The publication is produced in electronic form and the most recent version is the official university publication. Archival copies are available at www.mcgill.ca/study.

This publication provides guidance to prospects, applicants, students, f

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/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/library-using/branches/macdonald-library* or feel free to drop by.

3.4 Lyman Entomological Museum and Research Laboratory

Originally established in 1914 and formerly housed in the Redpath Museum, the L

William H. Hendershot; B.Sc.(Tor.), M.Sc.(McG.), Ph.D.(Br. Col.)	**Associate Dean (Academic)**
Suha Jabaji; B.Sc.(AUB), M.Sc.(Guelph), Ph.D.(Wat.)	**Associate Dean (Research and Graduate Education)**
David J. Lewis; B.Sc., M.Sc., Ph.D.(Mem.)	**Associate Dean (Student Affairs)**
Silvana Pellecchia	**Manager, Student Affairs**
Gary O'Connell; B.Comm.(C'dia)	**Director, Academic and Administrative Services**
William R. Ellyett; B.A.(Sir G. Wms.), B.Ed.(Phys.Ed.)(McG.)	**Director of Athletics**
Paul Meldrum; B.J.(Hons.)(Car.)	**General Manager, Macdonald Campus Farm**
Ginette Legault	**Manager, Campus Housing**
Peter D.L. Knox; B.Sc.(Agr.)(McG.)	**Supervisor, Property Maintenance**

4.3 Faculty Admission Requirements

For information about the admission requirements for this Faculty, please refer to the *Undergraduate Admissions Guide* found at *www.mcgill.ca/applying*.

For information about interfaculty transfers, see *University Information and Regulations > Interfaculty Transfer*.

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

Student Affairs Office
Macdonald Campus of McGill University
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue, Quebec H9X 3V9

Telephone: 514-398-7928 or 7925
Email: *studentinfo.macdonald@mcgill.ca*
Website: *www.mcgill.ca/macdonald/prospective*

More specific information on application deadlines and admission requirements can be found at *www.mcgill.ca/applying*.

4.4 Student Inf ormation

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

4.4.1 The Student Affair s Office

The Student Affairs Office, located in Laird Hall, Room 106, provides a wide variety of academic services. These include information about admission (prerequisites and program requirements), academic standing, examinations (deferrals, conflicts, rereads), exchange programs, inter-faculty transfers, program changes, registration (course change, withdrawals1 0 25153 Tm(4.4.arshipralscadrF1 8ram rin-ange, Tm(e2 8y oe 1 382.169 625.294 Tm(changes, greesm(e2 8y majoam)T

4.5 Faculty Information and Regulations

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

4.5.1 Minimum Credit Requirement

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

Students are normally admitted to a four

4. When your CGPA (or TGPA in the first term of the program) falls below 1.50, your Academic Standing becomes Unsatisfactory and you must withdraw. (In the case of Fall term, the standing will be Interim Unsatisfactory standing and the rules for Probationary standing will apply.)
5. If you are in Unsatisfactory Standing, you may not continue in your program. You may apply for readmission only after your registration has been interrupted for at least one term (not including Summer term).
6. Readmission will be in the Standing Unsatisfactory/Readmit and a CGPA of 2.00 must be achieved to return to Satisfactory standing or a TGPA of 2.50 must be achieved for Probationary Standing. If you fail to meet at least one of these conditions, you will be required to withdraw permanently.
7. Students in the School of Dietetics and Human Nutrition have additional standards in place for the professional program (Dietetics). See *section 6.5.4: Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Major Dietetics (115 credits)*.

4.5.5.1 Committee on Academic Standing

The Faculty's Committee on Academic Standing, consisting of academic staff, administrative staff, and a student representative, reviews special requests made by students regarding their academic life.

4.5.6 Credit System

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

Please refer to *University Regulations and General Information > Credit System*.

4.5.6.1 Contin uing Education Cour ses

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

4.5.7 Academic Credit Transf er

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

Transfer credits may also be granted for courses tak

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 *University Regulations and General Information > Registration > Course Change Period*, and the Important Dates website *www.mcgill.ca/importantdates*.
2. Course withdrawal (Transcript notation of "W"): please refer to *University Regulations and General Information > Registration > Regulations Concerning 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 Graduate and Postdoctoral Studies. 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 extenuating circumstances may request an extension of the K deadline (KE) from the Associate Dean (Student Affairs). Refer to *University Regulations and General Information > Student Records > Grading and Grade Point Averages (GPA)* for more information about grading and credit.

4.5.13 Examinations

You should refer to *University Regulations and General Information > Examinations* for information about final examinations and deferred examinations. Examination schedules are posted on the McGill website, *www.mcgill.ca*, normally one month after the start of classes for the Tentative Exam Schedule, and two months after the start of classes for the Final Exam Schedule.

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

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

4.5.13.1 Reassessments and Rereads

In accordance with the *Charter of Student Rights*, and subject to its stated conditions, you have the right to consult any written submission for which you have received a mark. You also have the right to discuss this submission with the examiner.

If, after discussion with your instructor, you want to have a formal final examination reread, you must apply in writing to the Associate Dean (Student Affairs). The following conditions apply:

- grades may be either raised or lowered as the result of a reread;
- rereads in courses outside the Faculty of Agricultural and Environmental Sciences are subject to the deadlines, rules, and regulations of the relevant faculty.

Application for rereads must be made by March 31 for Fall term courses and by September 30 for Winter term and Summer term courses. You are assessed a fee for formal rereads. Any request to have term work re-evaluated must be made directly to the instructor concerned.

Any request to have in-course submissions reassessed must be made within 10 working days after the graded material has been made available to you.

4.5.13.2 Deferred Examinations

The Faculty offers deferred exams for medical reasons and e

Several programs offered by the Faculty and School lead toward professional accreditation. These include the Dietetics Major (membership in the Dietitians of Canada and the *Ordre professionnel des diététistes du Québec*); the Agricultural Economics Major and the Agro-En

5.2 Exchange Programs

The Faculty of Agricultural and Environmental Sciences participates in all University-wide student exchange programs available at McGill and also has

Plant Production

Professional Agrology

Soil and Water Resources

W

Dietetics (professional program leading to professional licensing as Dietitian/Nutritionist)

Nutrition:

- Food Function and Safety
- Global Nutrition
- Nutritional Biochemistry
- Sports Nutrition

5.7 Concurrent Bac helor of Science in Food Science – B.Sc.(F .Sc.) and Bac helor of Science in Nutritional Sciences – B.Sc.(Nutr .Sc.)

