdonald Campus and taught by the staff of the Faculty of Agricultural and Environmental Sciences of McGill University. For further information on the program, please refer to our [website](#).

### 6.3.3 Diploma of College Studies — Farm Management Technology

This three-year academic and practical program is offered on the Macdonald campus and taught by the staff of the Faculty of Agricultural and Environmental Sciences of McGill University. The program is funded by the Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec and authorized by the Ministère de l'Éducation, Enseignement supérieur, et Recherche (MEESR).

The educational goals of the program are:

1. to make our graduates competent in the exercise of their profession;
2. to help the student's integration into professional life;
3. to foster professional mobility;
4. to foster a need for continual development of professional knowledge.

#### Program Overview

Six academic terms are spent on the Macdonald Campus studying a sequence of courses in soil, plant science, animal science, engineering, and management. The first summer of the program includes a 13-week internship on an agricultural enterprise other than the home farm, or an agricultural business, where the student learns the many skills related to modern commercial agriculture. Students prepare for their Agricultural Internship during both academic semesters of Year 1 through two Stage courses.

During the second summer, students are registered in Enterprise Management 1. During this period, the students will be responsible for data collection to be used in the next two Enterprise Management courses and the Nutrient Management Plan course when they return to the campus for the Fall semester. These internships will enable the students to relate their academic work to the reality of farming and of the agri-food sector.

Finally, courses in English, Français, Humanities, Physical Education, and two complementary subjects taken during the program will entitle the student to receive a Diploma of College Studies (DEC) from the MEESR.

#### Program Outline

##### Fall 1

FMT4 001	(1.33)	Fall Stage (152-VSA-MC)
FMT4 002	(1.67)	Soil Tillage (152-VSB-MC)
FMT4 003	(1.33)	Information Management (152-VSC-MC)
FMT4 004	(1.33)	Animal Physiology and Anatomy (152-VSD-MC)
FMT4 005	(2.33)	Introduction to Plant Science (152-VSE-MC)
FMT4 006	(1.33)	Pesticides and the Environment (152-VSF-MC)
FMTP 080	(2)	English Upgrading
FMTP 090	(1)	Physical Activity and Health (109-101-MQ)

##### Winter 1

FMT4 007	(2)	Health and Safety (152-VSG-MC)
FMT4 008	(2.33)	Animal Genetics and Nutrition (152-VSH-MC)
FMT4 009	(2)	Soil Fertility (152-VSJ-MC)
FMT4 010	(1.33)	Winter Stage (152-VSK-MC)
FMT4 011	(2)	Farm Accounting (152-VSL-MC)
FMT4 012	(1.67)	Machinery Maintenance (152-VSM-MC)
FMTP 077	(2.67)	Introduction to College English

##### Summer 1

FMT4 013 (2) Agricultural Internship (152-VSN-MC)

### Fall 2

Two courses selected from the Elective Production course list below.

FMT4 014 (2) Marketing Strategies (152-VSP-MC)  
 FMT4 015 (1.33) Forest Management (152-VSQ-MC)  
 FMTP 005 (1.33) Animal Anatomy and Physiology  
 FMTP 008 (2.33) Introduction to Animal Science (152-008-MC)  
 FMTP 075 (2) Langue française et communication (602-101-03)  
 FMTP 082 (2.33) Literary Genres (603-102-04)  
 FMTP 085 (2.33) Humanities 1: Knowledge (345-103-04)

### Winter 2

Two courses selected from the Elective Production course list below.

