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

1 . McGill University reserves the right to mak

Publication Information

Published by

Enrolment Services
McGill University
3415 McTavish Street
Montreal, Quebec, H3A 0C8
Canada

McGill University reserves the right to make changes to the information contained in this publication - including correcting errors, altering fees, schedules of admission and credit requirements, and revising or cancelling particular courses or programs - without prior notification.

Not all courses are offered every year and changes can be made after publication. Always check the Minerva Class Schedule link at https://horizon.mcgill.ca/pban1/bwckschd.p_disp_dyn_sched for the most up-to-date information on whether a course is offered.

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.

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 the 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 1800 undergraduate and graduate students.

3 Macdonald Campus Facilities

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*.

3.2 Macdonald Campus Library

Located in the Barton Building, the Macdonald Campus Library provides access to leading-edge print and electronic collections, facilities, and services to support a broad range of needs. The Library's collections encompass a wide variety of print and electronic resources in the areas of agriculture, nutrition, and environmental sciences.

The Library's catalogue, research databases, McGill theses, past exams, and other online resources are accessible to you via the Library website. The Library is also a depository for many print and electronic government publications. The Library's eZone computers provide access to specialized software such as ArcGIS, SAS and EndNote. Comfortable seating, study tables, group study rooms, and a 24-hour study area are also available to you. The area is equipped for direct or wireless laptop access to the McGill network and the Internet. Laptops and ebook readers can also be borrowed.

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. Tours and research workshops are provided throughout the year.

More information is available at *www.mcgill.ca/library/branches/macdonald* or feel free to drop by.

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 from 9:00 a.m. to 5:00 p.m., Monday to Friday. For support on all central IT services, contact the ICS Service Desk by email at *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*.

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

Associate Deans

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

Suha Jabaji; B.Sc.(AUB), M.Sc.(Guelph), Ph.D.(Wat.) (*Research*)

David J. Lewis; B.Sc., M.Sc., Ph.D.(Mem.) (*Student Affairs*)

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.)

4.3 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*

4.4.2 Student Ser vices

Students who study on the Macdonald campus can mak

4.4.7 Immunization for Dietetics Majors

As a student in the Dietetics Major, you are required to complete the Compulsory Immunization Program for Health Care Students prior to or at the commencement of the U1 Winter Professional Practice (Stage) course NUTR 208. Participation in Professional Practice (Stage) in Dietetics will only be permitted after you have completed all immunization requirements, and certain deadlines will apply. Updates to your immunizations may be required during your program. For full details, see

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.

4.5.4.2 Part-time Students

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

4.5.5 Academic Standing

Y wCTf1 0 0 1 67.541wTf1 0 0 1 67anding may gi

4.5.8 Regulations Regarding 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.

4.5.8.1 Procedures for Minor Programs

If you want to register for a Minor program, you must complete a Minor Approval form (usually at the beginning of your U2 year), and return it duly completed 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.

4.5.9 Course Change Information

1. Courses: please refer to the *eCalendar* under *University Regulations and Resources* > *Undergraduate* > *Registration* > *: Course Change Period*, and the Important Dates website *www.mcgill.ca/importantdates*.
2. Course withdrawal (Transcript notation of "W"): please refer to the *eCalendar* under *University Regulations and Resources* > *Undergraduate* > *Registration* > *: Course Withdrawal*, and the Important Dates website *www.mcgill.ca/importantdates*.
3. Other changes: information about changes may be obtained from the Student Affairs Office of the Faculty.

4.5.10 Graduate Courses Available to Undergraduates

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

4.5.11 Attendance and Conduct in Class

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

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

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

4.5.12 Incomplete Grades

An instructor who believes that there is justification for a student to delay submitting term work may extend the deadline until after the end of the course. In this case, the instructor will submit a grade of K (incomplete), indicating the date by which the work is to be completed. The maximum extensions for the submission of grades to the Student Affairs Office are as follows:

Students graduating in June	
Fall courses	January 15
Winter courses, and courses spanning Fall/Winter	April 30
Non-graduating students	
Fall courses	January 15
Winter courses, and courses spanning Fall/Winter	May 15

Students' deadlines for submitting their work must be sufficiently in advance of these dates to ensure that the work can be graded and the mark submitted on time. It is important to note that instructors may impose earlier deadlines than those listed above.