See *section 6.4.3: 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 (122 credits)* for details.

Food Science / Nutritional Science

5.8 Honour s Pr ogram

Environment, under *McGill School of Environment*

5.9 Minor Pr ograms

Agricultural Economics

Agricultural Production

Animal Biology

Animal Health and Disease

Ecological Agriculture

Environmental Engineering

Human Nutrition

International Agriculture

Minor in Environment, under *McGill School of Environment*

5.10 Post-Baccalaureate Cer tificate Pr ograms

The Faculty offers the following post-baccalaureate certificate programs.

Bioinformatics

Ecological Agriculture

Food Science

5.11 Diploma Pr ogram (Under graduate)

Diploma in Environment, under *McGill School of Environment*

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.

Freshman Adviser: Dr. Alice Cherestes

Macdonald-Stewart Building, Room 1-023

Telephone: 514-398-7980

Required Courses - Fall (14.5 credits)

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

Required Courses - Winter (12.5 credits)

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

Elective - Winter (3 credits)

B.Sc. (Ag. & Env. Sci.) - Agricultural Economics Major - Freshman Program (30 credits)

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

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

Freshman Adviser: Dr. Alice Cherestes

Macdonald-Stewart Building, Room 1-023

Telephone: 514-398-7980

Required Courses - Fall (14 credits)

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

Required Courses - Winter (10 credits)

AEBI 122	(3)	Cell Biology
AEHM 205	(3)	Science Literacy

AEMA 102	(4)	Calculus 2

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:

BREE 188	(.5)	Freshman Seminar 2

6.1.3 Bachelor of Science (Food Science) (B.Sc.(F .Sc.)) - Freshman Program (30 credits)

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

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

Note: If you are not certain that you have adequate math and/or ph

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

Required Cour ses - 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

Concurrent Bac

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 20 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; that is, they only count for that specialization and do not overlap with either the major or a second specialization. At least 54 credits of the 90 credits required for the degree (120 for students admitted to the Freshman year) must be from 300-level courses or higher; of this 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.

Majors:

- Agricultural Economics
- Agro-environmental Sciences
- Environmental Biology
- International Agriculture and Food Systems
- Life Sciences (Biological and Agricultural)
- Major in Environment (see

6.2.2 B.Sc.(Ag.En v.Sc.) – Agricultural Economics Major

Program Director

Profesor John Henning

Macdonald-Stewart Building, Room 3-038

Telephone: 514-398-7826

Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.En v.Sc.)) - Major Agricultural Economics (42 c2

Raymond Building, Room 2-021c
T

Choose at least one specialization of 18-24 credits

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

- Animal Health and Disease
- Animal Production
- Ecological Agriculture
- Entomology
- International Agriculture
- Professional Agrology
- Soil and Water Resources

Electives

To meet the minimum credit requirement for the degree.

6.2.4 B.Sc.(Ag.Env.Sc.) – Environmental Biology Major

Program Director: Professor Chris Buddle
Academic Adviser: Dr. Julie Major
Raymond Building, Room 2-021c
Telephone: 514-398-8380

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

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

Program Director: Professor Christopher Buddle

Academic Adviser: Dr. Julie Major

Raymond Building, Room 2-021c

Telephone: 514-398-8380

Program Prerequisites

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

Required Courses (30 credits)

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

Complementary Courses (12 credits)

12 credits of complementary courses selected from:

AEBI 451	(3)	Research Project 1
AEBI 491	(1)	Scientific Communication
ENTO 340	(3)	Field Entomology
ENVB 301	(3)	Meteorology
ENVB 305	(3)	Population & Community Ecology
ENVB 313	(3)	Phylogeny and Biogeography
ENVB 315	(3)	Science of Inland Waters
ENVB 430	(3)	GIS for Natural Resource Management
ENVB 437	(3)	Assessing Environmental Impact
ENVB 506	(3)	Quantitative Methods in Ecology
ENVR 203	(3)	Knowledge, Ethics and Environment
LSCI 230	(3)	Introductory Microbiology
MICR 331	(3)	Microbial Ecology
PLNT 304	(3)	Biology of Fungi
PLNT 358	(3)	Flowering Plant Diversity
SOIL 300	(3)	Geosystems
SOIL 326	(3)	Soils in a Changing Environment
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 Ecosystem Sciences
- Entomology
- Environmental Biology (Multidisciplinary)
- Plant Biology
- Soil and Water Resources
- 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) -1mLiSc.(Agr.15.006 294.141 4 458.3he i0.864 521.2 Tm((3))Tj1 08.3he , 8.3 Tf1 0 0 1 6

a common core of scientific and development-related courses and allows students to seek further depth in development-related courses in either the social sciences or natural sciences.

Program Director: Professor Anwar Naseem

Academic Adviser: Dr. Julie Major

Raymond Building, Room 2-021c

Telephone: 514-398-8380

Program Prerequisites

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

Required Cour ses (15 credits)

AEMA 310	(3)	Statistical Methods 1
AGEC 200	(3)	Principles of Microeconomics
AGRI 411	(3)	Global Issues on Development, Food and Agriculture
AGRI 493	(3)	International Project Management
INTD 200	(3)	Introduction to International Development

Complementar y Cour ses (27 credits)

Complementary Course A (3 credits)

One of:

AGRI 490	(3)	Agri-Food Industry Project
AGRI 499	(3)	Agricultural Development Internship

Complementary Courses B (9 credits)

AEBI 210	(3)	Organisms 1
ANSC 250	(3)	Principles of Animal Science
ENVB 210	(3)	The Biophysical Environment
FDSC 200	(3)	Introduction to Food Science

Streams

Choose either the Natural Science or Social Science stream (9 credits)

Natural Science Stream

Complementary Course C1.1 (3 credits)