FMT4 016 (2) Budgeting and Administration (152-VSR-MC)  
 FMT4 017 (1.33) Agricultural Systems (152-VST-MC)  
 FMTP 083 (2.33) Literary Themes (603-103-04)  
 FMTP 091 (1) Physical Activity and Effectiveness (109-102-MQ)  
 FMTP 098 (2) Français agricole (602-VSG-MC)

### Summer 2

FMT4 018 (2.33) Enterprise Management 1 (152-VSU-MC)

### Fall 3

FMT4 019 (2) Nutrient Management Plan (152-VSV-MC)  
 FMT4 020 (2) Conservation of Soil and Water (152-VSW-MC)  
 FMT4 021 (2.67) Enterprise Management 2 (152-VSX-MC)  
 FMT4 022 (1.67) Equipment Management (152-VSY-MC)  
 FMTP 078 (2) FMT English (603-VSB-MC)  
 FMTP 086 (2) Humanities 2: World Views (345-102-03)  
 FMTP 097 (2) Landscape Design (504-VSG-MC)

### Winter 3

FMT4 023 (1.33) Building Management (152-VSZ-MC)  
 FMT4 024 (1.67) Farm Building Development (152-VTA-MC)  
 FMT4 025 (2.33) Enterprise Management 3 (152-VTB-MC)  
 FMT4 026 (1.67) Human Resources (152-VTC-MC)  
 FMT4 027 (1.33) Precision Agriculture (152-VTD-MC)  
 FMTP 087 (2) Humanities 3: Env. & Org. Issues (345-VSH-MC)  
 FMTP 092 (1) Physical Activity and Autonomy (109-103-MQ)

### Elective Production Courses

We offer four production courses in the area of Animal Science and four production courses in the area of Plant Science. Students must take a minimum of two courses in each category for a total of four courses. Students could elect to take more than four courses if they wish, after a discussion with their academic adviser. They must take a minimum of two courses per semester.

### Animal Science Category

FMT4 028	(2.67)	Dairy Replacement Management (152-VTE-MC)
FMT4 029	(2.67)	Dairy Performance Management (152-VTF-MC)
FMT4 030	(2.67)	Swine and Poultry Management (152-VTG-MC)
FMT4 031	(2.67)	Beef and Sheep Management (152-VTH-MC)

### Plant Science Category

FMT4 033	(2.67)	Vegetable and Fruit Crops (152-VTK-MC)
FMT4 034	(2.67)	Greenhouse Crop Production (152-VTL-MC)
FMT4 035	(2.67)	Field Crop Management 1 (152-VTM-MC)
FMT4 036	(2.67)	Field Crop Management 2 (152-VTN-MC)

### Complementary Courses\*

Students must take two complementary courses to meet the program requirements. The program offers the following.

\* After consultation with their academic adviser, students can substitute complementary courses taken at another collegial institution. This includes science courses which are required for further studies in a degree program. The cost associated with courses taken elsewhere must be assumed by the students.

FMT4 074	(2)	Complementary Course 2
FMT4 097	(2)	Landscape Design (504-VSG-MC)

### Comprehensive Assessment

The objective of this examination is to ensure that students have attained the objectives and standards for each competency in the program. Successful completion of the Comprehensive Assessment is mandatory to obtain the DEC.

The passing grade is 60%. The mark indicating that the student has successfully completed the Comprehensive Assessment will appear on the student's transcript.

### English Exit Examination

All students who wish to graduate and obtain the DEC must pass the English Exit Examination that is prepared and corrected by the MEESR. Students must take this examination on the dates selected by the MEESR.

## 6.3.4 Academic Rules and Information – FMT

The Farm Management and Technology program follows the rules and regulations of McGill University as well as from the *Ministère de l'Éducation et de l'Enseignement supérieur* (MEES) for the collegial level.

### 6.3.4.1 Entrance Requirements – FMT

- Students should have a good practical knowledge of farming under eastern Canadian conditions. One year of experience is recommended, but under special conditions a four-month summer season is acceptable.
- The **minimum academic entrance requirements** are a Quebec Secondary School Diploma (SSD) or its equivalent and the successful completion of the following five courses:
  - Secondary IV: History and Citizenship Education or History of Quebec and Canada
  - Secondary IV: Science and Technology or Applied Science and Technology or Physical Science
  - Secondary IV: Mathematics
  - Secondary V: Language of Instruction
  - Secondary V: Second Language
- The minimum entrance requirements for **students from Ontario** are the Ontario Secondary School Diploma (OSSD), as well as:
  - grade 10 French as a second language

- science: SNC2P (recommended with TCJ20 or TDJ20 or TMJ20) or SNC2D (desired with TCJ20 or TDJ20 or TMJ20)
- mathematics: MFM2P or MPM2D

For **other Canadian students**, the minimum French requirement is grade 10 second language. Please contact the department for more information.

