



**Faculty of Agricultural and Environmental  
Sciences, including School of Dietetics and  
Human Nutrition**

**Programs, Courses and University Regulations  
2016-2017**



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- 1 About the Faculty of Agricultural and Environmental Sciences, including School of Dietetics and Human Nutrition , page 13
- 2 History of the Faculty, page 13
- 3 Macdonald Campus Facilities, page 13
  - 3.1 Morgan Arboretum, page 13
  - 3.2 Macdonald Campus Library, page 13
  - 3.3 Macdonald Campus Computing Centre, page 13
  - 3.4 Lyman Entomological Museum and Research Laboratory, page 14
  - 3.5 Brace Centre for Water Resources Management, page 14
- 4 About Agricultural & Environmental Sciences (Undergraduate), page 14
  - 4.1 Location, page 14
  - 4.2 The Faculty of Agricultural and Environmental Sciences, including School of Dietetics and Human Nutrition (Undergraduate), page 14
  - 4.3 Administrative Officers, page 15
  - 4.4 Faculty Admission Requirements, page 15
  - 4.5 Student Information, page 15
    - 4.5.1 The Student Affairs Office, page 16
    - 4.5.2 Student Services, page 16
    - 4.5.3 Macdonald Campus Residences, page 16
    - 4.5.4 Student Life, page 16
    - 4.5.5 Student Rights and Responsibilities, page 16
    - 4.5.6 Fees, page 16
      - 4.5.6.1 Tuition Fees, page 16
      - 4.5.6.2 Other Expenses, page 16
    - 4.5.7 Immunization for Dietetics Majors, page 16
    - 4.5.8 Language Requirement for Professions, page 16
  - 4.6 Faculty Information and Regulations, page 17
    - 4.6.1 Minimum Credit Requirement, page 17
    - 4.6.2 Minimum Grade Requirement, page 17
    - 4.6.3 Academic Advisers, page 17
    - 4.6.4 Categories of Students, page 17
      - 4.6.4.1 Full-Time Students, page 17
      - 4.6.4.2 Part-time Students, page 17
    - 4.6.5 Academic Standing, page 17
      - 4.6.5.1 Committee on Academic Standing, page 18
    - 4.6.6 Credit System, page 18
      - 4.6.6.1 School of Continuing Studies Courses, page 18
    - 4.6.7 Academic Credit Transfer, page 18
    - 4.6.8 Second Academic Majors, page 18
      - 4.6.8.1 Procedures for Minor Programs, page 19
    - 4.6.9 Course Change Information, page 19
    - 4.6.10 Graduate Courses Available to Undergraduates, page 19

- 
- 4.6.11 Attendance and Conduct in Class, page 19
  - 4.6.12 Incomplete Grades, page 19
  - 4.6.13 Examinations, page 19
    - 4.6.13.1 Reassessments and Rereads, page 19
    - 4.6.13.2 Deferred Examinations, page 19
  - 4.6.14 Degree Requirements, page 19
  - 4.6.15 Graduation Honours, page 20
  - 4.6.16 Scholarships, Bursaries, Prizes, and Medals, page 20
  - 5 Overview of Programs Offered, page 20
    - 5.1 Internship Opportunities and Co-op Experience, page 21
      - 5.1.1 FAES 200 / FAES 300 Internship Program, page 21
      - 5.1.2 AGRI 310 Internship in Agriculture/Environment, page 21
      - 5.1.3 AGRI 410D1 and AGRI 410D2 Agrology Internship, page 21
      - 5.1.4 AGRI 499 Agricultural Development Internship, page 21
    - 5.2 Exchange Programs (Overview), page 21
    - 5.3 Bachelor of Science in Agricultural and Environmental Sciences – B.Sc.(Ag.Env.Sc.) (Overview), page 21
      - 5.3.1 Majors and Honours, page 21
      - 5.3.2 Specializations, page 22
    - 5.4 Bachelor of Engineering in Bioresource Engineering – B.Eng.(Bioresource) (Overview), page 22
    - 5.5 Bachelor of Science in Food Science – B.Sc.(F.Sc.) (Overview), page 23
    - 5.6 Bachelor of Science in Nutritional Sciences – B.Sc.(Nutr.Sc.) (Overview), page 23
    - 5.7 Concurrent Bachelor of Science in Food Science – B.Sc.(F.Sc.) and Bachelor of Science in Nutritional Sciences – B.Sc.(Nutr.Sc.) (Overview), page 24
    - 5.8 Honours Programs (Overview), page 24
    - 5.9 Minor Programs (Overview), page 24
    - 5.10 Post-Baccalaureate Certificate Programs (Overview), page 25
    - 5.11 Diploma Program (Undergraduate) (Overview), page 25
    - 5.12 Diploma in Collegial Studies (Overview), page 25
    - 5.13 Environmental Sciences Programs (Overview), page 25
      - 5.13.1 McGill School of Environment (MSE), page 25
      - 5.13.2 Environmental Programs on the Macdonald Campus, page 25
    - 5.14 Graduate Programs, page 25
  - 6 Browse Academic Programs, page 26
    - 6.1 Freshman Major, page 26
      - 6.1.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Freshman Program (30 credits) , page 26
      - 6.1.2 Bachelor of Engineering (Bioresource) (B.Eng.(Bioresource)) - Freshman Program (30 credits) , page 28
      - 6.1.3 Bachelor of Science (Food Science) (B.Sc.(F.Sc.)) - Freshman Program (30 credits) , page 28
      - 6.1.4 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Freshman Program (30 credits) , page 29

- 
- 6.1.5 Concurrent Bachelor of Science Food Science (B.Sc. (F.Sc.)) and Bachelor of Science Nutritional Sciences (B.Sc. (Nutr.Sc.)) - Freshman Program (Concurrent) (30 credits) , page 29
  - 6.2 Bachelor of Science (Agricultural and Environmental Sciences) – B.Sc.(Ag.Env.Sc.), page 30
    - 6.2.1 B.Sc.(Ag.Env.Sc.) Major and Honours Programs, page 30
      - 6.2.1.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Major Agricultural Economics (42 credits) , page 30
      - 6.2.1.2 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Honours Agricultural Economics (42 credits) , page 31
      - 6.2.1.3 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Major Agro-Environmental Sciences (42 credits) , page 32
      - 6.2.1.4 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Honours Agro-Environmental Sciences (54 credits) , page 33
      - 6.2.1.5 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Major Environmental Biology (42 credits) , page 35
      - 6.2.1.6 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Honours Environmental Biology (54 credits) , page 36
      - 6.2.1.7 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Major Global Food Security (42 credits) , page 38
      - 6.2.1.8 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Honours Global Food Security (54 credits) , page 39
      - 6.2.1.9 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Major Life Sciences (Biological and Agricultural) (42 credits) , page 41
      - 6.2.1.10 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Honours Life Sciences (Biological and Agricultural) (54 credits) , page 42
    - 6.2.2 Specializations, page 44
      - 6.2.2.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Agribusiness (24 credits) , page 44
      - 6.2.2.2 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Animal Biology (24 credits) , page 44
      - 6.2.2.3 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Animal Health and Disease (24 credits) , page 45
      - 6.2.2.4 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Animal Production (24 credits) , page 45
      - 6.2.2.5 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Applied Ecology (24 credits) , page 46
      - 6.2.2.6 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Ecological Agriculture (24 credits) , page 47
      - 6.2.2.7 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Environmental Economics (24 credits) , page 47

- 
- 6.2.2.8 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - International Agriculture (24 credits) , page 48
  - 6.2.2.9 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Life Sciences (Multidisciplinary) (24 credits) , page 49
  - 6.2.2.10 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Microbiology and Molecular Biotechnology (24 credits) , page 50
  - 6.2.2.11 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Plant Biology (24 credits) , page 51
  - 6.2.2.12 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Plant Production (24 credits) , page 51
  - 6.2.2.13 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Professional Agrology (21 credits) , page 52
  - 6.2.2.14 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Soil and Water Resources (24 credits) , page 53
  - 6.2.2.15 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Wildlife Biology (24 credits) , page 53
  - 6.3 Bachelor of Engineering (Bioresource) – B.Eng.(Bioresource), page 54
    - 6.3.1 Bachelor of Engineering (Bioresource) (B.Eng.(Bioresource)) - Major Bioresource Engineering (113 credits) , page 54
    - 6.3.2 Bachelor of Engineering (Bioresource) (B.Eng.(Bioresource)) - Honours Bioresource Engineering (113 credits) , page 56
    - 6.3.3 Bachelor of Engineering (Bioresource) (B.Eng.(Bioresource)) - Major Bioresource Engineering - Professional Agrology (113 credits) , page 59
    - 6.3.4 Bachelor of Engineering (Bioresource) – B.Eng.(Bioresource) Related Programs, page 62
      - 6.3.4.1 Minor in Environmental Engineering, page 62
      - 6.3.4.2 Barbados Field Study Semester, page 62
      - 6.3.4.3 Internship Opportunities and Co-op Experiences, page 62
  - 6.4 Bachelor of Science (Food Science) - B.Sc.(F.Sc.), page 62
    - 6.4.1 Bachelor of Science (Food Science) (B.Sc.(F.Sc.)) - Major Food Science - Food Science Option (90 credits) , page 62
    - 6.4.2 Bachelor of Science (Food Science) (B.Sc.(F.Sc.)) - Honours Food Science - Food Science Option (90 credits) , page 63
    - 6.4.3 Bachelor of Science (Food Science) (B.Sc.(F.Sc.)) - Major Food Science - Food Chemistry Option (90 credits) , page 65
    - 6.4.4 About the Concurrent Bachelor of Science in Food Science (B.Sc.(F.Sc.)) and Bachelor of Science in Nutritional Sciences (B.Sc.(Nutr.Sc.)), page 66
      - 6.4.4.1 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
      - 6.4.4.2 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 68
    - 6.4.5 Bachelor of Science (Food Science) – B.Sc.(F.Sc.) Related Programs, page 70



- 
- 6.4.5.1 Certificate in Food Science, page 70
  - 6.5 Bachelor of Science (Nutritional Sciences) – B.Sc.(Nutr.Sc.), page 70
    - 6.5.1 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Dietetics (115 credits) , page 70
    - 6.5.2 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Nutrition - Food Function and Safety (90 credits) , page 72
    - 6.5.3 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Nutrition - Global Nutrition (90 credits) , page 73
    - 6.5.4 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Nutrition - Health and Disease (90 credits) , page 74
    - 6.5.5 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Nutrition - Nutritional Biochemistry (90 credits) , page 76
    - 6.5.6 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Nutrition - Sports Nutrition (90 credits) , page 77
    - 6.5.7 Bachelor of Science (Nutritional Sciences) – Related Programs, page 79
      - 6.5.7.1 Minor in Human Nutrition, page 79
      - 6.5.7.2 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 79
  - 6.6 Minor Programs, page 79
    - 6.6.1 Minor in Environment (McGill School of Environment), page 79
    - 6.6.2 Minor Agribusiness Entrepreneurship - (18 credits) , page 79
    - 6.6.3 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor Agricultural Economics (24 credits) , page 80
    - 6.6.4 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor Agricultural Production (24 credits) , page 80
    - 6.6.5 Minor Animal Biology - (24 credits) , page 81
    - 6.6.6 Minor Animal Health and Disease - (24 credits) , page 82
    - 6.6.7 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor Applied Ecology (24 credits) , page 82
    - 6.6.8 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor Ecological Agriculture (24 credits) , page 83
    - 6.6.9 Minor in Environmental Engineering, page 84
    - 6.6.10 Minor Human Nutrition - (24 credits) , page 84
    - 6.6.11 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor International Agriculture (24 credits) , page 86
  - 6.7 Post-Baccalaureate Certificate Programs, page 86
    - 6.7.1 Certificate in Ecological Agriculture (30 credits) , page 87
    - 6.7.2 Certificate in Food Science (30 credits) , page 87
  - 6.8 Field Studies, page 88
    - 6.8.1 Africa Field Study Semester, page 88
    - 6.8.2 Barbados Field Study Semester, page 89

- 
- 6.8.3 Barbados Interdisciplinary Tropical Studies Field Semester, page 89
  - 6.8.4 Panama Field Study Semester, page 89
  - 7 Farm Management and Technology Program, page 89
    - 7.1 Location, page 89
    - 7.2 About the Farm Management and Technology Program, page 89
    - 7.3 Diploma of College Studies — Farm Management Technology , page 89
    - 7.4 Farm Management and Technology Program Faculty, page 92
    - 7.5 Academic Rules and Information – FMT, page 92
      - 7.5.1 Entrance Requirements – FMT, page 92
      - 7.5.2 Important Dates – FMT, page 93
        - 7.5.2.1 Sessional Dates, page 93
        - 7.5.2.2 Last Day for Withdrawal or Course Additions, page 93
      - 7.5.3 Registration – FMT, page 93
      - 7.5.4 Academic Standing – FMT, page 93
      - 7.5.5 Handbook on Student Rights and Responsibilities, page 93
      - 7.5.6 Institutional Policy on the Evaluation of Student Achievement – FMT, page 93
    - 7.6 Fees and Expenses – FMT, page 94
      - 7.6.1 Fees, page 94
      - 7.6.2 Textbooks and Supplies, page 94
      - 7.6.3 Financial Assistance, page 94
    - 7.7 Residence Accommodation – FMT, page 94
  - 8 Department of Animal Science, page 94
    - 8.1 Location, page 94
    - 8.2 About the Department of Animal Science, page 94
    - 8.3 Animal Science Faculty, page 95
  - 9 Department of Bioresource Engineering, page 96
    - 9.1 Location, page 96
    - 9.2 About the Department of Bioresource Engineering, page 96
    - 9.3 Bioresource Engineering Faculty, page 96
  - 10 Department of Food Science and Agricultural Chemistry, page 97
    - 10.1 Location, page 97
    - 10.2 About the Department of Food Science, page 98
    - 10.3 Food Science and Agricultural Chemistry Faculty, page 98
  - 11 Department of Natural Resource Sciences, page 99
    - 11.1 Location, page 99
    - 11.2 About the Department of Natural Resource Sciences, page 99
    - 11.3 Natural Resource Sciences Faculty, page 99
  - 12 Department of Plant Science, page 101
    - 12.1 Location, page 101
    - 12.2 About the Department of Plant Science, page 101

- 
- 12.3 Plant Science Faculty, page 101
  - 13 School of Dietetics and Human Nutrition, page 102
    - 13.1 Location, page 102
    - 13.2 About the School of Dietetics and Human Nutrition, page 102
    - 13.3 Degrees Offered by the School of Dietetics and Human Nutrition, page 103
    - 13.4 Dietetics and Human Nutrition Faculty, page 103
    - 13.5 Application Procedures, page 104
    - 13.6 Admission Requirements, page 105
      - 13.6.1 Quebec CEGEP Students, page 105
      - 13.6.2 Applicants from Ontario, page 105
      - 13.6.3 Applicants from Other Canadian Provinces, page 106
      - 13.6.4 Applicants from U.S. High School Programs, page 106
      - 13.6.5 Applicants from Other Countries, page 106
      - 13.6.6 Applicants with the International Baccalaureate, page 107
      - 13.6.7 Transfer Students, page 107
      - 13.6.8 Transfer Students – Inter-Faculty, page 107
      - 13.6.9 Mature Student Admission, page 107
    - 13.7 Academic Information and Regulations, page 107
      - 13.7.1 Academic Standing, page 107
      - 13.7.2 Degree Requirements, page 108
      - 13.7.3 Minimum Credit Requirement, page 108
  - 14 Institute of Parasitology, page 108
    - 14.1 Location, page 108
    - 14.2 About the Institute of Parasitology, page 108
    - 14.3 Parasitology Faculty, page 108
  - 15 Instructional Staff, page 109



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## 1 About the Faculty of Agricultural and Environmental Sciences, including School of Dietetics and 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 History of the Faculty

Dedicated to improving the quality of life in Quebec's rural communities, Sir William Christopher Macdonald founded the School of Agriculture, the School for Teachers, and the School of Household Science at Macdonald College in Sainte-Anne-de-Bellevue in 1906. Macdonald College opened its doors to students in 1907 and its first degrees were awarded in 1911. The School for Teachers became the Faculty of Education in 1965 and moved to the downtown campus in 1970.