LSCI 211	(3)	Biochemistry 1

Complementary Course C1.2 (3 credits)

Choose one of:

LSCI 202	(3)	Molecular Cell Biology
LSCI 204	(3)	Genetics

Complementary Course C1.3 (3 credits)

Choose one of:

ANSC 234	(3)	Biochemistry 2
LSCI 230	(3)	Introductory Microbiology

Social Science Stream

Complementary Course C2.1 (3 credits)

Choose one of:

AGEC 430	(3)	Agriculture, Food and Resource Policy
AGEC 442	(3)	Economics of International Agricultural Development

Choose 2 of the following 3 complementary course sets (6 credits)

Complementary Courses C2.2 (3 credits)

Choose one of:

GEOG 205	(3)	Global Change: Past, Present and Future
GEOG 210	(3)	Global Places and Peoples
GEOG 216	(3)	Geography of the World Economy
NRSC 221	(3)	Environment and Health

Complementary Course C2.3 (3 credits)

Choose one of:

ANTH 202	(3)	Comparative Cultures
ANTH 204	(3)	Anthropology of Meaning
ANTH 206	(3)	Environment and Culture

Complementary Course C2.4 (3 credits)

Choose one of:

POLI 243	(3)	International Politics of Economic Relations
SOCI 210	(3)	Sociological Perspectives
SOCI 225	(3)	Medicine and Health in Modern Society
SOCI 234	(3)	Population and Society
SOCI 254	(3)	Development and Underdevelopment

Specialization (18-24 credits)

Students must also complete at least one specialization of 18-24 credits. Specializations designated to be taken with the International Agriculture and Food Systems Major:

Social Science Stream

- Agribusiness
- Agriculture and Food Systems (Multidisciplinary)
- Ecological Agriculture
- International Agriculture
- Soil and Water Resources

Natural Science Stream

- Agriculture and Food Systems (Multidisciplinary)

15 credits of the complementary courses selected from:

AEHM 330	(3)	Academic and Scientific Writing
ANSC 234	(3)	Biochemistry 2
ANSC 250	(3)	Principles of Animal Science
ANSC 312	(3)	Animal Health and Disease
ANSC 323	(3)	Mammalian Physiology
ANSC 324	(3)	Developmental Biology and Reproduction
ANSC 326	(3)	Fundamentals of Population Genetics
ANSC 330	(3)	Fundamentals of Nutrition
ANSC 400	(3)	Eukaryotic Cells and Viruses
ANSC 420	(3)	Animal Biotechnology
BINF 301	(3)	Introduction to Bioinformatics
BINF 511	(3)	Bioinformatics for Genomics
BTEC 306	(3)	Experiments in Biotechnology
ENVB 210	(3)	The Biophysical Environment
ENVB 222	(3)	St. Lawrence Ecosystems
LSCI 451	(3)	Research Project 1
LSCI 452	(3)	Research Project 2
MICR 331	(3)	Microbial Ecology
MICR 338	(3)	Bacterial Molecular Genetics
MICR 341	(3)	Mechanisms of Pathogenicity
MICR 450	(3)	Environmental Microbiology
NRSC 333	(3)	Pollution and Bioremediation
PARA 410	(3)	Environment and Infection
PLNT 304	(3)	Biology of Fungi
PLNT 353	(3)	Plant Structure and Function
PLNT 424	(3)	Cellular Regulation
PLNT 426	(3)	Plant Ecophysiology
PLNT 435	(3)	Plant Breeding
WILD 375	(3)	Issues: Environmental Sciences
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
- Health and Nutrition
- Life Sciences (Multidisciplinary)
- Microbiology and Molecular Biotechnology
- Plant Biology
- Wildlife Biology

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 publication.

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. Although the list of suggested specializations appears under each major in the programs section, students interested in other specializations should consult with their academic adviser/specialization coordinator.

6.2.7.2 Bachelor of Science (Agricultural and En vir onmental Sciences) (B.Sc.(Ag.En v.Sc.)) - Agrib usiness (24 credits)

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

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

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

Specialization Adviser: Professor John Henning

Macdonald-Stewart Building, Room 3-038

Telephone: 514-398-7826

Required Cour ses (15 credits)

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

Complementar y Cour ses (9 credits)

9 credits chosen from the following list:

ACCT 361	(3)	Intermediate Management Accounting 1
AGRI 310	(3)	Internship in Agriculture/Environment
BUSA 364	(3)	Business Law 1
MGCR 341	(3)	Finance 1
MGCR 352	(3)	Marketing Management 1
MGCR 382	(3)	International Business
MGSC 373	(3)	Operations Research 1
ORGB 321	(3)	Leadership

6.2.7.3 Bachelor of Science (Agricultural and En vir onmental Sciences) (B.Sc.(Ag.En v.Sc.)) - Agriculture and Food Systems (Multidisciplinar y) (24 credits)

This flexible specialization offers a balance between food systems and consumption and agricultural production. It provides students with an opportunity to select courses in the economics, nutrition, and ethical and environmental implications of food systems and in the fundamentals of animal and plant production. The specialization is designed for students in the International Agriculture and Food Systems Major who have broad interests in international agriculture and development.

To complete the specialization, students select 1264 239.86Ju8b

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Complementar y Cour ses (24 credits)

24 credits of complementary courses are selected as follows:

12 credits - Food Systems and Consumption

12 credits - Agricultural Production

Food Systems and Consumption

12 credits from:

AGEC 201	(3)	Principles of Macroeconomics
AGEC 231	(3)	Economic Systems of Agriculture
AGEC 242	(3)	Management Theories and Practices
AGEC 320	(3)	Intermediate Microeconomic Theory
AGEC 330	(3)	Agriculture and Food Markets
A	(3)	Resource Economics

Agricultural Pr oduction

12 credits from:

AGRI 215	(3)	Agro-Ecosystems Field Course
AGRI 340	(3)	Principles of Ecological Agriculture
AGRI 435	(3)	Soil and Water Quality Management
ANSC 250	(3)	Principles of Animal Science
ANSC 312	(3)	Animal Health and Disease
ANSC 451	(3)	Dairy and Beef Production Management
ANSC 458	(3)	Swine and Poultry Production
BREE 217	(3)	Hydrology and Water Resources
ENTO 340	(3)	Field Entomology
ENTO 352	(3)	Biocontrol of Pest Insects
FDSC 310	(3)	Post Harvest Fruit and Vegetable Technology
PLNT 300	(3)	Cropping Systems
PLNT 302	(3)	Forage Crops and Pastures
PLNT 307	(3)	Agroecology of Vegetables and Fruits
PLNT 310	(3)	Plant Propagation
PLNT 312	(3)	Urban Horticulture
PLNT 315	(3)	Herbs and Medicinal Plants
PLNT 322	(3)	Greenhouse Management
PLNT 434	(3)	Weed Biology and Control
SOIL 315	(3)	Soil Fertility and Fertilizer Use

6.2.7.4 Bachelor of Science (Agricultural and En vir onmental Sciences) (B.Sc.(Ag.En v.Sc.)) - Animal Biology (24 credits)

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

Specialization Coordinator: Professor Roger Cue

Academic Adviser: Dr. Julie Major

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Telephone: 514-398-8380

Required Cour ses (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

Complementar y Cour ses (9 credits)

9 credits selected from:

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

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

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

Specialization Coordinator: Professor Sarah Kimmins

Academic Adviser: Dr. Julie Major

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Telephone: 514-398-8380

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 of complementary courses selected from:

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

6.2.7.6 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.

Specialization Coordinator: Professor Arif Mustafa

Academic Adviser: Dr. Julie Major

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Telephone: 514-398-8380

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
ANSC 433	(3)	Animal Nutrition
ANSC 451	(3)	Dairy and Beef Production Management
ANSC 458	(3)	Swine and Poultry Production

Complementary Course (3 credits)

One of:

ANSC 234	(3)	Biochemistry 2
ANSC 330	(3)	Fundamentals of Nutrition

6.2.7.7 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Applied Ecosystem Sciences (24 credits)

The goal of this specialization is to provide students with an opportunity to further develop their understanding of the ecosystem processes, ecology, and systems thinking necessary to understand, design, and manage our interaction with the environment.

Specialization Coordinator: Professor Elena Bennett

Academic Adviser: Dr. Julie Major

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Telephone: 514-398-8380

Required Courses (12 credits)

BREE 327	(3)	Bio-Environmental Engineering
ENVB 305	(3)	Population & Community Ecology
ENVB 415	(3)	Ecosystem Management
ENVB 506	(3)	Quantitative Methods in Ecology

Complementary Courses (12 credits)

12 credits of complementary courses selected as follows:

6 credits - Abiotic

6 credits - Biotic

6 credits are selected from the Abiotic list below:

AGRI 435	(3)	Soil and Water Quality Management
BREE 217	(3)	Hydrology and Water Resources
BREE 322	(3)	Organic Waste Management
ENVB 301	(3)	Meteorology
ENVB 430	(3)	GIS for Natural Resource Management
MICR 450	(3)	Environmental Microbiology
SOIL 300	(3)	Geosystems
SOIL 326	(3)	Soils in a Changing Environment
SOIL 510	(3)	Environmental Soil Chemistry

6 credits are selected from the Biotic list below:

AGRI 340	(3)	Principles of Ecological Agriculture
ENTO 440	(3)	Insect Diversity
ENVB 315	(3)	Science of Inland Waters
MICR 331	(3)	Microbial Ecology
PLNT 358	(3)	Flowering Plant Diversity
PLNT 426	(3)	Plant Ecophysiology
PLNT 460	(3)	Plant Ecology
WILD 307	(3)	Natural History of Vertebrates

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

This specialization focuses on the principles underlying the practice of ecological agriculture. When coupled with the Major in Environmental Biology, agriculture as a managed ecosystem that responds to the laws of community ecology is examined; when combined with the Major Agro-Environmental Sciences and the specialization in Professional Agrology

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

ENTO 340	(3)	Field Entomology
PLNT 304	(3)	Biology of Fungi
PLNT 358	(3)	Flowering Plant Diversity
WILD 307	(3)	Natural History of Vertebrates
WILD 350	(3)	Mammalogy
WILD 420	(3)	Ornithology

Ecology

Minimum of 3 credits from the following:

AEMA 406	(3)	Quantitative Methods: Ecology
ENTO 440	(3)	Insect Diversity
ENVB 305	(3)	Population & Community Ecology
ENVB 315	(3)	Science of Inland Waters
MICR 331	(3)	Microbial Ecology
PLNT 460	(3)	Plant Ecology
SOIL 335	(3)	Soil Ecology and Management

Ecosystem Processes and Applications

Minimum of 6 credits from the following:

AGRI 435	(3)	Soil and Water Quality Management
ENVB 301	(3)	Meteorology
ENVB 430	(3)	GIS for Natural Resource Management
ENVB 437	(3)	Assessing Environmental Impact
MICR 450	(3)	Environmental Microbiology
SOIL 300	(3)	Geosystems
SOIL 326	(3)	Soils in a Changing Environment
WILD 375	(3)	Issues: Environmental Sciences
WILD 421	(3)	Wildlife Conservation

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

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

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

Specialization Adviser: Professor John Henning

Macdonald-Stewart Building, Room 3-038

Telephone: 514-398-7826

Required Courses (9 credits)

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

Complementary Courses (15 credits)

At least 15 credits chosen from the following list:

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

6.2.7.12 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Health and Nutrition (24 credits)

This specialization offers students a foundation in nutrition with respect to health and disease. A focus on nutrition and health through the lifespan examines nutrient requirements and their relationship with health and disease prevention. Through careful selection of complementary courses, students can study about health and disease in various contexts ranging from human to animal health.