If instructors have not submitted marks to clear Ks to the Student Affairs Office by the above dates, the K is automatically changed to a KF and counts as an F in the GPA.

Students with a grade of K who have serious e

- some programs may impose additional requirements, which must be met before you are recommended for Honours or First-Class Honours.

Students in an honours program whose CGPA is below 3.00, or who did not satisfy certain program requirements, must consult their academic adviser to determine their eligibility to graduate in a program other than Honours.

Scholar ships,

5.1 Internship Opportunities and Co-op Experience

5.1.1 FAES 200 / FAES 300 Internship Program

As a full-time undergraduate student (with a CGPA of 2.9 or higher) in one of the following programs: B.Sc.(Ag.Env.Sc.), B.Sc.(F.Sc.), or B.Eng.(Bioresource), you have the opportunity to participate in the Internship program. It's a non-credit (Pass/Fail only) course, where you can intern in a place related to your field of study.

The internship should be a minimum length of 10 weeks, with the student working 35 hours a week or more. Internships allow students to gain practical, hands-on experience and develop skill sets that are frequently in high demand by employers.

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. Through observations of the enterprise function, 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 Internship and Co-op Experience

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. If you aspire to become a professional agrologist, you will be required to complete an internship under the supervision of a professional agrologist.

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 Quebec*.

Most undergraduate programs offered in the Faculty include the opportunity for a co-op work experience. Internships and co-op experience both involve a work placement of 12 to 16 weeks’ duration 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 both your employer and 64Enal ar7.097 435.8E9F4(v)Tj1 0 0 1 m(v)Tjp.622 1 181 g

Major and Honours Programs

Food Production and Environment Domain
Land Surface Processes and En

5.9 Minor Programs (Overview)

Minor Programs

Agricultural Economics – *section 6.6.2: Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor Agricultural Economics (24 credits)*

Agricultural Production – *section 6.6.3: Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Minor Agricultural Production (24 credits)*

Animal Biology – *section 6.6.4: Minor Animal Biology (24 credits)*

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

Required Cour ses - 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 Pr ogram (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 Cour ses - 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 Cour ses - Winter (10 credits)

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

Complementar y Cour ses - 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 AGEC 200/201 courses would then be taken as part of the "regular" U1 curriculum should they ultimately decide on the Agricultural Economics Major.

** Freshman 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://wwwGeneral Biolo0 1may recommend that you re(Maj.1.2

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

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

6.2.1 General rules for the following B.Sc.(Ag.Env.Sc.) programs

Students register in one ***major*** and at least one ***specialization***. They may design their own program by choosing one of the four majors and at least one of the specializations. By choosing two different specializations, students have the option of developing their own interdisciplinary interests. The multidisciplinary specializations are 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.

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

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.

Majors and Honours:

- Agricultural Economics
- Agro-environmental Sciences
- Environmental Biology
- Global Food Security
- Life Sciences (Biological and Agricultural)
- Major in Environment (see the eCalendar under *Faculties & Schools* > *McGill School of Environment* > *: Major in Environment – B.Sc.(Ag.Env.Sc.) and B.Sc.*)

Specializations:

- Agribusiness, *section 6.2.7.2: Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Agribusiness (24 credits)*
- Animal Biology, *section 6.2.7.3: Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Animal Biology (24 cr*