Currently, Macdonald Campus is home to the Faculty of Agricultural and Environmental Sciences, the School of Dietetics and Human Nutrition, and the Institute of Parasitology. The Faculty is comprised of the Departments of Animal Science, Bioresource Engineering, Food Science and Agricultural Chemistry, Natural Resource Sciences, and Plant Science. The Faculty is one of the founding members of the McGill School of Environment, and is also home to the Farm Management and Technology Program. The current enrolment is just short of 2,000 undergraduate and graduate students.

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## 3 Macdonald Campus Facilities

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### 3.1 Morgan Arboretum

The Morgan Arboretum 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. Finally, the Arboretum features 25 kilometers of ski, snowshoe, and walking trails, a variety of forest ecosystems, conservation projects, and forest operations such as maple syrup production. A nature interpretation program is also offered. More information is available at [www.mcgill.ca/nrs/facilities/arboretum](http://www.mcgill.ca/nrs/facilities/arboretum).

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### 3.2 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. 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 [www.mcgill.ca/library/branches/macdonald](http://www.mcgill.ca/library/branches/macdonald), or feel free to drop by.

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### 3.3 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. The labs offer computers running Microsoft Office software, scanners, and printers.

The IT walk-in support office, located in the Macdonald-Stewart Building, Room MS 2-025, is open Monday to Friday from 9:00 a.m. to 5:00 p.m. 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 [www.mcgill.ca/it](http://www.mcgill.ca/it).

### 3.4 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 <http://lyman.mcgill.ca>.

### 3.5 Brace Centre for Water Resources Management

The Brace Centre for Water Resources Management is located on the Macdonald campus. It is a multidisciplinary and advanced research and training centre of McGill University, dedicated to solving problems of water management for all human and environmental uses. It brings together staff from several McGill faculties to undertake research, teaching, specialized training, and policy and strategic studies, both in Canada and internationally. The Centre draws on the wide range of facilities available within the University. More information is available at [www.mcgill.ca/brace](http://www.mcgill.ca/brace).

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## 4 About Agricultural & Environmental Sciences (Undergraduate)

### 4.1 Location

McGill University, Macdonald Campus  
21,111 Lakeshore Road  
Sainte-Anne-de-Bellevue QC H9X 3V9  
Canada

Telephone: 514-398-7925

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

The Faculty of Agricultural and Environmental Sciences and the School of Dietetics and 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.

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

The Faculty of Agricultural and Environmental Sciences and the School of Dietetics and 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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### 4.3 Administrative Officers

**Dean, Faculty of Agricultural and Environmental Sciences, and Associate Vice-Principal (Macdonald Campus)**

Anja Geitmann; Diplom(Konstanz), Ph.D.(Siena)

**Associate Deans**

Christopher Buddle; B.Sc.(Guelph), Ph.D.(Alta.) (*Student Affairs*)

Salwa Karboune; B.Sc., M.Sc.,(Hassan II, Rabat), Ph.D.(Univ. de la Méditerranée) (*Research*)

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

Ian Strachan; B.Sc.(Tor.), M.Sc., Ph.D.(Qu.) (*Graduate Studies*)

**Manager, Student Affairs**

Silvana Pellecchia

**Director, Academic and Administrative Services**

Gary O'Connell; B.Comm.(C'dia)

**Assistant Director, Athletics and Recreation**

Jill Barker, B.A.(C'dia)

**General Manager, Macdonald Campus Farm**

Paul Meldrum; B.J.(Hons.)(Car.)

**Supervisor, Property Maintenance**

Peter D.L. Knox; B.Sc.(Agr.)(McG.)

**Manager, Residence Life and Accommodations**

Lindsay O'Connell; B.A.(McG.)

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### 4.4 Faculty Admission Requirements

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

Applications are submitted directly online at [www.mcgill.ca/applying](http://www.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: [www.mcgill.ca/macdonald/prospective](http://www.mcgill.ca/macdonald/prospective)

For information about inter-faculty transfers, see [University Regulations and Resources](#) > *Undergraduate* > *Registration* > *: Interfaculty Transfer*.

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### 4.5 Student Information

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

#### 4.5.1 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), academic standing, examinations (deferrals, conflicts, rereads), exchange programs, inter-faculty transfers, program changes, registration (course change, withdrawals), scholarships (entrance and in-course), second degrees, second majors, minors, session away, and graduation (convocation).

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

#### 4.5.2 Student Services

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

All Student Services, whether at the Macdonald or the Downtown campuses, fall under the direction of the Office of the Executive Director, Services for Students; see : [Office of the Senior Director, Services for Students](#).

#### 4.5.3 Macdonald Campus Residences

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

#### 4.5.4 Student Life

All undergraduate and Farm Management and Technology students are members of the [Macdonald Campus Students' Society](#). 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.

#### 4.5.5 Student Rights and Responsibilities

The *Handbook on Student Rights and Responsibilities* is published jointly by the Office of the Dean of Students and the University Secretariat. A copy of the Handbook can be found at [www.mcgill.ca/secretariat/policies/students](http://www.mcgill.ca/secretariat/policies/students).

#### 4.5.6 Fees

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

##### 4.5.6.1 Tuition Fees

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

##### 4.5.6.2 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. These may be purchased at the [Robber's Roost Bookstore](#) in the Centennial Centre.

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.

#### 4.5.7 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 [www.mcgill.ca/studenthealth/immunize/forms](http://www.mcgill.ca/studenthealth/immunize/forms).

#### 4.5.8 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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## 4.6 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 advisers 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.

### 4.6.1 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 plus any missing basic science prerequisites, and 122 credits for the Concurrent Degrees in Food Science and Nutritional Sciences.

Students from outside Quebec who are admitted on the basis of a high school diploma enter the Freshman Major, which comprises 30 credits (see [section 6.1: Freshman Major](#) 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.

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.

### 4.6.2 Minimum Grade Requirement

You must obtain grades of C or better in any required, complementary, and Freshman courses used to fulfil 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.

### 4.6.3 Academic Advisers

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

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

### 4.6.4 Categories of Students

#### 4.6.4.1 Full-Time Students

Full-time students in Satisfactory Standing take a minimum of 12 credits per term. (A normal course load is considered to be 15 credits per term.)

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

#### 4.6.4.2 Part-time Students

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

### 4.6.5 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 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 Dietetics and Human Nutrition have additional standards in place for the professional program (Dietetics). See [section 6.5.1: Bachelor of Science \(Nutritional Sciences\) \(B.Sc.\(Nutr.Sc.\)\) - Major Dietetics \(115 credits\)](#).

#### 4.6.5.1 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.

#### 4.6.6 Credit System

The credit assigned to a particular course reflects the amount of effort it demands of you. As a guideline, a one-credit course would represent approximately 45 hours total work per course. This is, in general, a combination of lecture hours and other contact hours such as laboratory periods, tutorials, and problem periods as well as personal study hours.

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

#### 4.6.6.1 School of Continuing Studies Courses

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

#### 4.6.7 Academic Credit Transfer

Transfer credits based on courses taken at other institutions (completed with a grade of C or better) before entrance to this Faculty are calculated and assigned after you are accepted, and have accepted the offer of admission.

Transfer credits may also be granted for courses taken at other institutions (completed with a grade of C or better) 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. Prior Approval Forms are available in the Student Affairs Office in the Faculty. 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 Adviser.

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

#### 4.6.8 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 Majors:

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 Adviser, 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 Adviser and the Student Affairs Office and from the Associate Dean, adviser, 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.

#### 4.6.8.1 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 to the Student Affairs Office. 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 Adviser and the Student Affairs Office. The Minor Approval form is available on the Faculty website and in the Student Affairs Office, Laird Hall, Room 106.

#### 4.6.9 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.

#### 4.6.10 Graduate Courses Available to Undergraduates

Undergraduates who want to take graduate courses must have a cumulative grade point average (CGPA) of at least 3.20. 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.

#### 4.6.11 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.

#### 4.6.12 Incomplete Grades

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

#### 4.6.13 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 one month after the start of classes for the **Tentative** Exam Schedule, and two months 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.

##### 4.6.13.1 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](#).

##### 4.6.13.2 Deferred Examinations

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

#### 4.6.14 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 4.6.1: 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) courses.

#### 4.6.15 Graduation Honours

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

#### 4.6.16 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 of these are set out in the [Undergraduate Scholarships and Awards Calendar](#), available at [www.mcgill.ca/studentaid](http://www.mcgill.ca/studentaid).

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## 5 Overview of Programs Offered

The Faculty of Agricultural and Environmental Sciences and the School of Dietetics and 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 program 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 McGill School of Environment.

Several programs offered by the Faculty and School 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 plus the *Ordre des agronomes du Québec*;
- the Dietetics Major – membership in the Dietitians of Canada and the *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 6.2: Bachelor of Science \(Agricultural and Environmental Sciences\) – B.Sc.\(Ag.Env.Sc.\)](#)

[section 6.3: Bachelor of Engineering \(Bioresource\) – B.Eng.\(Bioresource\)](#)

[section 6.4: Bachelor of Science \(Food Science\) - B.Sc.\(F.Sc.\)](#)

[section 6.5: Bachelor of Science \(Nutritional Sciences\) – B.Sc.\(Nutr.Sc.\)](#)

[section 5.7: Concurrent Bachelor of Science in Food Science – B.Sc.\(F.Sc.\) and Bachelor of Science in Nutritional Sciences – B.Sc.\(Nutr.Sc.\) \(Overview\)](#)

[section 5.8: Honours Programs \(Overview\)](#)

[section 5.9: Minor Programs \(Overview\)](#)

[section 5.10: Post-Baccalaureate Certificate Programs \(Overview\)](#)

[section 5.11: Diploma Program \(Undergraduate\) \(Overview\)](#)

[section 5.12: Diploma in Collegial Studies \(Overview\)](#)

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

*section 5.13: Environmental Sciences Programs (Overview)*

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### 5.1 Internship Opportunities and Co-op Experience

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.

#### 5.1.1 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 14 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.

#### 5.1.2 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 working in your chosen field of study.

#### 5.1.3 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 summer-long internship related to your field of study.

**AGRI 410** is part of the professional agrology specialization and is obligatory for students wanting to become professional agrologists (*agronomes*) in Quebec as part of the 6 credits of practical training required by the *Ordre des agronomes du Québec*.

#### 5.1.4 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.

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### 5.2 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 [Field Studies > Undergraduate > : Exchange Programs](#).

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### 5.3 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, *except* Agricultural Economics and Environment, and at least one of the specializations. By choosing two different specializations, students have the option of developing their own interdisciplinary interests. The multidisciplinary specialization is designed for those interested in broad training.

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.

#### 5.3.1 Majors and Honours

Graduates of programs marked with an asterisk (\*) are 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)
- Major in Environment – see [McGill School of Environment > Undergraduate > : Major in Environment – B.Sc.\(Ag.Env.Sc.\) and B.Sc.](#)

Full program descriptions are listed at [section 6.2.1: 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.

### 5.3.2 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 adviser.

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 6.2.2: Specializations](#).

- Agribusiness, [section 6.2.2.1: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Agribusiness \(24 credits\)](#)
- Animal Biology, [section 6.2.2.2: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Animal Biology \(24 credits\)](#)
- Animal Health and Disease, [section 6.2.2.3: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Animal Health and Disease \(24 credits\)](#)
- Animal Production, [section 6.2.2.4: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Animal Production \(24 credits\)](#)
- Applied Ecology, [section 6.2.2.5: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Applied Ecology \(24 credits\)](#)
- Ecological Agriculture, [section 6.2.2.6: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Ecological Agriculture \(24 credits\)](#)
- Environmental Economics, [section 6.2.2.7: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Environmental Economics \(24 credits\)](#)
- International Agriculture, [section 6.2.2.8: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - International Agriculture \(24 credits\)](#)
- Life Sciences (Multidisciplinary), [section 6.2.2.9: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Life Sciences \(Multidisciplinary\) \(24 credits\)](#)
- Microbiology and Molecular Biotechnology, [section 6.2.2.10: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Microbiology and Molecular Biotechnology \(24 credits\)](#)
- Plant Biology, [section 6.2.2.11: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Plant Biology \(24 credits\)](#)
- Plant Production, [section 6.2.2.12: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Plant Production \(24 credits\)](#)
- Professional Agrology, [section 6.2.2.13: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Professional Agrology \(21 credits\)](#)
- Soil and Water Resources, [section 6.2.2.14: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Soil and Water Resources \(24 credits\)](#)
- Wildlife Biology, [section 6.2.2.15: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Wildlife Biology \(24 credits\)](#)

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

Bioresource engineering is the unique branch of engineering that includes biological engineering and bioengineering where professional engineering practice intersects with biological sciences. Bioresource engineers design, improve, and manage biology-based systems to operate in efficient and sustainable ways for the well-being of the environment and society.