Specialization Adviser: Professor Linda Wykes

Academic Adviser: Dr. Julie Major

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Telephone: 514-398-8380

Required Courses (12 credits)

ANSC 323	(3)	Mammalian Physiology
ANSC 330	(3)	Fundamentals of Nutrition
NUTR 337	(3)	Nutrition Through Life
PARA 438	(3)	Immunology

Complementary Courses (12 credits)

12 credits from:

ANSC 312	(3)	Animal Health and Disease
ANSC 350	(3)	Food-Borne Pathogens
ANSC 424	(3)	Metabolic Endocrinology
ANSC 551	(3)	Carbohydrate and Lipid Metabolism
ANSC 552	(3)	Protein Metabolism and Nutrition
FDSC 213	(3)	Analytical Chemistry 1
FDSC 334	(3)	Analysis of Food Toxins and Toxicants
FDSC 442	(3)	Food Microbiology
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
PARA 410	(3)	Environment and Infection

AEBI 423	(3)	Sustainable Land Use
AEBI 425	(3)	Tropical Energy and Food
AEBI 427	(6)	Barbados Interdisciplinary Project

Panama Field Stud y Semester (Winter)

15 credits selected as follows:

9 credits of required courses

BIOL 553	(3)	Neotropical Environments
ENVR 451	(6)	Research in Panama

6 credits of complementary courses

Choose one of the following sets:

AGRI 550	(3)	Sustained Tropical Agriculture
HIST 510	(3)	Environmental History of Latin America (Field)

OR

GEOG 404	(3)	Environmental Management 2
GEOG 498	(3)	Humans in Tropical Environments

6.2.7.14 Bachelor of Science (Agricultural and En vir onmental Sciences) (B.Sc.(Ag.En v.Sc.)) - International De velopment (IAFS) (24 credits)

The program is closed for further admissions. For students currently enrolled in this program, please refer to the 2010-2011 Programs, Courses and University Regulations publication available at: http://www.mcgill.ca/study/2010-2011.

6.2.7.15 Bachelor of Science (Agricultural and En vir onmental Sciences) (B.Sc.(Ag.En v.Sc.)) - Lif e Sciences (Multidisciplinar y) (24 credits)

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

Academic Adviser: Professor Brian Driscoll

Academic Adviser: Dr. Julie Major

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ANSC 420	(3)	Animal Biotechnology
ANSC 424	(3)	Metabolic Endocrinology
ANSC 433	(3)	Animal Nutrition
ANSC 506	(3)	Advanced Animal Biotechnology
ANSC 560	(3)	Biology of Lactation
ANSC 565	(3)	Applied Information Systems
BINF 301	(3)	Introduction to Bioinformatics
BINF 511	(3)	Bioinformatics for Genomics
BTEC 306	(3)	Experiments in Biotechnology
BTEC 535	(3)	Functional Genomics in Model Organisms
BTEC 555	(3)	Structural Bioinformatics
ENTO 330	(3)	Insect Biology
ENTO 352	(3)	Biocontrol of Pest Insects
ENTO 440	(3)	Insect Diversity
ENTO 535	(3)	Aquatic Entomology
ENVB 301	(3)	Meteorology
ENVB 305	(3)	Population & Community Ecology
ENVB 313	(3)	Phylogeny and Biogeography
ENVB 315	(3)	Science of Inland Waters
ENVB 430	(3)	GIS for Natural Resource Management
ENVB 506	(3)	Quantitative Methods in Ecology
FDSC 442	(3)	Food Microbiology
MICR 331	(3)	Microbial Ecology
MICR 338	(3)	Bacterial Molecular Genetics
MICR 341	(3)	Mechanisms of Pathogenicity
MICR 450	(3)	Environmental Microbiology
NUTR 337	(3)	Nutrition Through Life
NUTR 512	(3)	Herbs, Foods and Phytochemicals
PARA 410	(3)	Environment and Infection
PARA 438	(3)	Immunology
PARA 515	(3)	Water, Health and Sanitation
PLNT 304	(3)	Biology of Fungi
PLNT 305	(3)	Plant Pathology
PLNT 310	(3)	Plant Propagation
PLNT 353	(3)	Plant Structure and Function
PLNT 358	(3)	Flowering Plant Diversity
PLNT 424	(3)	Cellular Regulation
PLNT 426	(3)	Plant Ecophysiology
PLNT 434	(3)	Weed Biology and Control
PLNT 435	(3)	Plant Breeding
PLNT 460	(3)	Plant Ecology
SOIL 335	(3)	Soil Ecology and Management
WILD 424	(3)	Parasitology

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

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

Specialization Coordinator: Professor Brian Driscoll

Academic Adviser: Dr. Julie Major

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Telephone: 514-398-8380

Required Courses (18 credits)

BTEC 306	(3)	Experiments in Biotechnology
MICR 331	(3)	Microbial Ecology
MICR 338	(3)	Bacterial Molecular Genetics
MICR 341	(3)	Mechanisms of Pathogenicity
MICR 450	(3)	Environmental Microbiology
PARA 438	(3)	Immunology

Complementary Courses and Suggested Electives (6 credits)

ANSC 350	(3)	Food-Borne Pathogens
ANSC 400	(3)	Eukaryotic Cells and Viruses
ANSC 420	(3)	Animal Biotechnology
BINF 301	(3)	Introduction to Bioinformatics
BTEC 501	(3)	Bioinformatics
BTEC 535	(3)	Functional Genomics in Model Organisms
BTEC 555	(3)	Structural Bioinformatics
FDSC 442	(3)	Food Microbiology
MIMM 324	(3)	Fundamental Virology
NRSC 333	(3)	Pollution and Bioremediation
PLNT 304	(3)	Biology of Fungi
PLNT 424	(3)	Cellular Regulation
WILD 424	(3)	Parasitology

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

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

Specialization Coordinator: Professor Marcia Waterway

Academic Adviser: Dr. Julie Major

Raymond Building, Room 2-021c

Telephone: 514-398-8380

Required Courses (12 credits)

PLNT 353	(3)	Plant Structure and Function Flowering Plant Div

PLNT 307	(3)	Agroecology of Vegetables and Fruits
PLNT 312	(3)	Urban Horticulture
PLNT 315	(3)	Herbs and Medicinal Plants
PLNT 322	(3)	Greenhouse Management
PLNT 331	(3)	Grains and Biofuel Crops
PLNT 489	(1)	Project Planning and Proposal
PLNT 490	(2)	Research Project
SOIL 445	(3)	Agroenvironmental Fertilizer Use

6.2.7.19 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Professional Agrology (21 credits)

This specialization is required for students who wish to qualify for membership in the Ordre des agronomes du Québec (OAQ). It cannot be taken alone; it must be taken with the Major Agro-Environmental Sciences and a second specialization in Animal Production, Ecological Agriculture, Plant Production, or Soil and Water, or with the Major Agricultural Economics and the Agri-business specialization.