For **international students**, a recognized French proficiency test may be required. An English proficiency test may also be required. For details on proof of English proficiency, visit [mcgill.ca/applying/requirements/prep](https://mcgill.ca/applying/requirements/prep).

4. All candidates for admission must make arrangements to come to the Macdonald Campus for an interview prior to admission to the program.
5. Admission to this program is only in the Fall semester.
6. We strongly encourage incoming students to acquire their driver's permit (both for cars **and** farm equipment) before coming to Macdonald Campus. This is first for safety reasons, given that students may work with farm equipment during the first semester. As well, most farmers require their employees and trainees (stagiaires) to drive and possess the appropriate driver's license.

### 6.3.4.2 Important Dates – FMT

#### 6.3.4.2.1 Sessional Dates

The number of teaching and examination days is set by the *Ministère de l'Éducation et de l'Enseignement supérieur* (MEES). The sessional dates vary from year to year. At the present time, each semester has 75 teaching days and seven days of exams.

#### 6.3.4.2.2 Last Day for Withdrawal or Course Additions

The last day to make course registration changes for Fall term courses is **September 20**.

The last day to make course registration changes for Winter term courses is **February 15**.

### 6.3.4.3 Registration – FMT

Students in the Farm Management and Technology program must register online using Minerva at [mcgill.ca/minerva](https://mcgill.ca/minerva) for each semester at McGill.



**Note:** The University reserves the right to make changes without prior notice to the information contained in this publication, including the alteration of various fees, schedules, conditions of admission and credit requirements, and the revision or cancellation of particular courses. In normal circumstances, individual courses will not be offered with fewer than five registrants.

### 6.3.4.4 Academic Standing – FMT

In their first semester, students who fail half or more of the courses for which they are registered or obtain a weighted average grade below 60% in their first term in the FMT program are placed in unsatisfactory standing and are required to withdraw from the program for a period of at least one semester. If after this period, students wish to be readmitted, they must apply in writing to the Director of the Program.

After the first semester, when a student's cumulative weighted average grade or semestrial weighted average grade drop below 60%, or when a student fails half or more of the courses for which he/she is registered in any one term, the student is placed on academic probation. Students on probation may be limited to a maximum of 10 credits for the following semester, if the Director and/or the Associate Director believe this action to be in the best interest of the student. Course registration is subject to approval by the Associate Director for the following semester.

Students who are on academic probation for two semesters in a row are placed on unsatisfactory standing and are asked to withdraw from the Program. They may apply in writing to the Director or Associate-Director for readmission after a 6 to 12-month waiting period.

Any student who is readmitted to the FMT Program after having been placed on unsatisfactory standing is automatically placed on academic probation for the semester into which he/she is readmitted. The conditions mentioned in the second paragraph above still apply.

### 6.3.4.5 Student Rights and Responsibilities

The regulations and policies governing student rights and responsibilities at McGill University are published jointly by the Dean of Students' Office and the Secretariat and can be found at [mcgill.ca/secretariat/policies-and-regulations](https://mcgill.ca/secretariat/policies-and-regulations).

### 6.3.4.6 Institutional Policy on the Evaluation of Student Achievement – FMT

The policy has the following objectives:

- to establish and explain the principles followed in evaluating student learning;
- to describe the means of translating these principles into practice and to establish the required procedures;
- to articulate the appropriate responsibilities of students, instructors, departments, and academic administrators;
- to account to students, parents, universities, and employers for the standards of learning at the campus;
- to create an environment of awareness and free discussion of pedagogical concerns within all segments of the campus community;
- to provide information that will allow students to more fully understand and participate in the educational process;
- to provide the framework within which instructors and academic administrators can exercise their professional judgment in a competent, just, and coherent fashion.

Copies are available in the Library and students are informed of it at registration.