The Department of Bioresource Engineering collaborates with other departments and the Faculty of Engineering in providing courses of instruction for a curriculum in Bioresource Engineering. Graduates qualify to apply for registration as professional engineers in any province of Canada. The Professional Agrology option qualifies graduates to apply for registration to the *Ordre des agronomes du Québec*.

There are three optional streams offered within the Bioresource Engineering Major. Via the appropriate choice of elective course sets, a particular area of study may be emphasized. More information about these streams and the suggested course sets for each can be found on the Department website at [www.mcgill.ca/bioeng](http://www.mcgill.ca/bioeng).

### Bioresource Engineering

- Bio-Environmental Engineering Stream
- Bio-process Engineering Stream
- Bio-production Engineering Stream
- Professional Agrology Option

Refer to [section 6.3: Bachelor of Engineering \(Bioresource\) – B.Eng.\(Bioresource\)](#) for a full list of B.Eng.(Bioresource) programs and streams offered.

Students who specialize in 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.

In the **Bio-process Engineering** stream, students apply engineering 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.

Students who follow the **Bio-production Engineering** stream use science and technology to create systems and machines for the production of crops, livestock, and biomass. Students learn about machine design, robotics, artificial intelligence, geomatics and GIS, remote sensing, buildings and structures, and complex systems.

The **Professional Agrology** option offers a course selection guided to qualify graduates for registration as professional agrologists with the *Ordre des agronomes du Québec*.

All required and complementary courses must be passed with a minimum grade of C. One term is spent taking courses from the Faculty of Engineering on the McGill downtown campus.

Students also have the opportunity to 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) courses.

See [section 6.3: Bachelor of Engineering \(Bioresource\) – B.Eng.\(Bioresource\)](#) for a list of B.Eng.(Bioresource) programs offered.

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

Refer to [section 6.4: 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 [www.mcgill.ca/macdonald/studentinfo/advising](http://www.mcgill.ca/macdonald/studentinfo/advising).

## 5.6 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 five concentrations):
  - Food Function and Safety
  - Global Nutrition
  - Health and Disease
  - Nutritional Biochemistry
  - Sports Nutrition
- Food Science/Nutritional Sciences (concurrent degree)

Refer to [section 6.5: 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 [www.mcgill.ca/macdonald/studentinfo/advising](http://www.mcgill.ca/macdonald/studentinfo/advising).

#### **Freshman Adviser**

Professor Alice Cherestes  
Macdonald-Stewart Building, Room 1-023  
Telephone: 514-398-7980

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### **5.7 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 6.4.4: About the Concurrent Bachelor of Science in Food Science \(B.Sc.\(F.Sc.\)\) and Bachelor of Science in Nutritional Sciences \(B.Sc.\(Nutr.Sc.\)\)](#) for details.

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### **5.8 Honours Programs (Overview)**

#### **Honours Programs**

- [section 6.2.1.2: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Honours Agricultural Economics \(42 credits\)](#)
- [section 6.2.1.4: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Honours Agro-Environmental Sciences \(54 credits\)](#)
- [section 6.2.1.6: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Honours Environmental Biology \(54 credits\)](#)
- [section 6.2.1.8: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Honours Global Food Security \(54 credits\)](#)
- [section 6.2.1.10: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Honours Life Sciences \(Biological and Agricultural\) \(54 credits\)](#)
- [section 6.3.2: Bachelor of Engineering \(Bioresource\) \(B.Eng.\(Bioresource\)\) - Honours Bioresource Engineering \(113 credits\)](#)
- [section 6.4.2: Bachelor of Science \(Food Science\) \(B.Sc.\(F.Sc.\)\) - Honours Food Science - Food Science Option \(90 credits\)](#)
- [section 6.4.4.2: 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 [McGill School of Environment](#)

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### **5.9 Minor Programs (Overview)**

#### **Minor Programs**

- Agribusiness Entrepreneurship – [section 6.6.2: Minor Agribusiness Entrepreneurship - \(18 credits\)](#)
- Agricultural Economics – [section 6.6.3: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor Agricultural Economics \(24 credits\)](#)
- Agricultural Production – [section 6.6.4: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor Agricultural Production \(24 credits\)](#)
- Animal Biology – [section 6.6.5: Minor Animal Biology - \(24 credits\)](#)
- Animal Health and Disease – [section 6.6.6: Minor Animal Health and Disease - \(24 credits\)](#)
- Applied Ecology – [section 6.6.7: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor Applied Ecology \(24 credits\)](#)
- Ecological Agriculture – [section 6.6.8: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor Ecological Agriculture \(24 credits\)](#)
- Environmental Engineering – [section 6.6.9: Minor in Environmental Engineering](#)
- Human Nutrition – [section 6.6.10: Minor Human Nutrition - \(24 credits\)](#)
- International Agriculture – [section 6.6.11: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor International Agriculture \(24 credits\)](#)
- Environment – listed under [McGill 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 [: Minors for Non-Management Students](#) – listed under [Desautels Faculty of Management](#)



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## 5.10 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 6.7: Post-Baccalaureate Certificate Programs](#) for program descriptions and details.

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## 5.11 Diploma Program (Undergraduate) (Overview)

### Diploma Program (Undergraduate)

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

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## 5.12 Diploma in Collegial Studies (Overview)

### Diploma in Collegial Studies

- [section 7: Farm Management and Technology Program](#)

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## 5.13 Environmental Sciences Programs (Overview)

### 5.13.1 McGill School of Environment (MSE)

The MSE is a joint initiative of the Faculty of Agricultural and Environmental Sciences, the Faculty of Arts, the Faculty of Science, and the Faculty of Law. 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. The MSE programs allow you to choose to study on both the Macdonald and Downtown campuses.

Further information on all programs is given in the [McGill School of Environment](#) section, and on the MSE website: [www.mcgill.ca/mse](http://www.mcgill.ca/mse).

### 5.13.2 Environmental Programs on the Macdonald Campus

A number of integrated environmental science programs are also 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 you with a well-rounded training in a specific interdisciplinary subject as well as the basis for managing natural resources. For a complete list of the programs, see [section 5: Overview of Programs Offered](#).

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## 5.14 Graduate Programs

Graduate work may be undertaken on the Macdonald Campus, through the Departments of Animal Science, Bioresource Engineering, Food Science and Agricultural Chemistry, Natural Resource Sciences, Plant Science, the Institute of Parasitology, and the School of Dietetics and Human Nutrition.

The advanced courses of study offered lead to the degrees of Master of Science, Master of Science Applied, Doctor of Philosophy, Graduate Certificate in Biotechnology, and Graduate Certificate in Integrated Water Resources Management (IWRM).

Information on these programs and related fellowships is available from the Graduate and Postdoctoral Studies office, Macdonald Campus of McGill University, 21,111 Lakeshore Road, Macdonald-Stewart Building, Sainte-Anne-de-Bellevue QC H9X 3V9.

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

## 6 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. degree in Food Science (F.Sc.), a B.Sc. degree in Nutritional Sciences (Nutr.Sc.), or a B.Eng. degree in Bioresource Engineering. The Faculty also offers students the possibility of doing concurrent B.Sc. degrees in both Food Science and Nutritional Sciences.

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

### 6.1 Freshman Major

#### Program Director

Dr. Alice Cherestes  
Macdonald-Stewart Building, Room 1-023  
Telephone: 514-398-7980

The Freshman 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 year consists of at least 30 credits in Fundamental Math and Science courses as 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, or McGill Placement examinations may receive exemption and/or credit for all or part of the Basic Science courses in biology, chemistry, physics, and mathematics. Similarly, students who have completed courses at other universities or colleges may receive exemptions and/or credits. Students should consult with the Faculty's Student Affairs Office.

#### 6.1.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Freshman Program (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 year of at least 30 credits as listed below.

Normally, students registered in the Faculty of Agricultural and Environmental Sciences Freshman 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 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 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 Program (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 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 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 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.

Freshman Adviser: Dr. Alice Cherestes

Macdonald-Stewart Building, Room 1-023

Telephone: 514-398-7980

**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 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 program; the AGECE 200/201 courses would then be taken as part of the "regular" U1 curriculum should they ultimately decide on the Agricultural Economics Major.

\*\* Freshman 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 year will be required to substitute 6 other credits. Students should discuss suitable replacement courses with their adviser.

### 6.1.2 Bachelor of Engineering (Bioresource) (B.Eng.(Bioresource)) - Freshman Program (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 year of at least 30 credits as listed below.

Normally, students registered in the Faculty of Agricultural and Environmental Sciences Freshman 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 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 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

### 6.1.3 Bachelor of Science (Food Science) (B.Sc.(F.Sc.)) - Freshman Program (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 year of at least 30 credits as listed below.

Normally, students registered in the Faculty of Agricultural and Environmental Sciences Freshman 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 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 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)****6.1.4 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Freshman Program (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 year of at least 30 credits as listed below.

Normally, students registered in the Faculty of Agricultural and Environmental Sciences Freshman 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.

Students require a minimum 3.00 CGPA in order to progress into Year 1 of the Dietetics program.

Note: If you are not certain that you have adequate math and/or physics skills to commence the Freshman 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 Adviser may recommend that you register for an additional weekly Pre-calculus Lab, of 1 credit, which may be applied toward 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

**6.1.5 Concurrent Bachelor of Science Food Science (B.Sc. (F.Sc.)) and Bachelor of Science Nutritional Sciences (B.Sc. (Nutr.Sc.)) - Freshman Program (Concurrent) (30 credits)**

These freshman 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 year of at least 30 credits as listed below.

Normally, students registered in the Faculty of Agricultural and Environmental Sciences Freshman 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 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 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

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

Please refer to [section 5.3: 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.

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

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

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

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

Program Director: Professor Paul Thomassin

#### 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 & Methodology
ENVB 210	(3)	The Biophysical Environment

**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 "Academic 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.

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

Program Director: Professor Paul Thomassin

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 & 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 "Academic 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.

#### 6.2.1.3 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).

Program Director: Professor Roger Cue

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
ENVB 210	(3)	The Biophysical Environment
ENVB 301	(3)	Meteorology
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.

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

Program Director: Professor Roger Cue

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
ENVB 210	(3)	The Biophysical Environment
ENVB 301	(3)	Meteorology
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

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
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FAES 402 (6) Honours Research Project 2

### Honours Plan B

A minimum of two 3-credit Honours project 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 project must be 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 project.

FAES 405 (3) Honours Project 1

FAES 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\*
- 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.

#### 6.2.1.5 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.

Program Director: Professor Chris Solomon

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 (30 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 410	(3)	Ecosystem Ecology
LSCI 204	(3)	Genetics
LSCI 211	(3)	Biochemistry 1

### Complementary Courses (12 credits)

12 credits of complementary courses selected from:

ENTO 330	(3)	Insect Biology
ENVB 301	(3)	Meteorology
ENVB 305	(3)	Population & Community Ecology
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

### 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 "Academic 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.

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

Program Director: Professor Chris Solomon

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 (30 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 410	(3)	Ecosystem Ecology
LSCI 204	(3)	Genetics
LSCI 211	(3)	Biochemistry 1

### Complementary Courses (24 credits)

12 credits from the following:

ENTO 330	(3)	Insect Biology
ENVB 301	(3)	Meteorology
ENVB 305	(3)	Population & Community Ecology
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

### 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
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FAES 402 (6) Honours Research Project 2

OR

### Honours Plan B

A minimum of two 3-credit Honours project 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 project must be 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 project.

FAES 405 (3) Honours Project 1

FAES 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 "Academic 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.

#### 6.2.1.7 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.

Program Director: Professor Humberto Monardes

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.

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

Program Director: Professor Humberto Monardes

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.



**6.2.1.9 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.

Program Director: Professor Brian Driscoll

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
PLNT 304	(3)	Biology of Fungi
PLNT 353	(3)	Plant Structure and Function
PLNT 426	(3)	Plant Ecophysiology
PLNT 435	(3)	Plant Breeding
WILD 424	(3)	Parasitology

### 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 "Academic 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.

#### 6.2.1.10 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

FAES 401	(6)	Honours Research Project 1
FAES 402	(6)	Honours Research Project 2
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
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
PLNT 304	(3)	Biology of Fungi
PLNT 353	(3)	Plant Structure and Function
PLNT 426	(3)	Plant Ecophysiology
PLNT 435	(3)	Plant Breeding
WILD 424	(3)	Parasitology

### 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 "Academic 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.

### 6.2.2 Specializations

The faculty offers the following specializations, to be paired with a B.Sc.(Ag.Env.Sc.) major. Each major program description suggests a complementary specialization, though another may be selected following a consultation with your academic adviser/specialization coordinator.

#### 6.2.2.1 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 (15 credits)

AEBI 210	(3)	Organisms 1
AGEC 242	(3)	Management Theories and Practices
AGEC 332	(3)	Farm Management and Finance
AGEC 450	(3)	Agriculture Business Management
ANSC 250	(3)	Principles of Animal Science

#### Complementary Courses (9 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 341	(3)	Introduction to Finance
MGCR 352	(3)	Principles of Marketing
MGCR 382	(3)	International Business
MGSC 373	(3)	Operations Research 1
ORGB 321	(3)	Leadership

#### 6.2.2.2 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 560	(3)	Biology of Lactation
ANSC 565	(3)	Applied Information Systems
LSCI 451	(3)	Research Project 1

**6.2.2.3 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
WILD 424	(3)	Parasitology

**Complementary Courses (6 credits)**

**Revision, May 2016. Start of revision.**

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

**Revision, May 2016. End of revision.**

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

This specialization will be of interest to students who wish to study the improved efficiency of livestock production at the national and international levels. Students are exposed to 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, it conforms with the eligibility requirements of the Ordre des agronomes du Québec.