- Animal Health and Disease, *section 6.2.7.4: Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Animal Health and Disease (24 credits)*
- Animal Production, *section 6.2.7.5: Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Animal Production (24 credits)*
- Applied Ecology, *section 6.2.7.6: Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Applied Ecology (24 credits)*
- Ecological Agriculture, *section 6.2.7.7: Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Ecological Agriculture (24 credits)*
- Environmental Economics, *section 6.2.7.8: Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Environmental Economics (24 credits)*
- International Agriculture, *section 6.2.7.9: Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - International Agriculture (24 credits)*
- Life Sciences (Multidisciplinary), *section 6.2.7.10: Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Life Sciences (Multidisciplinary) (24 credits)*
- Microbiology and Molecular Biotechnology, *section 6.2.7.11: Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Microbiology and Molecular Biotechnology (24 credits)*
- Plant Biology, *section 6.2.7.12: Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Plant Biology (24 credits)*
- Plant Production, *section 6.2.7.13: Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Plant Production (24 credits)*
- Professional Agrology, *section 6.2.7.14: Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Professional Agrology (21 credits)*
- Soil and Water Resources, *section 6.2.7.15: Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Soil and Water Resources (24 credits)*
- Wildlife Biology, *section 6.2.7.16: Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Wildlife Biology (24 credits)*

6.2.2 B.Sc.(Ag.En v.Sc.) ± Agricultural Economics Major and Honour s

Program Director: Professor John Henning

6.2.2.1 Bachelor of Science (Agricultural and En vir onmental Sciences) (B.Sc.(Ag.En v.Sc.)) - Major Agricultural Economics (42 credits)

Program Prerequisites

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

Required Cour ses (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

Complementar y Cour ses (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.

Honour s Plan B

A minimum of two 3-credit Honours cours

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

Complementar y Cour ses (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 OA

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.

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 430	(3)	GIS for Natural Resource Management
ENVB 437	(3)	Assessing Environmental Impact
ENVB 497	(3)	Research Project 1
ENVB 498	(3)	Research Project 2
FAES 300	(3)	Internship 2
MICR 331	(3)	Microbial Ecology
PLNT 304	(3)	Biology of Fungi
PLNT 358	(3)	Flowering Plant Diversity
PLNT 460	(3)	Plant Ecology
SOIL 300	(3)	Geosystems
WILD 302	(3)	Fish Ecology
WILD 307	(3)	Natural History of Vertebrates

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.)" > "Specializations1.949 607.421 Tm(Assessing Ene1 0 0 1 165.86P

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 Cour ses (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

Complementar y Cour ses (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 430	(3)	GIS for Natural Resource Management
ENVB 437	(3)	Assessing Environmental Impact
ENVB 497	(3)	Research Project 1
ENVB 498	(3)	Research Project 2
FAES 300	(3)	Internship 2
MICR 331	(3)	Microbial Ecology
PLNT 304	(3)	Biology of Fungi
PLNT 358	(3)	Flowering Plant Diversity
PLNT 460	(3)	Plant Ecology
SOIL 300	(3)	Geosystems
WILD 302	(3)	Fish Ecology
WILD 307	(3)	Natural History of Vertebrates

Honour s Cour ses

12 credits of Honours Plan A or Plan B:

Honour s 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

Honour s 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.

6.2.5 B.Sc.(Ag.En v.Sc.) ± Global Food Security Major and Honour s

Program Director: Professor Humberto Monardes

6.2.5.1 Bac helor of Science (Agricultural and En vir onmental Sciences) (B.Sc.(Ag.En v.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 Cour ses (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.

6.2.5.2 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 comprehensiv

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

Complementar y Cour ses (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

Honour s Cour ses

12 credits of Honours Plan A or Plan B:

Honour s 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

Honour s 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.

6.2.6 B.Sc.(Ag.En v.Sc.) ± Lif e Sciences (Biological and Agricultural) Major and Honour s

Program Director: Professor Brian Driscoll

6.2.6.1 Bac helor of Science (Agricultural and En vir onmental Sciences) (B.Sc.(Ag.En v.Sc.)) - Major Lif e 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.

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.

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)

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.

6.2.7 Specializations

6.2.7.1 B.Sc.(Ag.En v.Sc.) ± Specializations to be taken with one of the B.Sc.(Ag.En v.Sc.) major s

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.