Note: Most students will require 21 credits to complete this specialization. In consultation with the Academic Adviser, students taking the Agri-business Specialization will need to take an additional 3 credits, chosen in consultation with the

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 F

NRSC 333	(3)	Pollution and Bioremediation
SOIL 510	(3)	Environmental Soil Chemistry

6.2.7.21 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 Reserv

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 under *Faculty of Engineering > 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.

About the B.Eng. (Bioresour ce) Programl 8i904 Tm (,)Tj -0.003 Tw 1 0 0 1l 225.754 52Fgomum 5.754 5rnimuh sya754 5r3 0 1 6.,e 1 12n

BREE 495	(3)	Engineering Design 3
FACC 400	(1)	Engineering Professional Practice
MECH 289	(3)	Design Graphics
MIME 310	(3)	Engineering Economy

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	(4)	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
CHEE 430	(3)	Technology Impact Assessment
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

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Required Cour ses (56 credits)

AEMA 202	(3)	Intermediate Calculus
AEMA 305	(3)	Differential Equations
AGRI 330	(1)	Agricultural Legislation
AGRI 430	(2)	Professional Practice in Agrology
BREE 205	(3)	Engineering Design 1
BREE 210	(3)	Mechanical Analysis & Design
BREE 216	(3)	Bioresource Engineering Materials
BREE 252	(3)	Computing for Engineers
BREE 301	(3)	Biothermodynamics
BREE 305	(3)	Fluid Mechanics
BREE 312	(3)	Electric Circuits and Machines
BREE 319	(3)	Engineering Mathematics
BREE 327	(3)	Bio-Environmental Engineering
BREE 341	(3)	Mechanics of Materials
BREE 481	(.5)	Undergraduate Seminar 1
BREE 482	(.5)	Undergraduate Seminar 2
BREE 483	(.5)	Undergraduate Seminar 3
BREE 484	(.5)	Undergraduate Seminar 4
BREE 485	(1)	Undergraduate Seminar 5
BREE 486	(1)	Undergraduate Seminar 6
BREE 490	(3)	Engineering Design 2
BREE 495	(3)	Engineering Design 3
FACC 400	(1)	Engineering Professional Practice
MECH 289	(3)	Design Graphics
MIME 310	(3)	Engineering Economy

Complementar y Cour ses

57 credits of the complementary courses selected as follows:

6 credits - Set A

12 credits - Set B (Natural Sciences)

6 credits - Set C (Social Sciences)

33 credits - Set D (Engineering)

Set A

6 credits

One course from the following:

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

CHEE 315	(4)	Heat and Mass Transfer
MECH 346	(3)	Heat Transfer

Set B - Natural Sciences

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 502	(3)	Drainage/Irrigation Engineering
BREE 506	(3)	Advances in Drainage Management
BREE 509	(3)	Hydrologic Systems and Modelling
BREE 510	(3)	Watershed Systems Engineering
BREE 512	(3)	Soil Cutting and Tillage
BREE 515	(3)	Soil Hydrologic Modelling
BREE 518	(3)	Bio-Treatment of Wastes
BREE 533	(3)	Water Quality Management

Group 2 - Food Pr ocessing

BREE 325	(3)	Food Process Engineering
BREE 519	(3)	Advanced Food Engineering
BREE 520	(3)	Food, Fibre and Fuel Elements
BREE 530	(3)	Fermentation Engineering
BREE 531	(3)	Post-Harvest Drying
BREE 532	(3)	Post-Harvest Storage
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 419	(3)	Structural Design
BREE 423	(3)	Biological Material Properties
BREE 497	(3)	Bioresource Engineering Project
BREE 501	(3)	Simulation and Modelling
BREE 504	(3)	Instrumentation and Control
BREE 525	(3)	Climate Control for Buildings
CIVE 317	(3)	Structural Engineering 1
CIVE 318	(3)	Structural Engineering 2

6.3.5 Bachelor of Engineering (Bioresour ce) – B.Eng.(Bioresour ce) Related Pr ograms

6.3.5.1 Minor in En vir onmental Engineering

For more information, see *section 6.6.7: Minor in Environmental Engineering (27 credits)*.

6.3.5.2 Barbados Field Stud y Semester

For more information, see *Field Studies and Study Abroad > Field Studies > Barbados Field Study Semester*.

6.3.5.3 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.

Freshman Adviser

Dr. Alice Cherestes
Macdonald-Stewart Building, Room1-023
Telephone: 514-398-7980

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 Food Science Major with Food Science Option can also qualify for recognition by the Institute of Food Technologists (IFT).

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

Refer to "Faculty Information and Regulations" > "Minimum Credit Requirements", in this publication 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 425	(3)	Principles of Quality Assurance
FDSC 442	(3)	Food Microbiology
FDSC 495D1	(1.5)	Food Science Seminar
FDSC 495D2	(1.5)	Food Science Seminar
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology

FDSC 400	(3)	Food Packaging
FDSC 425	(3)	Principles of Quality Assurance
FDSC 442	(3)	Food Microbiology
FDSC 497	(1.5)	Professional Seminar: Food
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
NUTR 207	(3)	Nutrition and Health
NUTR 214	(4)	Food Fundamentals
NUTR 307	(3)	Human Nutrition
NUTR 337	(3)	Nutrition Through Life
NUTR 344	(4)	Clinical Nutrition 1
NUTR 497	(1.5)	Professional Seminar: Nutrition
NUTR 512	(3)	Herbs, Foods and Phytochemicals

Complementary Courses (30 credits)

Complementary courses are selected as follows:

At least 9 credits from the following:

AGEC 200	(3)	Principles of Microeconomics
AGEC 201	(3)	Principles of Macroeconomics
AGEC 330	(3)	Agriculture and Food Markets
AGEC 430	(3)	Agriculture, Food and Resource Policy

AGEC 4.52 662.68 Tm(LSCI(3)211huo6 t Tm(Agricon Business Management (Economics of International Agricultural Development) Tj1 0 0 1 165.I 211huo6 t Tm((3))Tj1 0 0 1 70I 211huo6 t Tm(A)Tj1 0 0 1 76.I 211huo6

6.4.3.1 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.