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

**Required Courses (24 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 451	(3)	Dairy and Beef Production Management
ANSC 458	(3)	Swine and Poultry Production

#### 6.2.2.5 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 misuse often degrades the ability of ecosystems to provide the benefits and services we value. In the Applied Ecology minor 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>

#### Required Courses (12 credits)

ENVB 305	(3)	Population & Community Ecology
ENVB 415	(3)	Ecosystem Management
ENVB 437	(3)	Assessing Environmental Impact
ENVB 529	(3)	GIS for Natural Resource Management

#### Complementary Courses (12 credits)

12 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 440	(3)	Insect Diversity
ENVB 301	(3)	Meteorology
ENVB 506	(3)	Quantitative Methods: Ecology
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)	Ecological Soil Management
WILD 302	(3)	Fish Ecology
WILD 307	(3)	Natural History of Vertebrates
WILD 350	(3)	Mammalogy
WILD 420	(3)	Ornithology

**6.2.2.6 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)	Ecological Soil Management

**Complementary Courses (12 credits)**

Minimum of 6 agronomic credits from:

AGRI 310	(3)	Internship in Agriculture/Environment
AGRI 435	(3)	Soil and Water Quality Management
ANSC 312	(3)	Animal Health and Disease
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 434	(3)	Weed Biology and Control
SOIL 326	(3)	Soils in a Changing Environment

Other complementary courses:

AGRI 411	(3)	Global Issues on Development, Food and Agriculture
MICR 331	(3)	Microbial Ecology
NUTR 341	(3)	Global Food Security
PLNT 460	(3)	Plant Ecology
WOOD 441	(3)	Integrated Forest Management

**6.2.2.7 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 (9 credits)**

ENVB 305	(3)	Population & Community Ecology
ENVB 437	(3)	Assessing Environmental Impact
ENVB 506	(3)	Quantitative Methods: Ecology

### Complementary Courses (15 credits)

At least 15 credits chosen from the following list:

AGRI 310	(3)	Internship in Agriculture/Environment
BREE 217	(3)	Hydrology and Water Resources
ECON 225	(3)	Economics of the Environment
ECON 326	(3)	Ecological Economics
ECON 405	(3)	Natural Resource Economics
ENVB 301	(3)	Meteorology
ENVR 203	(3)	Knowledge, Ethics and Environment
MICR 331	(3)	Microbial Ecology
NRSC 333	(3)	Pollution and Bioremediation
WILD 415	(2)	Conservation Law
WILD 421	(3)	Wildlife Conservation

### 6.2.2.8 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

**6.2.2.9 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
ENTO 440	(3)	Insect Diversity
ENTO 535	(3)	Aquatic Entomology
ENVB 301	(3)	Meteorology
ENVB 305	(3)	Population & Community Ecology
ENVB 313	(3)	Phylogeny and Biogeography
ENVB 315	(3)	Science of Inland Waters
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 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
WILD 424	(3)	Parasitology

#### 6.2.2.10 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
WILD 424	(3)	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

**6.2.2.11 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

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

The goal of this specialization is to give students an excellent background in 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 may find employment directly with plants in horticulture or in field crop development, production, and management; or in government services, extension, teaching, consulting, or 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:

AEMA 411	(3)	Experimental Designs 01
AGRI 340	(3)	Principles of Ecological Agriculture
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)	Ecological Soil Management

### 6.2.2.13 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Professional Agrology (21 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, or with the Major Agricultural Economics and the Agri-business Specialization.

Note: Most students will require 21 credits to complete this specialization. Students taking the Agri-business Specialization will need to take an additional 3 credits, chosen in consultation with the Academic Adviser, such that they meet the minimum requirements of the OAQ. The credits within this specialization may not count towards the student's Major or other Specialization. All of the 21 or 24 credits count only for this Specialization.

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

9-12 credits

Note: students in Animal Production, Ecological Agriculture, Plant Production, or Soil and Water Resources specializations must take 9 complementary credits, while students in the Agri-business specialization must take 12 complementary credits.

For students in the Agro-Environmental Sciences major with a specialization in Animal Production, Ecological Agriculture, Plant Production, or Soil and Water Resources:

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

For students in the Agri-business Specialization:

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

#### 6.2.2.14 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)	Ecological Soil Management

##### 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

#### 6.2.2.15 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 (10 credits)

PLNT 358	(3)	Flowering Plant Diversity
WILD 307	(3)	Natural History of Vertebrates
WILD 401	(4)	Fisheries and Wildlife Management

##### Complementary Courses (14 credits)

14 credits of complementary courses selected as follows:

At least 6 credits from the following:

BIOL 427	(3)	Herpetology
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ENVB 529	(3)	GIS for Natural Resource Management
WILD 302	(3)	Fish Ecology
WILD 350	(3)	Mammalogy
WILD 420	(3)	Ornithology

At least 6 credits from the following:

BIOL 307	(3)	Behavioural Ecology
BIOL 465	(3)	Conservation Biology
WILD 421	(3)	Wildlife Conservation
WILD 424	(3)	Parasitology
WILD 475	(3)	Desert Ecology

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

For more information on this major, please see [section 5.4: Bachelor of Engineering in Bioresource Engineering – B.Eng.\(Bioresource\) \(Overview\)](#).

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

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

##### Required Courses (56 credits)

AEMA 202	(3)	Intermediate Calculus
AEMA 305	(3)	Differential Equations
BREE 205	(3)	Engineering Design 1
BREE 210	(3)	Mechanical Analysis & Design
BREE 216	(3)	Bioresource Engineering Materials
BREE 252	(3)	Computing for Engineers
BREE 301	(3)	Biothermodynamics
BREE 305	(3)	Fluid Mechanics
BREE 319	(3)	Engineering Mathematics
BREE 327	(3)	Bio-Environmental Engineering
BREE 341	(3)	Mechanics of Materials
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 1
BREE 490	(3)	Engineering Design 2
BREE 495	(3)	Engineering Design 3
ECSE 461	(3)	Electric Machinery
FACC 300	(3)	Engineering Economy
FACC 400	(1)	Engineering Professional Practice
MECH 289	(3)	Design Graphics

**Complementary Courses**

57 credits of the complementary courses selected as follow:

6 credits - Set A

9 credits - Set B (Natural Sciences and Mathematics)

9 credits - Set C (Social Sciences)

33 credits - Set D (Engineering)

**Set A**

3 credits from the following:

AEMA 310	(3)	Statistical Methods 1
CIVE 302	(3)	Probabilistic Systems
MATH 323	(3)	Probability

3 credits from the following:

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

**Set B - Natural Sciences and Mathematics**

9 credits with a minimum of 3 credits chosen from the list below:

AEBI 210	(3)	Organisms 1
AEBI 211	(3)	Organisms 2
ENVB 305	(3)	Population & Community Ecology
ENVB 315	(3)	Science of Inland Waters
LSCI 202	(3)	Molecular Cell Biology
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
MICR 331	(3)	Microbial Ecology

Plus 6 credits chosen in consultation with the Academic Adviser.

**Set C - Social Sciences**

Minimum of 3 credits from the following list:

CHEE 230	(3)	Environmental Aspects of Technology
CIVE 469	(3)	Infrastructure and Society
ENVR 201	(3)	Society, Environment and Sustainability
MIME 308	(3)	Social Impact of Technology
SOCI 235	(3)	Technology and Society

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.

A suggestion in the Social Sciences offered in the department is BREE 503 Water: Society, Law & Policy.

**Set D - Engineering**

33 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 315	(3)	Design of Machines
BREE 322	(3)	Organic Waste Management
BREE 325	(3)	Food Process Engineering
BREE 412	(3)	Machinery Systems Engineering
BREE 416	(3)	Engineering for Land Development
BREE 418	(3)	Soil Mechanics and Foundations
BREE 423	(3)	Biological Material Properties
BREE 497	(3)	Bioresource Engineering Project
BREE 501	(3)	Simulation and Modelling
BREE 504	(3)	Instrumentation and Control
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
CHEE 474	(3)	Biochemical Engineering
CIVE 317	(3)	Structural Engineering 1
CIVE 318	(3)	Structural Engineering 2

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

#### Required Courses (53 credits)

AEMA 202	(3)	Intermediate Calculus
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AEMA 305	(3)	Differential Equations
BREE 205	(3)	Engineering Design 1
BREE 210	(3)	Mechanical Analysis & 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 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 1
BREE 490	(3)	Engineering Design 2
BREE 495	(3)	Engineering Design 3
FACC 300	(3)	Engineering Economy
FACC 400	(1)	Engineering Professional Practice
MECH 289	(3)	Design Graphics

### 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

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

### Complementary Courses

60 credits of the complementary courses selected as follow:

6 credits - Set A

9 credits - Set B (Natural Sciences and Mathematics)

9 credits - Set C (Social Sciences)

36 credits - Set D (Engineering)

**Set A**

One of the following:

AEMA 310	(3)	Statistical Methods 1
CIVE 302	(3)	Probabilistic Systems
MATH 323	(3)	Probability

One of the following:

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

**Set B - Natural Sciences and Mathematics**

9 credits with a minimum of 3 credits chosen from the list below:

AEBI 210	(3)	Organisms 1
AEBI 211	(3)	Organisms 2
ENVB 305	(3)	Population & Community Ecology
ENVB 315	(3)	Science of Inland Waters
LSCI 202	(3)	Molecular Cell Biology
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
MICR 331	(3)	Microbial Ecology

Plus 6 credits chosen in consultation with the Academic Adviser.

**Set C - Social Sciences**

Minimum of 3 credits from the following list:

CHEE 230	(3)	Environmental Aspects of Technology
CIVE 469	(3)	Infrastructure and Society
ENVR 201	(3)	Society, Environment and Sustainability
MIME 308	(3)	Social Impact of Technology
SOCI 235	(3)	Technology and Society

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**

36 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 315	(3)	Design of Machines
BREE 322	(3)	Organic Waste Management
BREE 325	(3)	Food Process Engineering

BREE 412	(3)	Machinery Systems Engineering
BREE 416	(3)	Engineering for Land Development
BREE 418	(3)	Soil Mechanics and Foundations
BREE 419	(3)	Structural Design
BREE 420	(3)	Engineering for Sustainability
BREE 423	(3)	Biological Material Properties
BREE 497	(3)	Bioresource Engineering Project
BREE 501	(3)	Simulation and Modelling
BREE 502	(3)	Drainage/Irrigation Engineering
BREE 504	(3)	Instrumentation and Control
BREE 506	(3)	Advances in Drainage Management
BREE 509	(3)	Hydrologic Systems and Modelling
BREE 510	(3)	Watershed Systems Management
BREE 512	(3)	Soil Cutting and Tillage
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 525	(3)	Climate Control for Buildings
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
CHEE 474	(3)	Biochemical Engineering
CIVE 317	(3)	Structural Engineering 1
CIVE 318	(3)	Structural Engineering 2

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

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

#### Required Courses (59 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 & Design
BREE 216	(3)	Bioresource Engineering Materials
BREE 252	(3)	Computing for Engineers
BREE 301	(3)	Biothermodynamics
BREE 305	(3)	Fluid Mechanics

BREE 319	(3)	Engineering Mathematics
BREE 327	(3)	Bio-Environmental Engineering
BREE 341	(3)	Mechanics of Materials
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 1
BREE 490	(3)	Engineering Design 2
BREE 495	(3)	Engineering Design 3
ECSE 461	(3)	Electric Machinery
FACC 300	(3)	Engineering Economy
FACC 400	(1)	Engineering Professional Practice
MECH 289	(3)	Design Graphics

### Complementary Courses

54 credits of the complementary courses selected as follows:

6 credits - Set A

12 credits - Set B (Natural Sciences)

6 credits - Set C (Social Sciences)

30 credits - Set D (Engineering)

#### Set A

6 credits

3 credits from the following:

AEMA 310	(3)	Statistical Methods 1
CIVE 302	(3)	Probabilistic Systems
MATH 323	(3)	Probability

3 credits from the following:

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

#### Set B - Natural Sciences

6 credits from each of the following two groups:

##### Group 1 - Biology

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**

AEBI 210	(3)	Organisms 1
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 203	(3)	Economic Botany
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

**Set C - Social Sciences**

3 credits from the following list:

CHEE 230	(3)	Environmental Aspects of Technology
CIVE 469	(3)	Infrastructure and Society
ENVR 201	(3)	Society, Environment and Sustainability
MIME 308	(3)	Social Impact of Technology
SOCI 235	(3)	Technology and Society

Plus one 3-credit Social Sciences, Management Studies, Humanities, Law, or Language course with permission of the Academic Adviser.

A suggestion in the Social Sciences offered in the department is BREE 503 Water: Society, Law & Policy.

**Set D - Engineering**

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

(Minimum of 6 credits from Group 1 or Group 2 below.)

**Group 1 - Soil and Water**

BREE 214	(3)	Geomatics
BREE 217	(3)	Hydrology and Water Resources
BREE 322	(3)	Organic Waste Management
BREE 416	(3)	Engineering for Land Development
BREE 418	(3)	Soil Mechanics and Foundations
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
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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
CHEE 474	(3)	Biochemical Engineering

### Group 3 - Other Engineering

BREE 314	(3)	Agri-Food Buildings
BREE 315	(3)	Design of Machines
BREE 412	(3)	Machinery Systems Engineering
BREE 423	(3)	Biological Material Properties
BREE 497	(3)	Bioresource Engineering Project
BREE 501	(3)	Simulation and Modelling
BREE 504	(3)	Instrumentation and Control
BREE 522	(3)	Bio-Based Polymers
CIVE 317	(3)	Structural Engineering 1
CIVE 318	(3)	Structural Engineering 2

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

### 6.3.4.1 Minor in Environmental Engineering

For more information, see [section 6.6.9: Minor in Environmental Engineering](#).

### 6.3.4.2 Barbados Field Study Semester

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

### 6.3.4.3 Internship Opportunities and Co-op Experiences

For more information, see [section 5.1: Internship Opportunities and Co-op Experience](#).

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## 6.4 Bachelor of Science (Food Science) - B.Sc.(F.Sc.)

Please refer to [section 5.5: Bachelor of Science in Food Science – B.Sc.\(F.Sc.\) \(Overview\)](#) for advising and other information on these B.Sc.(F.Sc.) programs.

### 6.4.1 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.

#### **6.4.2 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.

#### 6.4.3 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.

#### 6.4.4 About the Concurrent Bachelor of Science in Food Science (B.Sc.(F.Sc.)) and Bachelor of Science in Nutritional Sciences (B.Sc.(Nutr.Sc.))

Unique in North America, the new concurrent degree program in Food Science and Nutritional Science offers the best education in these complementary fields and opens the door to a multitude of career paths.

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

##### 6.4.4.1 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)	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)	Agriculture Business Management
NUTR 446	(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 535	(3)	Food Biotechnology
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)	Bioenergetics and the Lifespan

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.

#### 6.4.4.2 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
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)	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)	Agriculture Business Management

At least 9 credits from the following:

AGEC 242	(3)	Management Theories and Practices
ENVR 203	(3)	Knowledge, Ethics and Environment
NRSC 340	(3)	Global Perspectives on Food
NUTR 301	(3)	Psychology
NUTR 322	(3)	Applied Sciences Communication
NUTR 446	(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.