6 credits of complementary courses selected from:

AGRI 380	(1)	Special Topics: Agricultural Sciences 1
ANSC 251	(3)	Comparative Anatomy
ANSC 303	(2)	Farm Livestock Internship
ANSC 324	(3)	Developmental Biology and Reproduction
ANSC 330	(3)	Fundamentals of Nutrition

Revision, May 2014. End of revision.

6.2.7.5 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 (21 credits)

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
		Animal Nutrition

874 695.12 Tm(eAnimal Nutrition

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
		Quantitativ

Complementary Courses (18 credits)

Students select either Option A or Option B.

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

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

Complementar y Cour ses and Sug gested Electives (6 credits)

ANSC 350	(3)	Food-Borne Pathogens

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

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

3 credits from:

AGEC 332	(3)	Farm Management and Finance
ANSC 433	(3)	Animal Nutrition

Plus 6-9 additional 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
PLNT 302	(3)	Forage Crops and Pastures
PLNT 434	(3)	Weed Biology and Control

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

This program is currently under review.

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)

BREE 217	(3)	Hydrology and Water Resources
SOIL 315	(3)	Soil Nutrient Management
SOIL 326	(3)	Soils in a Changing Environment

For the remaining required 3 credits please consult an adviser.

Complementary Courses (9 credits)

9 credits of complementary courses selected as follows:

3 credits from:

AGRI 435	(3)	Soil and Water Quality Management

BREE 416	(3)	Engineering for Land Development

6 credits from:

BREE 322	(3)	Organic Waste Management
BREE 327	(3)	Bio-Environmental Engineering
ENVB 301	(3)	Meteorology
ENVB 430	(3)	GIS for Natural Resource Management
NRSC 333	(3)	Pollution and Bioremediation
SOIL 510	(3)	Environmental Soil Chemistry

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

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

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

Required Courses (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
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
ENVB 430	(3)	GIS for Natural Resource Management
WILD 421	(3)	Wildlife Conservation
WILD 424	(3)	Parasitology
WILD 475	(3)	Desert Ecology

6.3 Bachelor of Engineering (Bioresource) ± B.Eng.(Bioresource)

6.3.1 Bioresource Engineering Major

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 five 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*.

In the **Bio-Environmental Engineering** stream, students learn about soil and water quality management and conservation, geomatics, hydrology and water resources, organic waste treatment, use of GIS for biosystem operation, engineering for land development, climate control in buildings, ecosystem remediation, and many other related topics.

Students who follow the **Soil and Water** stream learn about hydrology, irrigation and drainage, soil and water management, environmental quality control and remediation, structural design, machinery design, artificial intelligence, GIS, and remote sensing.

In the **Ecological Engineering** stream, students learn how to apply principals of engineering and ecology to the design and implementation of complex ecological systems. They learn how to create systems that preserve and enhance natural ecological processes as a means of fulfilling design requirements.

In the **Food and Bioprocessing** stream, students are taught about 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 specialize in the **Agricultural Engineering** stream will learn about machine design, machinery, robotics, structural design, environmental quality control, waste management, artificial intelligence, GIS, remote sensing, complex system simulation, and much more.

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 in the *eCalendar* under *Faculties & Schools > Faculty of Engineering > Undergraduate > : 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.

See *section 4.5.1: Minimum Credit Requirement* for prerequisites and minimum credit requirements.

6.3.2 About the B.Eng. (Bioresource) Program

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.

6.3.3 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 312	(3)	Electric Circuits and Machines
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
FACC 300	(3)	Engineering Economy
FACC 400	(1)	Engineering Professional Practice
MECH 289	(3)	Design Graphics

Complementar y Cour ses

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

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.