6.4.4 Bachelor of Science (Food Science) – B.Sc.(F .Sc.) Related Pr ograms

6.4.4.1 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

Academic Advising Coordinator

Sandy Phillips, M.Sc., R.D.
School of Dietetics and Human Nutrition

6.5.2 Nutrition Major

Academic Advising Coordinator

Kristine G. Koski, Ph.D., R.D. (U.S.)
School of Dietetics and Human Nutrition

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

Freshman Adviser

Professor Alice Cherestes
Macdonald-Stewart Building, Room1-023
Telephone: 514-398-7980

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

The Dietetics Major, which includes a 40-week internship (Stage) as part of its degree requirements, is a professional program that leads to membership in a provincial regulatory body and professional licensure as a dietitian/nutritionist.

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 nutritionists, dietitians may work in health-care settings, nutrition counselling centres, clinics, and pri

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

Academic Advising Coordinator: Sandy Phillips, M.Sc., R.D.

School of Dietetics and Human Nutrition

Laird Hall, Room 199b

Telephone: 514-398-7982

Notes:

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.

Advising Note for Professional Practice

* Note: 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. Undergraduate registration is restricted to students in the Dietetics Major, CGPA greater than or equal to 3.0. Students in the Dietetics Major who have a CGPA below a 3.0 for two consecutive years will not be permitted to continue in the program. Visiting and Special students must contact the Academic Advising Coordinator (Dietetics) regarding course registration approval.

Students are reminded that ethical conduct on Professional Practice (Stage) rotations is required. The Faculty reserves the right to require the withdrawal of any student if at any time the Faculty feels the student has displayed unprofessional conduct or demonstrates incompetence.

Required Courses (100 credits)

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

AEMA 310	(3)	Statistical Methods 1
AGEC 242	(3)	Management Theories and Practices
AGEC 343	(3)	Accounting and Cost Control
ANSC 234	(3)	Biochemistry 2
ANSC 323	(3)	Mammalian Physiology
ANSC 424	(3)	Metabolic Endocrinology
LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
NUTR 207	(3)	Nutrition and Health
NUTR 208*	(1)	Professional Practice Stage 1A
NUTR 209*	(3)	Professional Practice Stage 1B
NUTR 214	(4)	Food Fundamentals
NUTR 217	(4)	Application: Food Fundamentals
NUTR 310*	(1)	Professional Practice Stage 2A
NUTR 311*	(5)	Professional Practice Stage 2B
NUTR 322	(2)	Applied Sciences Communication
NUTR 337	(3)	Nutrition Through Life
NUTR 344	(4)	Clinical Nutrition 1
NUTR 345	(3)	Food Service Systems Management
NUTR 346	(2)	Quantity Food Production
NUTR 403	(3)	Nutrition in Society
NUTR 408*	(1)	Professional Practice Stage 3A
NUTR 409*	(8)	Professional Practice Stage 3B
NUTR 436	(2)	Nutritional Assessment
NUTR 438	(2)	Interviewing and Counselling

NUTR 450	(3)	Research Methods: Human Nutrition
NUTR 510*	(14)	Professional Practice - Stage 4
NUTR 545	(5)	Clinical Nutrition 2

Complementar y Cour ses (9 credits)

3 credits from either:

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

Note: ANSC 330 or NUTR 307 must be taken in Fall of U2.

3 credits of Human Behavioural Science courses chosen from:

NUTR 301	(3)	Psychology

Or equivalent from another faculty

3 credits from the social sciences that may include, but are not limited to:

AGEC 200	(3)	Principles of Microeconomics
		Society(3)GEOG 200 ainabilitsychology

Academic Advising Coordinator: Professor Kristine Koski
School of Dietetics and Human Nutrition
Macdonald-Stewart Building, Room 2-039
Telephone: 514-398-7840

Required Cour ses (54 credits)

Food Function and Saf ety

12 credits are selected as follo

(3) Metabolic Endocrinology

Note: The program requirements are under review.

(3)	Biochemistry 1

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

Complementary Courses (15 credits)

15 credits of complementary courses are selected as follows:

3 credits from the list below

12 credits from the Sports Nutrition set

3 credits, one of the following courses:

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

Sports Nutrition

12 credits selected as follows:

Note: Students select either ANAT 214 or EDKP 205.

ANAT 214	(3)	Systemic Human Anatomy
EDKP 205	(3)	Structural Anatomy
EDKP 391	(3)	Physiology in Sport and Exercise
EDKP 495	(3)	Scientific Principles of Training
NUTR 503	(3)	Bioenergetics and the Lifespan

Electives (21 credits)

21 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.

Bachelor of Science (Nutritional Sciences) –

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

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

Minor Coordinator: Professor John Henning

Macdonald-Stewart Building, Room 3-038

Telephone: 514-398-7826

Required Courses (12 credits)

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

Complementary Courses (12 credits)

12 credits of complementary courses selected from:

AGEC 231	(3)	Economic Systems of Agriculture
AGEC 242	(3)	Management Theories and Practices
AGEC 320	(3)	Intermediate Microeconomic Theory
AGEC 332	(3)	Farm Management and Finance
AGEC 343	(3)	Accounting and Cost Control
A	(3)	Applied Econometrics

General Regulations

To obtain a Minor in Agricultural Production, students must:

a) ensure that their academic record at the University includes a C grade or higher in the courses as specified in the course requirements given below.

b) offer a minimum total of 24 credits from the courses as given below, of which not more than 6 credits may be counted for both the Major and the Minor programs. This restriction does not apply to elective courses in the Major program.

Required Courses (12 credits)

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

Complementary Courses (12 credits)

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

AGRI 215	(3)	Agro-Ecosystems Field Course
AGRI 340	(3)	Principles of Ecological Agriculture
ANSC 451	(3)	Dairy and Beef Production Management
ANSC 458	(3)	Swine and Poultry Production
PLNT 302	(3)	Forage Crops and Pastures
PLNT 307	(3)	Agroecology of Vegetables and Fruits
PLNT 331	(3)	Grains and Biofuel Crops

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.