### 6.3.5 Fees and Expenses – FMT

#### 6.3.5.1 Fees

Tuition fees are calculated separately from student fees. For eligible Quebec residents in the Farm Management and Technology Program there is no amount charged for tuition, thanks to support from the *Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec*. Out-of-province and international status FMT students registered for full-time studies pay a tuition fee in addition to student fees. Students considered to be studying part-time (less than 8 credits/semester) will be charged half that amount. For information about fees specific to your residency status, consult the Undergraduate fees tables on the [Student Accounts Website](#). Student fees are charged to all students, regardless of residency.

\* All fees are subject to change without notice.

#### 6.3.5.2 Textbooks and Supplies

The cost of textbooks and supplies is estimated at \$250.00 per semester.

#### 6.3.5.3 Financial Assistance

In-Course Financial Aid (including loans and bursaries) is available to full-time students on the basis of demonstrated financial need; however, it is recommended that all applicants apply for the maximum government student assistance program for which they are eligible. Students may apply for In-Course Financial Aid through the *Financial Aid & Awards Menu* on Minerva and will then be asked to make an appointment with a Financial Aid Counsellor at Student Services. For more information, consult [University Regulations and Resources > Undergraduate > : Scholarships and Student Aid](#) or contact Student Services, Macdonald Campus, at 514-398-7992.

### 6.3.6 Residence Accommodation – FMT

Laird Hall is a co-educational residence with a capacity of 250 students. It accommodates students in double and single rooms. Each floor includes shared washrooms, a fully-equipped kitchen, a television lounge, and a laundry room. For more information, refer to [University Regulations and Resources > Undergraduate > Residential Facilities > : University Residences – Macdonald Campus; mcgill.ca/ students/housing/macdonald](#) or email [residences.macdonald@mcgill.ca](mailto:residences.macdonald@mcgill.ca).

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## 6.4 Department of Food Science and Agricultural Chemistry

### 6.4.1 Location

Macdonald-Stewart Building, Room MS1-034  
McGill University, Macdonald Campus  
21,111 Lakeshore Road  
Sainte-Anne-de-Bellevue QC H9X 3V9  
Canada  
Telephone: 514-398-7773  
Fax: 514-398-7990  
Email: [info.macdonald@mcgill.ca](mailto:info.macdonald@mcgill.ca)  
Website: [mcgill.ca/foodscience](http://mcgill.ca/foodscience)

### 6.4.2 About the Department of Food Science

**Food Science** is a multidisciplinary field involving chemistry, biochemistry, nutrition, microbiology, and processing that gives students the scientific knowledge to solve real problems associated with the many facets of the food system. Food Science is still a relatively new and growing discipline, brought about mainly as a response to the social changes taking place in North America and other parts of the developed world. The current trend toward a merger between **food** and **pharmaceutical industries** to produce the next generation of new food products, such as functional foods and nutraceuticals, is the biggest challenge facing the discipline of Food Science today. You can be part of it.

The programs offered are:

- B.Sc. Food Science (Food Chemistry or Food Science option)
- Concurrent degree, which includes B.Sc. Food Science/B.Sc. Nutritional Sciences
- Post-Baccalaureate Certificate in Food Science

For more information on these programs, see [section 5.4: Bachelor of Science \(Food Science\) - B.Sc.\(F.Sc.\)](#).



## 6.5 School of Human Nutrition

### 6.5.1 Location

Macdonald Stewart Building  
 McGill University, Macdonald Campus  
 21,111 Lakeshore Road  
 Sainte-Anne-de-Bellevue QC H9X 3V9  
 Canada  
 Telephone: 514-398-7773  
 Fax: 514-398-7739  
 Email: [nutrition.dietetics@mcgill.ca](mailto:nutrition.dietetics@mcgill.ca)  
 Website: [mcgill.ca/nutrition](http://mcgill.ca/nutrition)

### 6.5.2 About the School of Human Nutrition

The health and well-being of individuals and populations in relation to food choices and metabolism prevails as the unifying theme of the programs in the School of Human Nutrition, a part of the McGill University Health Sciences.

The School offers a **B.Sc.(Nutr.Sc.)** in either the Dietetics Major or the Nutrition Major.