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 430	(3)	GIS for Natural Resource Management
BREE 497	(3)	Bioresource Engineering Project
BREE 501	(3)	Simulation and Modelling
BREE 504	(3)	Instrumentation and Control
BREE 510	(3)	Watershed Systems Management
BREE 515	(3)	Soil Hydrologic Modelling
BREE 518	(3)	Bio-Treatment of Wastes
BREE 519	(3)	Advanced Food Engineering
BREE 520	(3)	Food, Fibre and Fuel Elements
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

6.3.4 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

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 430	(3)	GIS for Natural Resource Management
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)	Bio-Treatment of Wastes
BREE 519	(3)	Advanced Food Engineering
BREE 520	(3)	Food, Fibre and Fuel Elements
BREE 525	(3)	Climate Control for Buildings
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

6.3.5 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
	(3)	Engineering Design 1

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
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 430	(3)	GIS for Natural Resource Management
BREE 510	(3)	Watershed Systems Management

BREE 515	(3)	Soil Hydrologic Modelling
BREE 518	(3)	Bio-Treatment of Wastes
BREE 533	(3)	Water Quality Management

Group 2 - Food Processing

BREE 325	(3)	Food Process Engineering
BREE 519	(3)	Advanced Food Engineering
BREE 520	(3)	Food, Fibre and Fuel Elements
BREE 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
CIVE 317	(3)	Structural Engineering 1
CIVE 318	(3)	Structural Engineering 2

6.3.6 Bachelor of Engineering (Bioresource) ± B.Eng.(Bioresource) Related Programs

6.3.6.1 Minor in Environmental Engineering

For more information, see *section 6.6.8: Minor in Environmental Engineering*.

6.3.6.2 Barbados Field Study Semester

For more information, see the *eCalendar* under *Faculties & Schools* > *Field Studies* > *Undergraduate* > *: Barbados Field Study Semester*.

6.3.6.3 Internship Opportunities and Co-op Experiences

For more information, see *section 5.1: Internship Opportunities and Co-op Experience*.

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

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*.

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.

Academic Adviser-U1: Professor Salwa Karboune

Macdonald-Stewart Building, Room 1-040

Telephone: 514-398-8666

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 (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.

6.4.2 Bachelor of Science (Food Science) (B.Sc.(F .Sc.)) - Honour s 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 gov

Separation T

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 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
		Separation Techniques in Food

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)	Industrial Stage/Food
NUTR 480	(12)	Industrial Stage/Nutrition

Elective Cour ses (12 credits)

Electives are selected in consultation with an academic adviser.

6.4.5.1 About the Concurrent Bac helor of Science in Food Science (B.Sc.(F .Sc.)) and Bac helor of Science in Nutritional Sciences (B.Sc.(Nutr .Sc.)) Program

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 industry demands.

6.4.6 Bachelor of Science (Food Science) ± B.Sc.(F .Sc.) Related Pr ograms

6.4.6.1 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.

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

6.5.1 Dietetics Major

For academic advising, please consult *www.mcgill.ca/macdonald/studentinfo/advising*.

6.5.2 Nutrition Major

For academic advising, please consult *www.mcgill.ca/macdonald/studentinfo/advising*.

6.5.3 About the B.Sc. (Nutritional Sciences) Pr ogram

Freshman Adviser

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

6.5.4 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 f or Pr ofessional Practice (Sta ge):

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 and must be passed with a minimum grade of C. If a student fails one lev

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 electiv

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	(5)	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

Analysis of Food T0 0 1 165.864 508,42 4.f.n 1 70.h 1 221.949 4613 hhvu339.509 461.661 Tm(T0 0 130 0 0 64 508,42

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	(5)	Clinical Nutrition 2

At least 9 credits selected from:

AGEC 330	(3)	Agriculture and Food Markets
	(3)	Economics of International Agricultural Development

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.

6.5.7 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 heath 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

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

Complementar y Cour ses (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	(5)	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 01
EXMD 503	(3)	Advanced Endocrinology 02
MICR 341	(3)	Mechanisms of Pathogenicity
MIMM 314*	(3)	Intermediate Immunology
MIMM 414	(3)	Advanced Immunology

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.

6.5.9 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	(5)	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 Cour ses (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.

6.5.10 Bachelor of Science (Nutritional Sciences) ± Related Pr ograms

6.5.10.1 Minor in Human Nutrition

Detailed information on this Minor can be found under *section 6.6.9: Minor Human Nutrition (24 credits)* in this publication.