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

### 6.4.5.1 Certificate in Food Science

Detailed information on this certificate program can be found under [section 6.7.2: Certificate in Food Science \(30 credits\)](#) in this publication.

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

Please refer to [section 5.6: Bachelor of Science in Nutritional Sciences – B.Sc.\(Nutr.Sc.\) \(Overview\)](#) for advising and other information regarding the Dietetics and Nutrition majors.

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

The Major Dietetics, which includes a 40-week internship (Stage) as part of its degree requirements, is a professional program that leads to eligibility for membership in a provincial regulatory body and registration as a professional Dietitian/Nutritionist (R.D. or p.dt). Graduates are qualified for challenging professional and leadership positions related to food and health, as dietitians, nutritionists, and food administrators. The designations "Dietitian" and "Nutritionist" are reserved titles associated with reserved acts in the province of Quebec. As clinical dietitians/nutritionists, dietitians may work in healthcare settings, nutrition counselling centres, clinics, and private practice. As community nutritionists, dietitians are involved in nutrition education programs through community health programs, school boards, and local and international health agencies. The dietitian in the food service sector participates in all aspects of management to assure quality food products and services. Postgraduate programs are available to qualified graduates. The duration of the program is 3.5 years, with the 40 weeks of supervised internship (Stage) integrated into each year in a planned sequence. Successful graduates are qualified to apply for membership with the Ordre professionnel des diététistes du Québec (O.P.D.Q.) and/or other provincial regulatory bodies, as well as Dietitians of Canada.

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>

#### \* Advising Notes for Professional Practice (Stage):

The School firmly applies prerequisite requirements for registration in all required courses in the Dietetics Major. All required and complementary 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.

### Required Courses (109 credits)

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

AEMA 310	(3)	Statistical Methods 1
ANSC 234	(3)	Biochemistry 2
ANSC 323	(3)	Mammalian Physiology
ANSC 424	(3)	Metabolic Endocrinology
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)	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 343	(3)	Accounting and Cost Control
NUTR 344	(4)	Clinical Nutrition 1
NUTR 345	(4)	Food Service Systems Management
NUTR 346	(2)	Quantity Food Production
NUTR 403	(3)	Nutrition in Society
NUTR 408*	(1)	Professional Practice Stage 3A
NUTR 409*	(9)	Professional Practice Stage 3B
NUTR 438	(3)	Interviewing and Counselling
NUTR 446	(3)	Applied Human Resources
NUTR 450	(3)	Research Methods: Human Nutrition
NUTR 510*	(14)	Professional Practice - Stage 4
NUTR 545	(4)	Clinical Nutrition 2
NUTR 546	(4)	Clinical Nutrition 3

### Complementary Courses (3 credits)

3 credits (200 level or higher) in human behavior social science from the following list, or another 3-credit human behavior course approved by your adviser.

EDPE 300	(3)	Educational Psychology
NUTR 301	(3)	Psychology
PSYC 215	(3)	Social Psychology
SOCI 210	(3)	Sociological Perspectives

### 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. Students are encouraged to develop a working knowledge of French in order to optimize their participation and learning in Stage placement sites. Similar to the language policy for Medicine, a functional working knowledge of French is expected by second year. Alternate elective choices may include, but are not limited to:

AEHM 300	(3)	ESL: High Intermediate 1
AEHM 301	(3)	ESL: High Intermediate 2
AEHM 330	(3)	Academic and Scientific Writing
NUTR 501	(3)	Nutrition in Developing Countries
NUTR 503	(3)	Bioenergetics and the Lifespan
NUTR 512	(3)	Herbs, Foods and Phytochemicals

### A Compulsory Immunization

A compulsory immunization program exists at McGill which is required for Dietetics students to practise. Students should complete their immunization before or soon after arriving at Macdonald campus; confirmation of immunization will be coordinated by the Health nurse through Student Services (<http://www.mcgill.ca/studenthealth/>). Certain deadlines may apply.

### 6.5.2 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 (62 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
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)	Human Nutrition
NUTR 322	(3)	Applied Sciences Communication
NUTR 337	(3)	Nutrition Through Life
NUTR 344	(4)	Clinical Nutrition 1
NUTR 450	(3)	Research Methods: Human Nutrition
NUTR 512	(3)	Herbs, Foods and Phytochemicals
NUTR 551	(3)	Analysis of Nutrition Data

#### Complementary Courses (12 credits)

12 credits of complementary courses are selected as follows:

At least 3 credits from the following courses:

ANSC 560	(3)	Biology of Lactation
NUTR 501	(3)	Nutrition in Developing Countries
NUTR 503	(3)	Bioenergetics and the Lifespan
NUTR 511	(3)	Nutrition and Behaviour
NUTR 545	(4)	Clinical Nutrition 2



At least 9 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 525	(3)	Food Quality Assurance
FDSC 535	(3)	Food Biotechnology
FDSC 537	(3)	Nutraceutical Chemistry
FDSC 540	(3)	Sensory Evaluation of Foods
NUTR 430	(3)	Directed Studies: Dietetics and Nutrition 1

#### Elective Courses (16 credits)

16 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.

#### 6.5.3 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 (62 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)	Human Nutrition
NUTR 322	(3)	Applied Sciences Communication
NUTR 337	(3)	Nutrition Through Life
NUTR 344	(4)	Clinical Nutrition 1
NUTR 450	(3)	Research Methods: Human Nutrition
NUTR 501	(3)	Nutrition in Developing Countries
NUTR 512	(3)	Herbs, Foods and Phytochemicals
NUTR 551	(3)	Analysis of Nutrition Data

### Complementary Courses (12 credits)

12 credits of complementary courses are selected as follows:

At least 3 credits selected from:

ANSC 560	(3)	Biology of Lactation
NUTR 503	(3)	Bioenergetics and the Lifespan
NUTR 511	(3)	Nutrition and Behaviour
NUTR 545	(4)	Clinical Nutrition 2

At least 9 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 227	(3)	Medical Anthropology
ANTH 302	(3)	New Horizons in Medical Anthropology
ENVR 203	(3)	Knowledge, Ethics and Environment
GEOG 303	(3)	Health Geography
GEOG 403	(3)	Global Health and Environmental Change
NRSC 221	(3)	Environment and Health
NRSC 340	(3)	Global Perspectives on Food
NUTR 403	(3)	Nutrition in Society
NUTR 430	(3)	Directed Studies: Dietetics and Nutrition 1
PARA 410	(3)	Environment and Infection
PARA 515	(3)	Water, Health and Sanitation

### Elective Courses (16 credits)

16 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.

#### 6.5.4 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 (62 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)	Human Nutrition
NUTR 322	(3)	Applied Sciences Communication
NUTR 337	(3)	Nutrition Through Life
NUTR 344	(4)	Clinical Nutrition 1
NUTR 450	(3)	Research Methods: Human Nutrition
NUTR 512	(3)	Herbs, Foods and Phytochemicals
NUTR 551	(3)	Analysis of Nutrition Data
PARA 438	(3)	Immunology

### Complementary Courses (12 credits)

12 credits of complementary courses are selected as follows:

At least 3 credits from the following:

ANSC 560	(3)	Biology of Lactation
NUTR 501	(3)	Nutrition in Developing Countries
NUTR 503	(3)	Bioenergetics and the Lifespan
NUTR 511	(3)	Nutrition and Behaviour
NUTR 545	(4)	Clinical Nutrition 2

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
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 & Hormones
PHGY 312	(3)	Respiratory, Renal, & Cardiovascular Physiology
PHGY 313	(3)	Blood, Gastrointestinal, & Immune Systems Physiology
WILD 424	(3)	Parasitology

### Elective Courses (16 credits)

16 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.

### 6.5.5 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Nutrition - Nutritional Biochemistry (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 in nutritional biochemistry links nutrigenomics, nutri-genetics, and biotechnology with human health, regulation of metabolism, and the pathophysiology of inherited and chronic disease. 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 (62 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
BTEC 306	(3)	Experiments in Biotechnology
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)	Human Nutrition
NUTR 322	(3)	Applied Sciences Communication
NUTR 337	(3)	Nutrition Through Life
NUTR 344	(4)	Clinical Nutrition 1

NUTR 450	(3)	Research Methods: Human Nutrition
NUTR 512	(3)	Herbs, Foods and Phytochemicals
NUTR 551	(3)	Analysis of Nutrition Data

### Complementary Courses (12 credits)

12 credits of complementary courses are selected as follows:

At least 3 credits from the following:

ANSC 560	(3)	Biology of Lactation
NUTR 501	(3)	Nutrition in Developing Countries
NUTR 503	(3)	Bioenergetics and the Lifespan
NUTR 511	(3)	Nutrition and Behaviour
NUTR 545	(4)	Clinical Nutrition 2

At least 9 credits from the following courses:

ANAT 262	(3)	Introductory Molecular and Cell Biology
ANSC 324	(3)	Developmental Biology and Reproduction
ANSC 400	(3)	Eukaryotic Cells and Viruses
ANSC 420	(3)	Animal Biotechnology
ANSC 551	(3)	Carbohydrate and Lipid Metabolism
ANSC 552	(3)	Protein Metabolism and Nutrition
BINF 301	(3)	Introduction to Bioinformatics
BIOC 312	(3)	Biochemistry of Macromolecules
BIOL 300	(3)	Molecular Biology of the Gene
BTEC 535	(3)	Functional Genomics in Model Organisms
EXMD 401	(3)	Physiology and Biochemistry Endocrine Systems
EXMD 502	(3)	Advanced Endocrinology 1
EXMD 503	(3)	Advanced Endocrinology 02
MICR 341	(3)	Mechanisms of Pathogenicity
MIMM 314*	(3)	Intermediate Immunology
MIMM 414	(3)	Advanced Immunology
NUTR 430	(3)	Directed Studies: Dietetics and Nutrition 1
PARA 438*	(3)	Immunology

\* Note: Students take either PARA 438 or MIMM 314

### Elective Courses (16 credits)

16 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.

## 6.5.6 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 (62 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)	Human Nutrition
NUTR 322	(3)	Applied Sciences Communication
NUTR 337	(3)	Nutrition Through Life
NUTR 344	(4)	Clinical Nutrition 1
NUTR 450	(3)	Research Methods: Human Nutrition
NUTR 503	(3)	Bioenergetics and the Lifespan
NUTR 512	(3)	Herbs, Foods and Phytochemicals
NUTR 551	(3)	Analysis of Nutrition Data

### Complementary Courses (12 credits)

12 credits of complementary courses are selected as follows:

At least 3 credits from the following:

ANSC 560	(3)	Biology of Lactation
NUTR 501	(3)	Nutrition in Developing Countries
NUTR 511	(3)	Nutrition and Behaviour
NUTR 545	(4)	Clinical Nutrition 2

At least 9 credits from:

ANAT 214	(3)	Systemic Human Anatomy
EDKP 330	(3)	Physical Activity and Health
EDKP 395	(3)	Exercise Physiology
EDKP 444	(3)	Ergonomics
EDKP 445	(3)	Exercise Metabolism
EDKP 446	(3)	Physical Activity and Ageing
EDKP 448	(3)	Exercise and Health Psychology

EDKP 449	(3)	Exercise Pathophysiology 2
EDKP 485	(3)	Exercise Pathophysiology 1
EDKP 495	(3)	Scientific Principles of Training
EDKP 542	(3)	Environmental Exercise Physiology
NUTR 430	(3)	Directed Studies: Dietetics and Nutrition 1

### Elective Courses (16 credits)

16 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.

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

### 6.5.7.1 Minor in Human Nutrition

Detailed information on this Minor can be found under [section 6.6.10: Minor Human Nutrition - \(24 credits\)](#) in this publication.

### 6.5.7.2 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 6.4.4.1: 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.

## 6.6 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 5.9: Minor Programs \(Overview\)](#). For registration information, see [section 4.6.8.1: Procedures for Minor Programs](#).

### 6.6.1 Minor in Environment (McGill School of Environment)

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

### 6.6.2 Minor Agribusiness Entrepreneurship - (18 credits)

This minor program is open to B.Sc.(Ag.Env.Sc.), B.Eng.(Bioresource), and B.Sc.(F.Sc.) degree students.

The Minor in Agribusiness Entrepreneurship is designed to provide students with an understanding of the key concepts and processes involved in starting and managing new ventures in an agricultural or food business, including conceptualization, development and management of successful new ventures. It combines rigour with relevance as all students will complete a major project in the agri-food industry, thus providing an opportunity to apply the concepts acquired in the classroom. The minor is multidisciplinary and integrative, as it includes courses from across areas in the Faculties of Management and Agricultural and Environmental Sciences. The minor is appropriate for students interested in a wide variety of new ventures, from for-profit private companies to social enterprises and cooperatives.

The minimum requirement for entry into the minor is that a student be in his or her U2 year and have a CPGA of 3.0. The minor is limited to 25 students per year; interested students should contact the program coordinator to apply for admission.

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

### Required Courses (12 credits)

FAES 310	(3)	Agribusiness Entrepreneurship
INTG 201	(3)	Integrated Management Essentials 1
INTG 202	(3)	Integrated Management Essentials 2
MGPO 362	(3)	Fundamentals of Entrepreneurship

### Complementary Courses (6 credits)

6 credits from the following:

BUSA 465	(3)	Technological Entrepreneurship
FAES 300*	(3)	Internship 2
MGPO 364	(3)	Entrepreneurship in Practice
MGPO 438	(3)	Social Entrepreneurship and Innovation

\* 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.

### 6.6.3 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)	Agriculture Business Management
AGEC 491	(3)	Research & Methodology
AGEC 492	(3)	Special Topics in Agricultural Economics 01

### 6.6.4 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

### 6.6.5 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
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 560	(3)	Biology of Lactation
ANSC 565	(3)	Applied Information Systems
LSCI 451	(3)	Research Project 1

### 6.6.6 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)

Revision, May 2016. Start of revision.

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

Revision, May 2016. End of revision.