The **Dietetics Major** is an accredited professional program which leads to eligibility to register with a provincial dietetic regulatory body as a registered dietitian. The 3.5 year (115 credits) Dietetics Major is an undergraduate degree which includes 40 weeks of internship (Professional Practice - Stage) which is sequenced and integrated into each year of study. Students are exposed to a variety of practice settings including clinical nutrition, community nutrition, and food service management. The program is designed according to the Integrated Competencies for Dietetics Education and Practice (ICDEP). Accreditation information is available on our website at [mcgill.ca/nutrition/programs/undergraduate/dietetics](http://mcgill.ca/nutrition/programs/undergraduate/dietetics).

The **Nutrition Major** is a 90-credit undergraduate degree. At its core, it deals with how diet, nutrition, and metabolism affect human health and disease risk. It offers exciting opportunities to specialize in one of *four concentrations* (Food Function and Safety; Global Nutrition; Health and Disease; and Sports Nutrition), to incorporate research experience, travel for field studies, or a minor in your program. It does not lead to professional licensure as a Dietitian/Nutritionist; however, it is excellent preparation for further studies including graduate, medical, veterinary, and other professional schools; or for many careers in the food, pharmaceutical, or other industry, government or NGO, or global health organizations.

**B.Sc.(F.Sc.)/B.Sc.(Nutr.Sc.):** The School also offers a dual degree, the **B.Sc. Food Science/Nutritional Science Major**, which is a 122-credit undergraduate degree. You will obtain a strong background in chemical sciences regarding the physical nature and chemical properties of foods, combined with an advanced understanding of the important role of nutrition and metabolism in health and disease.

For more information on programs associated with this school, see [section 5.5: Bachelor of Science \(Nutritional Sciences\) – B.Sc.\(Nutr.Sc.\)](#).

For those interested in applying, please refer to the [Undergraduate Admissions](#) site for more information.

### 6.5.3 Degrees Offered by the School of Human Nutrition

#### Bachelor of Science in Nutritional Sciences – B.Sc.(Nutr.Sc.)

Two undergraduate degree programs are offered by the School.

- The **Dietetics** Major leads to professional qualification
- The **Nutrition** Major offers four concentrations:
  - Food Function and Safety
  - Global Nutrition
  - Health and Disease
  - Sports Nutrition

#### M.Sc.A., M.Sc., and Ph.D.

Graduate degrees in Human Nutrition are also offered in thesis and non-thesis-based research at the master's level and thesis-based research at the doctoral level. Three options are available in the M.Sc. Applied degree:

- Dietetics Credentialing
- Practicum
- Project

For further information, contact the School or refer to the Agricultural & Environmental Sciences' [Graduate and Postdoctoral Studies](#) section.

## 6.5.4 Academic Information and Regulations

### 6.5.4.1 Application Procedures

Entry into the Dietetics major, the Nutrition major and the Freshman/Foundation Year Program of the B.Sc.(Nutr.Sc.) is only possible in September. Application deadlines:

- Applicants studying outside of Canada: **January 15**
- Applicants from Canadian high schools outside of Quebec: **February 1**
- CEGEP applicants: **March 1**
- Transfer/Second degree applicants from Canadian universities: **May 1**
- Mature students: **May 1**

Applications to the School of Human Nutrition must be submitted online. Online applications and admissions information are available at [mcgill.ca/applying](http://mcgill.ca/applying).

### 6.5.4.2 Academic Standing

For general information, see [section 3.5.5: Academic Standing](#).

Dietetics students please note:

- Undergraduate registration for all Professional Practice (Stage) courses is restricted to students in the Dietetics Major with a CGPA greater than or equal to 3.00. The CGPA requirement is firmly applied.
- Students in the Dietetics Major who have a CGPA below 3.0 for two consecutive years will not be permitted to continue in the program.