6.5.10.2 Concurrent Bac helor of Science in Food Science ± B.Sc.(F .Sc.) and Bac helor 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: 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 Pr ograms

The FacuS30 1 TAgriuS30url agd un

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

Complementar y Cour ses (12 credits)

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

6.6.4 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)

A minimum of 9 credits selected from the following list:

ANSC 251	(3)	Comparative Anatomy
ANSC 326	(3)	Fundamentals of Population Genetics
ANSC 330	(3)	Fundamentals of Nutrition
ANSC 400	(3)	Eukaryotic Cells and Viruses
ANSC 424	(3)	Metabolic Endocrinology
ANSC 433	(3)	Animal Nutrition
ANSC 560	(3)	Biology of Lactation
ANSC 565	(3)	Applied Information Systems
LSCI 451	(3)	Research Project 1

6.6.5 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 (15 credits)

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

Complementary Courses (9 credits)

9 credits selected from the following list:

ANSC 251	(3)	Comparative Anatomy
ANSC 330	(3)	Fundamentals of Nutrition
ANSC 350	(3)	Food-Borne Pathogens
LSCI 451	(3)	Research Project 1
PARA 410	(3)	Environment and Infection
WILD 311	(3)	Ethology
WILD 424	(3)	Parasitology

6.6.6 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 dev

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

6.6.8 Minor in En vir onmental Engineering

The Minor program consists of 21 credits in courses that are environment related. By means of a judicious choice of complementary and elective 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 the *eCalendar* under *Faculties & Schools > Faculty of Engineering > Undergraduate > Academic Programs > Minor Programs > : Environmental Engineering Minor*).

Courses available in the Faculty of Agricultural and Environmental Sciences (partial listing):

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*.

6.6.9 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 Cour ses (6 credits)

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

Complementar y Cour ses (18 credits)

18 credits are selected as follows:

3 credits in Biochemistry, one of:

ANSC 234	(3)	Biochemistry 2
BIOC 31547.321 Tm(Agricul(3)ee Schoolg4IOMe-a76l2cTBi(cpe148(vi		31547.3dTm(er.241 398.382k)Tj1 0 0 1 to prep.Dtnter.20 1s.ome)Tj1 0 0 1 70.52 126.50435:ho

PHGY 210	(3)	Mammalian Physiology 2

3 credits in Nutrition, one of:

ANSC 330	(3)	Fundamentals of Nutrition
NUTR 307	(3)	Human Nutrition

9 credits are selected as follows:

ANSC 551	(3)	Carbohydrate and Lipid Metabolism
ANSC 552	(3)	Protein Metabolism and Nutrition
NUTR 403	(3)	Nutrition in Society
NUTR 436	(2)	Nutritional Assessment
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

One of:

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

One of:

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

6.6.10 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

6.6.11 Minor Operations Mana gement (For Non-Mana gement Students) (18 credits)

Mentors: Please consult the Bachelor of Commerce website at: http://www.mcgill.ca/desautels/programs/bcom/academics/courseinfo

The Minor Operations Management consists of 18 credits of Management courses and is currently offered to non-Management students in the Faculties of Arts, Engineering, Science, and Agricultural & Environmental Sciences.

It provides non-Management students with the opportunity to pursue a career that involves decision making at the operational level. Graduates will be able to find employment in consulting, manufacturing, supply chain, distribution, retail operations, healthcare management and environmental management for profit and non-profit corporations. This Minor has been designed to provide students with an understanding of the key concepts in operations management theory and practice.

Required Cour ses (6 credits)

MGCR 472	(3)	Operations Management
MGSC 373	(3)	Operations Research 1

Complementar y Cour ses (12 credits)

3 credits

MGCR 271*	(3)	Business Statistics

9 credits selected from:

MGSC 372	(3)	Advanced Business Statistics
MGSC 402	(3)	Operations Strategy
MGSC 403	(3)	Introduction to Logistics Management
MGSC 405	(3)	Quality Management
MGSC 415	(3)	Supplier Management

MGSC 431	(3)	Operations and Supply Chain Analysis
MGSC 479	(3)	Applied Optimization
MGSC 575	(3)	Applied Time Series Analysis Managerial Forecasting
MGSC 578	(3)	Simulation of Management Systems

or other appropriate 300- or 400-level MGSC courses with the approval of the Program Adviser.