### 6.6.7 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:

- Ensure all required and complementary courses are passed with a minimum grade of C;
- 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 (12 credits)**

ENVB 305	(3)	Population & Community Ecology
ENVB 415	(3)	Ecosystem Management
ENVB 437	(3)	Assessing Environmental Impact
ENVB 529	(3)	GIS for Natural Resource Management

**Complementary Courses (12 credits)**

12 credits of complementary courses selected as follows:

AGRI 340	(3)	Principles of Ecological Agriculture
AGRI 435	(3)	Soil and Water Quality Management
ENTO 440	(3)	Insect Diversity
ENVB 301	(3)	Meteorology
ENVB 506	(3)	Quantitative Methods: Ecology
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
WILD 302	(3)	Fish Ecology
WILD 307	(3)	Natural History of Vertebrates
WILD 350	(3)	Mammalogy
WILD 420	(3)	Ornithology

**6.6.8 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: <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)	Ecological Soil Management

### Complementary Courses (12 credits)

Minimum of 6 agronomic credits from:

AGRI 310	(3)	Internship in Agriculture/Environment
AGRI 435	(3)	Soil and Water Quality Management
ANSC 312	(3)	Animal Health and Disease
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 434	(3)	Weed Biology and Control
SOIL 326	(3)	Soils in a Changing Environment

Other complementary courses:

AGRI 411	(3)	Global Issues on Development, Food and Agriculture
MICR 331	(3)	Microbial Ecology
NUTR 341	(3)	Global Food Security
PLNT 460	(3)	Plant Ecology
WOOD 441	(3)	Integrated Forest Management

### 6.6.9 Minor in Environmental Engineering

The Minor program consists of 21 credits in courses that are environment related. By means of a judicious choice of complementary courses, Bioresource Engineering students may 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 and Applied Mechanics (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	Bio-Treatment of Wastes
MICR 331	Microbial Ecology

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

### 6.6.10 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 Dietetics and 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)	Human Nutrition

3 credits from:

ANSC 551	(3)	Carbohydrate and Lipid Metabolism
ANSC 552	(3)	Protein Metabolism and Nutrition
NUTR 403	(3)	Nutrition in Society
NUTR 501	(3)	Nutrition in Developing Countries
NUTR 512	(3)	Herbs, Foods and Phytochemicals
NUTR 551	(3)	Analysis of Nutrition Data
PATH 300	(3)	Human Disease

3 credits from:

MIMM 314	(3)	Intermediate Immunology
PARA 438	(3)	Immunology

3 credits from:

NUTR 430	(3)	Directed Studies: Dietetics and Nutrition 1
NUTR 431	(3)	Directed Studies: Dietetics and Nutrition 2

### 6.6.11 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:

African 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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## 6.7 Post-Baccalaureate Certificate Programs

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

### 6.7.1 Certificate in 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)	Ecological Soil Management

#### 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 & Community Ecology
ENVB 415	(3)	Ecosystem Management
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 434	(3)	Weed Biology and Control
PLNT 460	(3)	Plant Ecology
SOIL 326	(3)	Soils in a Changing Environment
WILD 424	(3)	Parasitology
WOOD 441	(3)	Integrated Forest Management

### 6.7.2 Certificate in Food Science (30 credits)

The 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

**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 535	(3)	Food Biotechnology
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

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**6.8 Field Studies**

**6.8.1 Africa Field Study Semester**

The Department of Geography, Faculty of Science, coordinates the 15-credit interdisciplinary Africa Field Study Semester. For more information, see [Field Studies > Undergraduate > : Africa Field Study Semester](#).



### 6.8.2 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 [Field Studies > Undergraduate > : Barbados Field Study Semester](#).

### 6.8.3 Barbados Interdisciplinary Tropical Studies Field Semester

This 15-credit program is offered at the Bellairs Research Institute in Barbados. For more information, see [Field Studies > Undergraduate > : Barbados Interdisciplinary Tropical Studies Field Semester](#).

### 6.8.4 Panama Field Study Semester

This program is a joint venture between McGill University and the Smithsonian Tropical Research Institute (STRI) in Panama. For more information, see [Field Studies > Undergraduate > : Panama Field Study Semester](#).

McGill students are eligible for a Mobility Award; see [www.mcgill.ca/studentaid/other-funding/mobilityawards](http://www.mcgill.ca/studentaid/other-funding/mobilityawards) for details or contact the Scholarships and Student Aid Office (SSAO) at [mobilityaward@mcgill.ca](mailto:mobilityaward@mcgill.ca).

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## 7 Farm Management and Technology Program

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### 7.1 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: [www.mcgill.ca/fmt](http://www.mcgill.ca/fmt)

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### 7.2 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](#).

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### 7.3 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)
FMT4 080	(2)	English Upgrading
FMT4 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)
FMT4 077	(2.67)	Introduction to College English

### Summer 1

FMT4 013	(2)	Agricultural Internship (152-VSN-MC)
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### 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)
FMT4 005	(1.33)	Animal Anatomy and Physiology
FMT4 008	(2.33)	Introduction to Animal Science (152-008-MC)
FMT4 075	(2)	Langue française et communication (602-101-03)
FMT4 082	(2.33)	Literary Genres (603-102-04)
FMT4 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)
FMT4 083	(2.33)	Literary Themes (603-103-04)
FMT4 091	(1)	Physical Activity and Effectiveness (109-102-MQ)
FMT4 098	(2)	Français agricole (602-VSG-MC)

**Summer 2**

FMT4 018	(2.33)	Enterprise Management 1 (152-VSU-MC)
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**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)
FMT4 078	(2)	FMT English (603-VSB-MC)
FMT4 086	(2)	Humanities 2: World Views (345-102-03)
FMT4 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)
FMT4 087	(2)	Humanities 3: Env. & Org. Issues (345-VSH-MC)
FMT4 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.

FMTTP 074	(2)	Complementary Course 2
FMTTP 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.

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## 7.4 Farm Management and Technology Program Faculty

### Director

Peter Enright; B.Sc.(Agr.Eng.), M.Sc.(McG.)

### Associate Director

Serge Lussier; B.Sc.(Agr.)(McG.)

### Faculty Lecturers

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

Christian Molgat; B.Sc.(Bio.)(Ott.), B.Sc.(Agr.)(Guelph)

Pascal Thériault; B.Sc.(Agr.), M.Sc.(Kansas)

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

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## 7.5 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, de l'Enseignement supérieur et de la Recherche* (MEESR) for the collegial level.

### 7.5.1 Entrance Requirements – FMT

1. 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.
2. 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
3. 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 and a minimum IELTS score of 6.5 is required (other English proficiency exams are also accepted by McGill).

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.

## 7.5.2 Important Dates – FMT

### 7.5.2.1 Sessional Dates

The number of teaching and examination days is set by the *Ministère de l'Éducation, de l'Enseignement supérieur, et de la Recherche* (MEESR). The sessional dates vary from year to year. At the present time, each semester has 75 teaching days and seven days of exams.

### 7.5.2.2 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**.

## 7.5.3 Registration – FMT

Students in the Farm Management and Technology program must register online using Minerva at [www.mcgill.ca/minerva](http://www.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.

## 7.5.4 Academic Standing – FMT

Attendance in class is compulsory. Students with attendance of less than 80% may not be permitted to write examinations.

Examinations and other work in courses will be marked according to the percentage system. The minimum passing mark in a course is 60%.

When a student's cumulative percent average (CPA) or semestrial percent average (SPA) first drops below 60%, or they fail four or more courses in a semester, withdrawal is advised. Students who choose to remain in the program are on probation.

Students on probation are normally permitted to register for no more than 10 credits per semester. They are not permitted to be on probation for more than one semester unless they obtain an SPA of 70% or higher.

Students who do not raise their CPA to 60% (or obtain an SPA of 70%) while on probation are not permitted to continue. They are required to withdraw from the program for one year. If, after this period, students wish to be readmitted, they must apply in writing to the Director of the program.

## 7.5.5 Handbook on Student Rights and Responsibilities

This *Handbook* is a compendium of regulations and policies governing student rights and responsibilities at McGill University. It is published jointly by the Dean of Students' Office and the Secretariat. A copy of the *Handbook* can be found at [www.mcgill.ca/secretariat/policies/students](http://www.mcgill.ca/secretariat/policies/students) or obtained from the Student Affairs Office or the Student Services Centre on the Macdonald campus.

## 7.5.6 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.

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## 7.6 Fees and Expenses – FMT

### 7.6.1 Fees

Tuition fees for all full-time students who are eligible for the Farm Management and Technology program are paid by the *Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec*. Student Services and Student Societies' fees, as well as course material fees, will be charged according to the schedule in effect for all Macdonald campus students. At the time of publishing, the fees\* were \$948.88 for the Fall semester, and \$697.86 for the Winter semester for Quebec residents. Additional fees will apply to out-of-province students.

\* 2015–2016 fees; subject to change without notice.

### 7.6.2 Textbooks and Supplies

The cost of textbooks and supplies is estimated at \$250.00 per semester.

### 7.6.3 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 the Financial Aid Counsellor at the Macdonald Student Service Centre. For more information, consult [University Regulations and Resources > Undergraduate > : Scholarships and Student Aid](#) or contact the Student Services Centre at 514-398-7992.

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## 7.7 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](#); [www.mcgill.ca/students/housing/macdonald](http://www.mcgill.ca/students/housing/macdonald) or email [residences.macdonald@mcgill.ca](mailto:residences.macdonald@mcgill.ca).

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## 8 Department of Animal Science

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### 8.1 Location

Macdonald Stewart Building, Room MS1-084

Telephone: 514-398-7890

Fax: 514-398-8732

Email: [animal.science@mcgill.ca](mailto:animal.science@mcgill.ca)

Website: [www.mcgill.ca/animal](http://www.mcgill.ca/animal)

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### 8.2 About the Department of Animal Science

There are excellent programs available for those students interested in the study of animal science at the undergraduate level. Whether students 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 those needs.

The Department of Animal Science plays a crucial role in the offering of 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, depending on the orientation of a student towards animal production management, animal biotechnology, further studies in animal health, international studies, and/or graduate studies.

A 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).

### 8.3 Animal Science Faculty

#### Chair

Kevin M. Wade

#### Emeritus Professors

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

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

Eugene Donefer; B.Sc., M.Sc.(Cornell), Ph.D.(McG.)

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

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

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

#### Professors

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

Xin Zhao; B.Sc., M.Sc.(Nanjing), Ph.D.(Cornell) (*James McGill Professor*)

#### Associate Professors

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

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

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

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

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

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

Kevin M. Wade; B.Sc.(Agr.), M.Sc.(Agr.)(Dublin), Ph.D.(Cornell)

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

#### Assistant Professors

Sergio Burgos; B.Sc.(Flor.), M.Sc.(Calif., Davis), Ph.D.(Guelph)

Elsa Vasseur; B.Sc., M.Sc.(ISA, Lille), M.Sc.(AgroParisTech), Ph.D.(Laval)

Jianguo (Jeff) Xia; B.M.(Peking Health Science), M.Sc., Ph.D.(Alta.) (*joint appt. with Parasitology*)

#### Adjunct Professors

Baurhoo Bushansingh, Eveline Ibeagha-Awemu, Pierre Lacasse, Daniel Lefebvre, Bruce Murphy, Débora Santschi

#### Affiliate Members

Hernan Baldassarre, René Lacroix

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## 9 Department of Bioresource Engineering

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### 9.1 Location

Macdonald Stewart Building, Room MS1-028  
McGill University, Macdonald Campus  
21,111 Lakeshore Road  
Sainte-Anne-de-Bellevue QC H9X 3V9  
Canada

Telephone: 514-398-7773

Website: [www.mcgill.ca/bioeng](http://www.mcgill.ca/bioeng)

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### 9.2 About the Department of Bioresource Engineering

Bioresource Engineering is an interdisciplinary program that integrates engineering, design, and the biological sciences. It is a unique profession that applies engineering principles to the enhancement and sustainability of the world's natural resources. Bioresource engineers seek solutions to problems that involve plants, animals, and the environment.

Bioresource Engineering includes the design, construction, operation, maintenance, remediation, and upgrading of systems that contain biological components. This also includes the design of many of the technological constructions that are part of such systems. Thus, Bioresource Engineering includes quite a few subdisciplines, which are linked because of their biological orientation.

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### 9.3 Bioresource Engineering Faculty

#### Chair

Valérie Orsat

#### Graduate Program Director

G.S. Vijaya Raghavan

#### Associate Graduate Program Director

Valérie Orsat

#### Emeritus Professors

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

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

#### Professors

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

Michael O. Ngadi; B.Eng.(Agr.Eng.), M.A.Sc., Ph.D.(Dal.Tech.)

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

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

#### Associate Professors

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

Jan Adamowski; B.Eng.(RMC), M.Phil.(Camb.), M.B.A.(WUT, LBS, HEC Montr., NHH), Ph.D.(Warsaw) (*Liliane and David M. Stewart Scholar in Water Resources*)



**Associate Professors**

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

Mark Lefsrud; B.Sc.(Sask.), M.Sc.(Rutg.), Ph.D.(Tenn.) (*William Dawson Scholar*)

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

**Assistant Professors**

Shafaroud Abdolhamid Akbarzadeh; B.Sc.(Isfahan Univ. of Tech.), M.Sc.(Amirkabir Univ. of Tech., Tehran), Ph.D.(New Br.)

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

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

**Adjunct Professors**

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

Luis Del Rio; B.Sc., M.Sc.(S. Fraser), Ph.D.(Br. Col.)

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

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

Ali Madani; B.Sc.(Pahlavi), M.Sc.(Br. Col.), Ph.D.(Wash. St.)

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

Boris Tartakovsky; M.Sc., Ph.D.(Moscow St.)

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

**Faculty Lecturers**

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

David Titley-Peloquin; B.Sc., Ph.D.(McG.)

**Research/Academic Associates**

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

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

**Technical**

Scott Manktelow

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## 10 Department of Food Science and Agricultural Chemistry

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### 10.1 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: 514-398-8732

Email: [foodscience@mcgill.ca](mailto:foodscience@mcgill.ca)

Website: [www.mcgill.ca/foodscience](http://www.mcgill.ca/foodscience)

## 10.2 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 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

For more information on these programs, see [section 6.4: Bachelor of Science \(Food Science\) - B.Sc.\(F.Sc.\)](#).

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## 10.3 Food Science and Agricultural Chemistry Faculty

### Chair

Varoujan A. Yaylayan

### Graduate Program Director

Ashraf Ismail

### Professors

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

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

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

### Associate Professors

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

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

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

### Assistant Professor

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

### Adjunct Professors

John Austin; M.Sc.(Windsor), Ph.D.(W. Ont.)