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## 6.6 Department of Natural Resource Sciences

### 6.6.1 Location

Macdonald-Stewart Building  
McGill University, Macdonald Campus  
21,111 Lakeshore Road  
Sainte-Anne-de-Bellevue QC H9X 3V9  
Canada  
Telephone: 514-398-7773  
Fax: 514-398-7990  
Email: [info.macdonald@mcgill.ca](mailto:info.macdonald@mcgill.ca)  
Website: [mcgill.ca/nrs](http://mcgill.ca/nrs)

### 6.6.2 About the Department of Natural Resource Sciences

As humans depend on a wide variety of ecosystem services, society is becoming increasingly aware of the need for sustainable management of natural resources. We require the natural world to provide us with necessities such as air, water, food, and energy; but we also depend on ecosystems for services such as nutrient cycling, biodiversity, recreation, and the splendour of nature. Sustainable management of natural resources via governance of human activities requires an understanding of all of these elements.

The Department of Natural Resource Sciences is a multidisciplinary group with a wide range of interests, including wildlife and fish biology, entomology, agriculture, soil science, microbiology, genomics, meteorology, forest science, landscape ecology, agricultural and resource economics, and environmental policy. We are concerned with the populations and diversity of organisms within ecosystems, the flow of energy and nutrients through ecosystems, and processes that influence human behaviour toward ecosystem services and the environment. Our graduate programs in agricultural economics, entomology, microbiology, and renewable resources allow students to gain disciplinary depth and interdisciplinary breadth.

Natural Resource Sciences plays a strong role in several undergraduate programs, from the inter-departmental **majors** in:

- Environmental Biology;
- Life Sciences (Biological and Agricultural);
- Environment (Bieler School of Environment);
- Agro-Environmental Sciences; and
- Agricultural Economics;

to the **specializations** such as:

- Applied Ecology;
- Wildlife Biology;
- Microbiology and Molecular Biotechnology;
- Agribusiness;
- Environmental Economics; and
- Life Sciences (Multidisciplinary).

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## 6.7 Institute of Parasitology

### 6.7.1 Location

Institute of Parasitology  
Parasitology Building  
McGill University, Macdonald Campus  
21,111 Lakeshore Road  
Sainte-Anne-de-Bellevue QC H9X 3V9  
Canada  
Website: [mcgill.ca/parasitology](http://mcgill.ca/parasitology)

### 6.7.2 About the Institute of Parasitology

The Institute of Parasitology is one of the oldest recognized centres of interdisciplinary research in Canada. We focus on parasitic organisms, the relationship with their host, and the means to limit the impact of parasitic disease on health and well-being.

For more information, please visit the Institute of Parasitology [website](#).

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## 6.8 Department of Plant Science

### 6.8.1 Location

Macdonald Campus  
21,111 Lakeshore Road  
Sainte-Anne-de-Bellevue QC H9X 3V9  
Canada  
Telephone: 514-398-7773  
Fax: 514-398-8732  
Email: [plant.science@mcgill.ca](mailto:plant.science@mcgill.ca)  
Website: [mcgill.ca/plant](http://mcgill.ca/plant)

### 6.8.2 About the Department of Plant Science

Our understanding of biological systems has advanced exponentially since the beginning of the twenty-first century, and technological developments now allow us to pose questions that simply could not be asked a few decades ago. We also live in a time of great challenges: the human population is now over eight billion and continues to rise at an alarming rate; the climate is changing dramatically; worldwide energy availability is decreasing; quality freshwater is becoming scarce; biodiversity is disappearing; and a number of wild habitats are threatened by human activities.

How can we keep feeding the growing population with quality food while resources are scarcer than ever? How will plants react to a changing climate? How can we design effective conservation strategies to preserve biodiversity? Plant scientists have a crucial role to play in solving these problems, and using the knowledge accumulated in the field of biology to answer these questions.

The Department of Plant Science contributes to several undergraduate programs that will train tomorrow's agrologists, ecologists, botanists, and biotechnologists. These include **Specializations** in Ecological Agriculture, Plant Biology, Plant Production, as well as both the Environmetrics and the Food Production and Environment domains of the Bieler School of Environment. For related program information, see [section 5.2: Bachelor of Science \(Agricultural and Environmental Sciences\) – B.Sc.\(Ag.Env.Sc.\)](#).