* 3 credits of Statistics: Students who have taken an equivalent Statistics course in another faculty may not count those credits toward the Minor; an additional 3-credit complementary course must be chosen from the course list above.

Note: Students should select their Statistics course only after consulting the "Course Overlap" section in the Faculty of Arts, the "Course Overlap" section in the Faculty of Science, and the "Course Overlap" section in the Desautels Faculty of Management to avoid overlapping Statistics courses.

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
		Soil and

8 Farm Management and Technology Program

8.1 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*
Website: *www.mcgill.ca/fmt*

8.2 Farm Management and Technology Program Faculty

Director

Peter Enright

Associate Director

Serge Lussier

Faculty Lecturers

Caroline Begg

Christian Molgat

Pascal Thériault

David Wees

8.3 Diploma of College Studies Ð 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'Enseignement supérieur, de la Recherche, de la Science et de la Technologie (MESRST).

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 receiv

FMTP 083	(2.33)	Literary Themes (603-103-04)
FMTP 091	(1)	Physical Activity and Effectiveness (109-102-MQ)
FMTP 098	(2)	Français agricole (602-VSG-MC)

Summer 2

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

Fall 3

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

Winter 3

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

Elective Pr oduction Cour ses

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 Categor y

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 Categor y

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)

Complementar y Cour ses*

9 Department of Animal Science

9.1 Location

Macdonald Stewart Building, Room MS1-084
Telephone: 514-398-7794
Fax: 514-398-7964
Email: *animal.science@mcgill.ca*
Website: *www.mcgill.ca/animal*

9.2 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 and reproduction, or the study of animals in a health context, or even the biotechnology aspects that provide a basis for further laboratory research and an opening to animal models and their impact on 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

10.3 Department of Bioresource Engineering Faculty

Chair

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

Edward McKyes; B.Eng., M.Eng., Ph.D.(McG.)

Michael O. Ngadi; B.Eng.(Agr.Eng.), M.A.Sc., Ph.D.(DalTech) (*1 ors*

11 Department of Food Science and Agricultural Chemistry

11.1 Location

Macdonald-Stewart Building, Room MS1-034
McGill University, Macdonald Campus
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue QC H9X 3V9
Canada

Telephone: 514-398-7898
Fax: 514-398-7977
Email: *foodscience@mcgill.ca*
Website: *www.mcgill.ca/foodscience*

11.2 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)** and **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.)*.

11.3 Department of Food Science and Agricultural Chemistry Faculty

Chair

Varoujan Yaylayan

Professors

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

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

Varoujan 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.)

Selim Kermasha; B.Sc.(Baghdad), C.E.S, D.E.A, D.Sc.(Nancy)

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

Assistant Professors

Martin Chénier; B.Sc.(Laval), M.Sc.(IAF), Ph.D.(McG.)

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

Professor Post-Retirement

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

Emeritus Professor

William D. Marshall; B.Sc.(New Br.), Ph.D.(McM.)

12 Department of Natural Resource Sciences

12.1 Location

Macdonald-Stewart Building, Room MS3-039
McGill University, Macdonald Campus
21,111 Lakeshore Road
Sailj13loe804 0eshore Road

Professors

James W. Fyles; B.Sc., M.Sc.(Vic., BC), Ph.D.(Alta.) (*Ecosystem Ecology*) (*T*

Associate Professors

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

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

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.)