Luis Garcia; M.Sc.(Guelph)

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

### Professors Post-Retirement

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

Selim Kermasha; B.Sc.(Baghdad), D.Sc.(Nancy)

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

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## 11 Department of Natural Resource Sciences

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### 11.1 Location

Macdonald-Stewart Building, Room MS3-039  
 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: [www.mcgill.ca/nrs](http://www.mcgill.ca/nrs)

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### 11.2 About the Department of Natural Resource Sciences

Human society depends on the natural world for many of its needs. The more traditional view of natural resources as food, fibre, and energy drawn from the natural world has expanded as we have learned more about the relationships between humans and our environment. While we continue to manage ecosystems for food, fibre, and energy, we increasingly recognize the importance of a wide range of ecosystem services including: regulation of local and global cycles or carbon, nutrients and water; biodiversity and its link to resilience; and recreational, aesthetic and spiritual dimensions. Governance of human activity in ecosystems requires an understanding of all of these services.

The Department of Natural Resource Sciences is an interdisciplinary collaboration among professors, staff, and students with a wide range of disciplinary backgrounds including wildlife and fish biology, entomology, soil science, microbiology, meteorology, forest science, landscape ecology, agricultural and resource economics, and environmental policy. We are concerned with 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 program aims to give students both disciplinary depth and interdisciplinary breadth. At the undergraduate level, we are particularly active in the Environmental Biology, Life Science, and Agricultural Economics Majors, as well as in several specializations including Wildlife Biology, Microbiology and Molecular Biotechnology, Environmental Economics, Entomology, Applied Ecosystem Sciences, and Agri-business.

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### 11.3 Natural Resource Sciences Faculty

#### Chair

James W. Fyles

#### Graduate Program Director

Benoît Côté

#### Program Director - Agricultural Economics

Paul J. Thomassin

#### Emeritus Professors

David M. Bird; B.Sc.(Guelph), M.Sc., Ph.D.(McG.) – *Wildlife Biology*

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

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

Angus F. MacKenzie; B.S.A., M.Sc.(Sask.), Ph.D.(Cornell) – *Soil Science*

Peter H. Schuupp; Dipl.Sc.Nat.(Zür.), Ph.D.(Tor.) – *Agricultural Physics*

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

#### Professors

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

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

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

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

#### Associate Professors

Niladri Basu; B.Sc.(Qu.), M.Sc.(Br. Col.), Ph.D.(McG.) (*Canada Research Chair*) (*joint appt. with School of Dietetics and Human Nutrition*) – *Ecotoxicology*

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

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

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

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

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

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

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

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

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

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

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

#### Assistant Professors

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

Kyle Elliott; B.Sc.(Br. Col.), M.Sc., Ph.D.(Manit.) (*Canada Research Chair*) – *Avian Conservation Biology*

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

Jessica Head; B.Sc.(McG.), Ph.D.(Ott.) – *Ecotoxicology*

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

Christopher Solomon; B.Sc.(Cornell), Ph.D.(Wisc.) – *Wildlife Biology*

#### Associate Members

David Green (*Redpath Museum*)

Marilyn Scott (*Institute of Parasitology*)

#### Adjunct Professors

Doug Crump

Kimberly Fernie

Charles W. Greer

Suren Kulshreshtha

#### Affiliate Member

Geoffrey Sunahara

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## 12 Department of Plant Science

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### 12.1 Location

Raymond Building, Room R2-019  
 McGill University, 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: [www.mcgill.ca/plant](http://www.mcgill.ca/plant)

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### 12.2 About the Department of Plant Science

Our understanding of biological systems has advanced exponentially during 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 7 billion and continues to rise at an alarming rate; the climate is changing; 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 the Environmetrics and Food Production and Environment Domains of the McGill School of Environment. For related program information, see [section 6.2: Bachelor of Science \(Agricultural and Environmental Sciences\) – B.Sc.\(Ag.Env.Sc.\)](#).

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### 12.3 Plant Science Faculty

#### Chair

Martina V. Stromvik

#### Emerita Professor

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

#### Professors

Pierre Dutilleul; B.Sc., Ph.D.(Univ. catholique de Louvain)

Anja Geitmann; Diplom(Konstanz), Ph.D.(Siena)

Donald L. Smith; B.Sc., M.Sc.(Acad.), Ph.D.(Guelph)

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

#### Associate Professors

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

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

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

Danielle J. Donnelly; B.Sc.(Agr.)(McG.), M.Sc.(Br. Col.), Ph.D.(S. Fraser)

#### Associate Professors

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

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

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

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

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

#### Assistant Professors

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

Olivia Wilkins; B.Sc.(Manit.), Ph.D.(Tor.)

#### Faculty Lecturers

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

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

#### Associate Members

Gregory Brown (*Department of Biology*)

Timothy A. Johns (*School of Dietetics and Human Nutrition*)

#### Adjunct Professors

Annick Bertrand

Bao-Luo Ma

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## 13 School of Dietetics and Human Nutrition

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### 13.1 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: [www.mcgill.ca/nutrition](http://www.mcgill.ca/nutrition)

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### 13.2 About the School of Dietetics and Human Nutrition

Health and well-being of individuals and populations in relation to food choices and metabolism prevail as the unifying theme of the programs in the School of Dietetics and 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) and is accredited by the *Partnership for Dietetic Education and Practice* (PDEP).

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 you exciting opportunities to specialize in one of *five concentrations* (Food Function and Safety; Global Nutrition; Health and Disease; Nutritional Biochemistry; 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 including in the food, pharma 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.

### 13.3 Degrees Offered by the School of Dietetics and 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 five concentrations:
  - Nutritional Biochemistry
  - Food Function and Safety
  - Global Nutrition
  - Health and Disease
  - Sports Nutrition

#### M.Sc.A., M.Sc., and Ph.D.

Graduate study is 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 Agricultural & Environmental Sciences' [Graduate and Postdoctoral Studies](#) section.

### 13.4 Dietetics and Human Nutrition Faculty

#### Director

Linda J. Wykes

#### Professor Emerita

Harriet V. Kühnlein; B.S.(Penn. St.), M.S.(Ore. St.), Ph.D.(Calif.), R.D.

#### Professors

Luis B. Agellon; B.Sc., Ph.D.(McM.)

Tim A. Johns; B.Sc.(McM.), M.Sc.(Br. Col.), Ph.D.(Mich.) (*Director, McGill Canadian Field Studies in Africa [CFSIA]*)

Linda J. Wykes; B.Sc., M.Sc., Ph.D.(Tor.)

#### Associate Professors

Niladri Basu; B.Sc.(Qu.), M.Sc.(Br. Col.), Ph.D.(McG.) (*Canada Research Chair*) (*joint appt. with Natural Resource Sciences*) (*Assoc. Member of Epidemiology and Biostatistics, Faculty of Medicine*)

Kristine G. Koski; B.S., M.S.(Wash.), Ph.D.(Calif.), R.D.(U.S.)

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

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

Hugo Melgar-Quinonez; M.Sc.(SPHM), M.D.(USAC), D.Sc.(Friedrich Schiller Univ.)

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

#### Associate Professors

Hope Weiler; B.A.Sc.(Guelph), Ph.D.(McM.), R.D. (CDO) (*Canada Research Chair*) (*Director, Mary Emily Clinical Nutrition Research Unit*)

#### Senior Faculty Lecturers

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

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

#### Faculty Lecturers

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

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

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

Joane Routhier; B.Sc.(McG.)

#### Sessional Lecturers

Peter Bender (PT); B.Ed., M.A.(McG.), Ph.D.(Flor. St.)

Stéphanie Chevalier (PT); B.Sc., M.Sc., Ph.D.(Montr.), Dt. P. (*joint appt. with Medicine*)

Lynda Fraser (PT); B.A., M.Ed.(Dal.)

Steven Landry (PT); B.Com., B.Ed., M.B.A.(McG.)

#### Associate Members

*Anaesthesia*: Franco Carli, Ralph Lattermann, Thomas Schrickler

*Food Science & Agricultural Chemistry*: Stephane Bayen

*Kinesiology*: Ross Andersen

*Medicine*: Louis Beaumier, Stéphanie Chevalier, L. John Hoffer, Larry Lands, Errol B. Marliss, José Morais, Jean-François Yale

*Natural Resource Sciences*: Sebastien Faucher

*Parasitology*: Marilyn E. Scott

#### Adjunct Professor

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

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## 13.5 Application Procedures

The academic year at McGill is made up of two sessions, the Fall/Winter or regular session, and the Summer session. These are subdivided into the Fall term (September to December), the Winter term (January to April) and the four months of the Summer session (May, June, July, and August). While most students enter in September, it is possible to be considered for admission to most of the Agricultural and Environmental Studies undergraduate programs in January. Entry at the Freshman Program level, however, is not available in January. Entry to the Dietetics Major is also not available in January.

The deadlines for submission of applications are:

- Applicants studying outside of Canada: **January 15**
- Applicants from Canadian high schools outside of Quebec: **February 1**
- All other applicants: **March 1**

All applications must be accompanied by a non-refundable fee, in Canadian or U.S. funds only, payable by certified cheque, money order or credit card. McGill does not offer application fee waivers. Please refer to for fee amounts and other fee information.

Application to the School of Dietetics and Human Nutrition may be made online at [www.mcgill.ca/applying](http://www.mcgill.ca/applying). Information may also be obtained from:

Service Point  
McGill University, Enrolment Services  
3415 McTavish St.  
Montreal QC H3A 0C8  
Canada



Telephone: 514-398-7878  
 Fax: 514-398-4193  
 Website: [www.mcgill.ca/students/servicepoint](http://www.mcgill.ca/students/servicepoint)

Please note that the same application is used for all undergraduate programs at McGill, and two program choices can be entered.

## 13.6 Admission Requirements

Applicants to the **School of Dietetics and Human Nutrition** are not required to submit proof of proficiency in English if they meet one of the following conditions:

- their mother tongue/first language is English;
- they have completed both Secondary V and a Diploma of Collegial Studies in Quebec;
- they have completed the last five years of study in a French Baccalaurate International Option program, or in a French Lycée located in an English speaking country;
- they have completed A-Level English (other than English as a Second Language) with a final grade of C or better;
- their last five years of study (preceding application) have been at a learning institution where English is the main language of instruction (including applicants taught in English in Kenya, Liberia, and Singapore).

More information on language requirements is available at [University Regulations and Resources > Undergraduate > General Policies and Information > : Language Policy](#).

### 13.6.1 Quebec CEGEP Students

Applicants must have completed a two-year Quebec post-secondary collegial program (CEGEP) in the Pure and Applied Sciences, Health Sciences, or Science de la nature. (Applicants who have completed the *DEC en sciences, lettres et arts* are also eligible for admission. Applicants who have completed a DEC in a technical area will be considered on an individual basis.)

McGill uses the *cote de rendement au collégial (cote r)* rather than CEGEP percentage grades for admission decisions. The *cote r* is a method of comparing and ranking students from CEGEP; it measures how far above or below the class average a student places, with adjustments based on the relative strength of the group.

The current CEGEP profile for the B.Sc.(Nutr.Sc.) is:

Biology (00UK, 00XU);  
 Chemistry – NYA, NYB, Organic Chemistry I (00UL, 00UM, 00XV);  
 Mathematics – NYA, NYB (00UN, 00UP);  
 Physics – NYA, NYB, NYC (00UR, 00US, 00UT).

Based upon entry with the appropriate DEC, the **B.Sc.(Nutr.Sc.)** is offered as a 90-credit, three-year program for Nutrition and a 115-credit, three and one-half year program for Dietetics. Refer to [section 6.5: Bachelor of Science \(Nutritional Sciences\) – B.Sc.\(Nutr.Sc.\)](#) for program details.

### 13.6.2 Applicants from Ontario

Applicants from Ontario must have completed:

- the Ontario Secondary School Diploma (OSSD),
- a minimum of six OAC, 4U and/or 4M courses combined, including:
  - At least one of OAC Calculus, OAC Algebra and Geometry, MCB4U or MGA4U;
  - Two different science subjects from the following list: OAC Biology or SBI4U, OAC Chemistry or SCH4U, OAC Physics or SPH4U;
  - OAC or 4U English or French; see note below explaining when English or French is required.

Students who are accepted on the basis of a high school diploma enter a program which is extended by one year to include the 30 credits which comprise the **Freshman Year** (see [section 6.1.4: Bachelor of Science \(Nutritional Sciences\) \(B.Sc.\(Nutr.Sc.\)\) - Freshman Program \(30 credits\)](#)).



**Note:** Admission to the freshman year is available for the Nutrition major only, not the Dietetics major. Students who wish to enter Year 1 of the Dietetics major and who first need to complete a freshman year, may complete the freshman year in the Nutrition Major, and then apply for transfer to year 1 of the Dietetics Major. Entry to Year 1 of the Dietetics major is based on CGPA.

If the applicant comes from a school where the language of instruction is English, then OAC English or 4U level English or EAE4A must be included in the six courses. If the applicant comes from a school where the language of instruction is French, then OAC French (FRAOA or FLIOA) or 4U level French or English EALOA or EAL4U must be included in the six courses. English and French Second Language courses are not accepted as prerequisites.

At least four of the six required courses, as well as all prerequisite courses must be taken at the OAC or 4U level. Admissions criteria will focus primarily on the top six OAC, 4U and/or 4M courses (including specified prerequisite courses). Generally speaking, all marks are taken into consideration in determining admission, including those of failed or repeated courses.

Every attempt has been made to report accurately on admission requirements in effect at the time of printing. Given the recent Ontario curriculum reform and the resulting array of new courses, McGill reserves the right to revise its admission requirements without prior notice.

### 13.6.3 Applicants from Other Canadian Provinces

Applicants from provinces other than Quebec and Ontario must hold:

- a high school diploma giving access to university education in their province/territory;

and must have completed:

- Grade 12 Mathematics (pre-calculus);
- two of: Grade 12 Biology, Chemistry or Physics;
- Grade 12 English or French (see note below explaining when English or French is required).

Students who are accepted on the basis of a high school diploma enter a program which is extended by one year to include the 30 credits which comprise the **Freshman Year** (see [section 6.1.4: Bachelor of Science \(Nutritional Sciences\) \(B.Sc.\(Nutr.Sc.\)\) - Freshman Program \(30 credits\)](#)).



**Note:** Admission to the freshman year is available for the Nutrition major only, not the Dietetics major. Students who wish to enter Year 1 of the Dietetics major, and who first need to complete a freshman year, may complete the freshman year in the Nutrition Major, and then apply for transfer to year 1 of the Dietetics Major. Entry to Year 1 of the Dietetics major is based on CGPA.