Katrine A. Stewart; B.S.A.(Br.Col.), Ph.D.(R'dg) (*Post-Retirement*)

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

Marcia J. Waterway; B.A.(Grand Rapids), M.S.(Wisc.), Ph.D.(Cornell)

Assistant Professors

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

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

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

Faculty Lecturers

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

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

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

Associate Members

Adjunct Pr

ABao-Luo M

Gregory Brown (*Department of Biology*)

Timothy A. Johns (*School of Dietetics and Human NutrireTDnTj/F1 8.1 Tf1 0 0 1 205.561 411.88 Tm(A)*

14.2 About the Sc hool of Dietetics and Human Nutrition

Health and well-being of individuals in relation to food choices and physiological status prevails as the unifying theme of the programs in the School of Dietetics and Human Nutrition. The availability of food, normal metabolism and clinical nutrition, community nutrition at the local and international level, the evaluation of nutritional products and their use in nutrition, and the communication of information about food and health form the core of academic programs.

14.3 School of Dietetics and Human Nutrition F aculty

Director

Kristine G. Koski

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.) (*Canada Research Chair*)

Timothy A. Johns; B.Sc.(McM.), M.Sc.(Br. Col.), Ph.D.(Mich.)

Linda W

Kristine G. Koein; B.), M.SWn. Calif.), R.D.yQ1StHumG. KyQ1ubo(yQ1 70b.(Br)4711.639l4m(yQ1whns; B.Sc.GMcM.), M.Scnu0 1 91.199 4l65539.39l4m(yQ17 T

Prear

15 Institute of P arasitology

15.1 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*
Website: *www.mcgill.ca/parasitology*

15.2 Institute of P arasitology F aculty

Director

Timothy Geary

Professors

Timothy 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 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)

Reza Salavati; B.A., M.A.(Calif. St.), Ph.D.(Wesl.)

Assistant Professors

Jerry Aldridge; B.Sc.(Lenoir-Rhyne), Ph.D.(Wake Forest)

Petra Rohrbach; B.Sc.(McG.), Ph.D.(Heidelberg)

Associate Members

Greg Matlashewski; B.Sc.(C'dia), Ph.D.(Ott.)

Martin Olivier; B.Sc., M.Sc.(Montr.), Ph.D.(McG.)

Mary Stevenson; B.A.(Hood College, Maryland), M.S., Ph.D.(Catholic Univ. of America)

Brian Ward; M.Sc.(Oxf.), M.D.,C.M.(McG.), DTM & H(Doctor of Tropical Medicine and Hygiene)(Lond.)

Adjunct Professors

John Dalton; B.Sc., Ph.D.(Dublin)

Florence Dzierszinski; B.Sc., M.Sc., Ph.D.(Lille 1)

Adjunct Professors

Sean Forrester; B.Sc.(Cape Breton), M.Sc.(Lake.), Ph.D.(McG.)

16 Instructional Staff

Instructional Staff

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); Assistant 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

Alli, Inteaz; B.Sc.(Guyana), M.Sc., Ph.D.(McG.); Professor of Food Science and Agricultural Chemistry

Basu, Niladri; B.Sc.(Qu.), M.Sc.(Br. Col.), Ph.D.(McG.); Associate Professor of Nutrition/Environmental Toxicology (*Canada Research Chair*)

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

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 Professor of Forest Insect Ecology

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); Assistant 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 McGill School of Environment

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

Instructional Staff

Goodridge, Lawrence D.; B.Sc., M.Sc.(Guelph), Ph.D.(Georgia); Associate Professor of Food Microbiology/Food Safety (*Ian & Jayne Munro Chair in Food Safety*)

Gravel, Valérie; B.Sc., M.Sc., Ph.D.(Laval); Assistant Professor of Plant Science

Instructional Staff

Prichard, Roger K.; B.Sc., Ph.D.(N.S.W.); Professor, Institute of Parasitology (*James McGill Professor*)

Qi, Zhiming; B.S., M.S.(China Agricultural University), Ph.D.(Iowa St.); Assistant Professor of Bioresource Engineering

Raghavan, G.S. Vijaya; B.Eng.(Bangalore), M.Sc.(Guelph), Ph.D.(Colo. St.); F.A.S.A.E, F.C.S.A.E., F.A.S.M.E., F.R.S.C.; Professor of Bioresource Engineering (*James McGill Pr*