Consideration will be given to the results for Grade 11 and 12 level courses (regardless of the calendar year in which they were taken), with emphasis on grades obtained in courses most relevant to the intended program of study. Generally speaking, all marks are taken into consideration in determining admission, including those of failed or repeated courses.

If the applicant comes from a school where the language of instruction is English, then Grade 12 English must be included in the academic record. If the applicant comes from a school where the language of instruction is French, then Grade 12 French is required. English and French Second Language courses are not accepted as prerequisites.

### 13.6.4 Applicants from U.S. High School Programs

Applicants who are applying on the basis of a high school diploma from a school in the United States must have completed a pre-calculus course in functions, and at least two of biology, chemistry, and physics. Applicants must write College Entrance Examination Board tests including the SAT I and three SAT IIs. SAT IIs must include mathematics and at least one science. ACTs are also acceptable.

Applicants who have completed Advanced Placement Examinations in appropriate subjects with a grade of 4 or better will be granted some advanced standing, up to a maximum of 30 credits.

Students who are accepted on the basis of a high school diploma enter a program which is extended by one year to include the 30 credits which comprise the **Freshman Year** (see [section 6.1.4: Bachelor of Science \(Nutritional Sciences\) \(B.Sc.\(Nutr.Sc.\)\) - Freshman Program \(30 credits\)](#)).



**Note:** Admission to the freshman year is available for the Nutrition major only, not the Dietetics major. Students who wish to enter Year 1 of the Dietetics major, and who first need to complete a freshman year, may complete the freshman year in the Nutrition Major, and then apply for transfer to year 1 of the Dietetics Major. Entry to Year 1 of the Dietetics major is based on CGPA.

### 13.6.5 Applicants from Other Countries

The normal basis for review of a file is completion of the credentials which lead to university admission in the applicant's country of study.

Students from the United Kingdom and Commonwealth countries may be admitted if they have completed Advanced Level examinations in chemistry, physics, and mathematics with two Bs and one C or better in each, and five appropriate G.C.S.E. subjects at the Ordinary Level, including biology and English.

Advanced Level examination results which are appropriate to the intended program of studies will be assessed for advanced standing and credit when the results are received directly from the appropriate Examination Board. A maximum of 30 credits is granted for Advanced Level papers and a maximum of 10 credits for papers in Mathematics. Credit is normally granted only for grades of C or better.

Students who have a very good academic record in Lower Form VI and excellent results in at least five G.C.S.E. subjects at the Ordinary Level may be considered for admission to a program requiring the completion of a minimum of 120 credits.

For students applying on the basis of the French Baccalaureate, the minimum requirement is the Diploma in Series S in the “*Première Groupe*” with Mention “*assez bien*”.



**Note:** Admission to the freshman year is available for the Nutrition major only, not the Dietetics major. Students who wish to enter Year 1 of the Dietetics major, and who first need to complete a freshman year, may complete the freshman year in the Nutrition Major, and then apply for transfer to year 1 of the Dietetics Major. Entry to Year 1 of the Dietetics major is based on CGPA.

### 13.6.6 Applicants with the International Baccalaureate

Applicants should have completed Higher or Subsidiary Level mathematics and normally two of biology, chemistry, or physics. Ten advanced standing credits may be granted for mathematics and science Higher Level subjects completed within the IB Diploma, up to the maximum of 30 credits, while 6 credits will be given for non-science Higher Level examinations taken as part of the Diploma or for Higher Level Certificate subjects.

### 13.6.7 Transfer Students

Students wishing to transfer from other universities and colleges are considered for admission on the basis of both their university work and previous studies. A minimum of 60 credits of work must be completed at McGill if a degree is to be granted. Students must also fulfil the requirements of a degree program. Credits are determined only once a formal application and all the necessary supporting documents are received.

Basic science requirements are:

- two semesters of biology;
- two semesters of general chemistry, with labs;
- one semester of organic chemistry;
- two semesters of physics (including mechanics, electricity and magnetism, and waves and optics), with labs;
- one semester in each of differential and integral calculus.

A grade of B or better is expected in prerequisite mathematics and science courses.

This same policy is applicable to holders of undergraduate degrees.

### 13.6.8 Transfer Students – Inter-Faculty

Students wishing to transfer from one faculty to another must complete an inter-faculty transfer form. The deadline for submitting a transfer form for admission to the School is **June 1** for admission in September and **December 1** for admission in January. There are no Winter term transfers for the Dietetics major.

For CGPA requirements please see [www.mcgill.ca/macdonald/studentinfo/undergrads/readmission](http://www.mcgill.ca/macdonald/studentinfo/undergrads/readmission). For more information, please refer to [University Regulations and Resources](#) > Undergraduate > Registration > : [Interfaculty Transfer](#).

### 13.6.9 Mature Student Admission

Residents of Canada who will be 23 years of age or older by September 1 (for admission for the Fall session) or January 1 (for admission for the Winter session) and who lack the academic background normally required for admission may apply for entrance as mature students.

Mature students must complete all entrance math/science requirements during their first year. This may require an additional year to the program due to the availability of required courses. Individuals interested in being considered for entrance under this policy should contact the [Student Affairs Office](#) for complete details.



**Note:** Mature students who are missing science entrance prerequisites are admitted to the Nutrition Major, not the Dietetics Major. Those wishing to complete the science entrance prerequisites and then transfer to the Dietetics Major should consult [www.mcgill.ca/macdonald/studentinfo/undergrads/readmission](http://www.mcgill.ca/macdonald/studentinfo/undergrads/readmission).

## 13.7 Academic Information and Regulations

### 13.7.1 Academic Standing

The program for the degree with a Major in Nutrition will normally be completed in three academic years or six semesters (following the Freshman Year, if one is required). The degree with a Major in Dietetics will normally be completed in three and one-half academic years. For the purpose of student classification, the years will be termed U1, U2 and U3.

- U1: the first 12 months following each admission to a degree program in which the student is required to complete 72 or more credits at the time of admission;
- U2: to be used for all students who are not U1 or U3.
- U3: the session in which it is expected the student will qualify to graduate.

Further information and regulations on academic standing are available at [section 4.6.5: Academic Standing](#).

#### Academic Advisers

Before registration, all students entering the Faculty must consult with the Academic Adviser of their program for selection and scheduling of required, complementary, and elective courses.

The Academic Adviser will normally continue to act in this capacity for the duration of the student's studies in the Faculty.

A Faculty Adviser is also available in the [Student Affairs Office](#) to assist students with student record related matters.

### 13.7.2 Degree Requirements

To be eligible for a B.Sc.(Nutr.Sc.), students must have passed, or achieved exemption, with a minimum C grade in all required and complementary courses of the program. They must have a CGPA of at least 2.00.

In addition, students in the Dietetics program must have completed the Professional Practice Stages of professional formation, which require a minimum CGPA of 3.00.

### 13.7.3 Minimum Credit Requirement

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

Please refer to [section 4.6.1: Minimum Credit Requirement](#) for further information.

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## 14 Institute of Parasitology

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### 14.1 Location

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

Telephone: 514-398-7722  
Fax: 514-398-7857  
Email: [graduate.parasitology@mcgill.ca](mailto:graduate.parasitology@mcgill.ca)  
Website: [www.mcgill.ca/parasitology](http://www.mcgill.ca/parasitology)

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### 14.2 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 wellbeing.

The Institute of Parasitology is part of the Quebec [Centre for Host Parasite Interaction](#) (CHPI), funded by the *Fonds de recherche du Québec - Nature et technologies* (FRQNT) *regroupement strategique* program and is one of the longest standing research centres of its type, beginning in 1973. The CHPI supports the interaction of 32 research labs throughout Quebec that focus on parasite research.

For more information, please visit the Institute of Parasitology [website](#).

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### 14.3 Parasitology Faculty

#### Director

Timothy G. Geary

#### Professors

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

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

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

**Associate Professors**

Robin N. Beech; B.Sc.(Nott.), Ph.D.(Edin.)  
 Elias Georges; B.Sc., Ph.D.(McG.)  
 Armando Jardim; B.Sc., Ph.D.(Vic., BC)  
 Paula Ribeiro; B.Sc., Ph.D.(York)  
 Petra Rohrbach; B.Sc.(McG.), Ph.D.(Heidel.)  
 Reza Salavati; B.A., M.A.(Calif. St.), Ph.D.(Wesl.)

**Assistant Professors**

Jerry Aldridge; B.Sc.(Lenoir-Rhyne), Ph.D.(Wake Forest)  
 Jianguo Xia; B.Sc.(Peking), M.Sc., Ph.D.(Alta.)

**Associate Members**

Gregory J. Matlashewski; B.Sc.(C'dia), Ph.D.(Ott.)  
 Momar Ndao; B.Sc., DVM(Dakar), M.Sc., Ph.D.(IMFA, Belgium)  
 Martin Olivier; B.Sc., M.Sc.(Montr.), Ph.D.(McG.)  
 Mary Stevenson; B.A.(Hood Coll.), M.Sc., Ph.D.(CUA)  
 Brian Ward; M.Sc.(Oxf.), M.D., C.M.(McG.), DTM&H(Lond.)

**Adjunct Professors**

Boakye Boatin; M.D.(Ghana), M.Sc.(Liv.), M.Phil.(Lond.)  
 John P. Dalton; B.Sc., Ph.D.(Dublin)  
 Sean Forrester; B.Sc.(Cape Breton), M.Sc.(Lake.), Ph.D.(McG.)  
 Raymond Hui; B.Sc., M.Sc., Ph.D.(Tor.)  
 Traian Sulea; M.Sc.(Polytechnic, Timi oara), Ph.D.(West, Timi oara)

**15 Instructional Staff****Instructional Staff**

Abdolhamid Akbarzadeh, Shafaroud; Ph.D.(New Br.), M.Sc.(Amirkabir Univ. of Tech., Tehran), B.Sc.(Isfahan Univ. of Tech.); Assistant Professor of Bioresource Engineering  
 Adamchuk, Viacheslav I.; B.S.(National Agricultural Univ. of Ukraine), M.S., Ph.D.(Purd.); Associate Professor of Bioresource Engineering  
 Adamowski, Jan; B.Eng.(RMC), M.Phil.(Camb/MIT), M.B.A.(Warsaw/HEC Paris/London Business School/Norwegian School of Economics and Business Administration), Ph.D.(Warsaw); Associate Professor of Bioresource Engineering  
 Agellon, Luis B.; B.Sc., Ph.D.(McM.); Professor of Human Nutrition  
 Aldridge, Jerry; B.Sc.(Lenoir-Rhyne), Ph.D.(Wake Forest); Assistant Professor of Parasite Immunology  
 Basu, Niladri; B.Sc.(Qu.), M.Sc.(Br. Col.), Ph.D.(McG.); Associate Professor of Nutrition/Environmental Toxicology (*Canada Research Chair*)  
 Bayen, Stephane; B.Sc., M.Eng.(Nat. Supérieure de Chimie, Montpellier), M.Sc., Ph.D.(Nat., Singapore); Assistant Professor of Food Science and Agricultural Chemistry  
 Bede, Jacqueline; B.Sc.(Calg.), M.Sc., Ph.D.(Tor.); Associate Professor of Plant Science  
 Beech, Robin N.; B.Sc.(Nott.), Ph.D.(Edin.); Associate Professor of Parasitology  
 Begg, Caroline; B.Sc.(Agr.)(McG.), M.Sc.(Sask.), Ph.D.(McG.); Faculty Lecturer, Department of Plant Science  
 Bennett, Elena; B.A.(Oberlin), M.Sc., Ph.D.(Wisc.); Associate Professor of Ecosystem Ecology and McGill School of Environment  
 Biswas, Asim; B.Sc.(BCKV), M.Sc.(UAS Bangalore), Ph.D.(Sask.); Assistant Professor of Soil Science

**Instructional Staff**

Bordignon, Vilceu; Ag.Tec.(EAPC), M.Sc., D.V.M.(Universidade da Região da Campanha (Brazil)), Ph.D.(Montr.); Associate Professor of Animal Science

Brown, Peter G.; B.A.(Haver.), M.A., Ph.D.(Col.); Professor of Natural Resource Sciences (*joint appoint. with Geography and McGill School of Environment*)

Buddle, Christopher; B.Sc.(Guelph), Ph.D.(Alta.); Associate Dean (Student Affairs) and Associate Professor of Forest Insect Ecology

Burgos, Sergio; B.Sc.(Flor.), M.Sc.(Calif.), Ph.D.(Guelph); Assistant Professor of Animal Science

Cardille, Jeffrey A.; B.Sc.(Carn. Mell), M.Sc.(Georgia Tech.), M.Sc., Ph.D.(Wisc.); Associate Professor of Landscape Ecology and McGill School of Environment

Charron, Jean-Benoit; B.Sc.(Montr.), M.Sc., Ph.D.(UQAM); Associate Professor of Plant Science

Chenier, Martin R.; B.Sc., M.Sc.(Laval), Ph.D.(McG.); Assistant Professor of Food Safety

Cherestes, Alice; B.A., M.A., Ph.D.(CUNY); Senior Faculty Lecturer, Faculty of Agricultural and Environmental Sciences

Clark, Grant; B.Sc.(Agr.Eng.)(Alta.), Ph.D.(McG.); Associate Professor of Bioresource Engineering

Côté, Benoît; B.Sc., Ph.D.(Laval); Associate Professor of Woodland Resources

Cue, Roger I.; B.Sc.(Newcastle, UK), Ph.D.(Edin.); Associate Professor of Animal Science

de Blois, Sylvie; B.Sc.(Agr.)(McG.), M.Sc., Ph.D.(Montr.); Associate Professor of Plant Science and Director, McGill School of Environment

Donnelly, Danielle J.; B.Sc.(Agr.)(McG.), M.Sc.(Br. Col.), Ph.D.(S. Fraser); Associate Professor of Plant Science

Driscoll, Brian T.; B.Sc., Ph.D.(McM.); Associate Professor of Microbiology

Duggavathi, Rajesha; B.V.Sc., M.V.Sc.(Univ. of Agricultural Sciences, Bangalore), Ph.D.(Sask.); Associate Professor of Animal Science

Duhamel, Paul-Guy; B.Sc.(McG.), M.Sc.(Montr.), Faculty Lecturer (Professional), School of Dietetics and Human Nutrition

Dumont, Marie-Josée; B.Eng., M.Eng.(Laval), Ph.D.(Alta.); Assistant Professor of Bioresource Engineering

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