Academic Adviser: Professor Roger Cue

Department of Animal Science

Telephone: 514-398-7805

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

Eukaryotic Cells and VirusesEukaryotic Cells and

Telephone: 514-398-8749

General Regulations

To obtain a Minor in Ecological Agriculture, students must:

a) Ensure that their academic record at the University includes a C grade or higher in the courses as speci

Telephone: 514-398-7775

6.6.8 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.

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 approv

Complementar y Cour ses (27 credits)

27 credits are selected as follows:

9 credits from the following:

FDSC 251	(3)	Food Chemistry 1
FDSC 300	(3)	Principles of Food Analysis 1
FDSC 305	(3)	Food Chemistry 2
FDSC 315	(3)	Separation Techniques in Food Analysis 1
FDSC 319	(3)	Food Commodities
FDSC 334	(3)	Analysis of Food Toxins and Toxicants
FDSC 410	(3)	Flavour Chemistry
FDSC 495D1	(1.5)	Food Science Seminar
FDSC 495D2	(1.5)	Food Science Seminar

6 credits from the following:

BREE 324	(3)	Elements of Food Engineering
FDSC 310	(3)	Post Harvest Fruit and Vegetable Technology
FDSC 330	(3)	Food Processing
FDSC 400	(3)	Food Packaging
FDSC 405	(3)	Food Product Development
FDSC 425	(3)	Principles of Quality Assurance

3 credits from the following:

FDSC 442	(3)	Food Microbiology
LSCI 230	(3)	Introductory Microbiology
NUTR 207	(3)	Nutrition and Health

9 credits from the following:

AGRI 510	(3)	Professional Practice
FDSC 515	(3)	Enzyme Thermodynamics/Kinetics
FDSC 519	(3)	Advanced Food Processing
FDSC 520	(3)	Biophysical Chemistry of Food
FDSC 530	(3)	Advanced Analytical Chemistry
FDSC 535	(3)	Food Biotechnology
FDSC 536	(3)	Food Traceability
FDSC 537	(3)	Nutraceutical Chemistry

6.8 Field Studies

6.8.1 African Field Stud y Semester

The Department of Geography, Faculty of Science, coordinates the 15-credit interdisciplinary African Field Study Semester. For more information, see *Field Studies and Study Abroad > African Field Study Semester*.

6.8.2 Barbados Field Stud y Semester

This program takes place at Bellairs Research Institute in Barbados; it is a full 15-credit program offered each Fall semester. For more information, see *Field Studies and Study Abroad > Barbados Field Study Semester*.

6.8.3 Barbados Inter disciplinar y Tropical Studies Field Semester

This 15-credit program is offered at the Bellairs Research Institute in Barbados. For more information, see *Field Studies and Study Abroad > Barbados Interdisciplinary Tropical Studies Field Semester*.

Panama Field Stud y Semester

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 Farm Management Technology

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

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, economics, 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 and encounters the many problems related to modern commercial agriculture. Students prepare for their Enterprise internship during both academic semesters of Year 1 through two Farm Practice courses.

During the second summer, students are registered in Entrepreneurship 1, which involves agricultural enterprises. The students will be responsible for data collection to be used in their Farm Project and the Nutrient Management Plan 2 when they return to campus for the Fall semester. The studenrn ms rel in theth academh

FMTP 004	(1.67)	Microcomputing (152-004-MC)
FMTP 014	(1.67)	Machinery Management (152-014-MC)
FMTP 018	(1.33)	Building Maintenance (152-018-MC)
FMTP 019	(1.67)	Tools & Machinery Maintenance (152-019-MC)
FMTP 021	(2)	Water and Soil Conservation (152-021-MC)
FMTP 024	(1.67)	Farm Building Planning (152-024-MC)
FMTP 027	(1.33)	Precision Farming (152-027-MC)

Agricultural Economics

FMTP 002	(1.33)	Introduction to Economics (152-002-MC)
FMTP 025	(2)	Farm Project (152-025-MC)

Physical Education

FMTP 090	(1)	Physical Activity and Health (109-101-MQ)
FMTP 091	(1)	Physical Activity and Effectiveness (109-102-MQ)
FMTP 095	(1)	Active Living (109-105-02)

Plant Science

FMTP 006	(2.67)	Agricultural Botany
FMTP 017	(1.33)	Pesticide Use

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

FMTP 028	(2.67)	Dairy Heifer Management (152-028-MC)
FMTP 029	(2.67)	Dairy Herd Management (152-029-MC)
FMTP 030	(2.67)	Swine and Poultry (152-030-MC)
FMTP 031	(2.67)	Beef and Sheep (152-031-MC)

Plant Science Categor y

FMTP 032	(2.67)	Fruit and Vegetable Crops (152-032-MC)
FMTP 033	(2.67)	Greenhouse Crops (152-033-MC)
FMTP 045	(2.67)	Field Crop Production (152-045-MC)
FMTP 046	(2.67)	Field Crop Management (152-046-MC)

Complementar y Cour ses*

Students must take the following complementary courses to meet the program requirements:

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

8.4 Entrance Requirements – FMT

1. Students should have a good practical knowledge of farming under eastern Canadian conditions. One year of experience is recommended, but under special conditions a four-month summer season is acceptable.
2. The minimum academic entrance requirements are a Quebec High School Leaving Certificate (Secondary V), or its equivalent and any other academic requirement set by the *Ministère de l'Éducation, du Loisir et du Sport* (MELS).
3. All candidates for admission must make arrangements to come to the Macdonald campus for an interview prior to admission to the program.
4. Admission to this program is only in the Fall semester.
5. We strongly encourage incoming students to acquire their driver's permit (both for cars **and** farm equipment) before coming to Macdonald campus. This is first for safety reasons, given that students work with farm equipment (Soil Preparation) very early on as they arrive at Macdonald. As well, most farmers require their employees and trainees (stagiaires) to drive and possess the appropriate driver's license.

8.5 Registration – FMT

Students in the Farm Management and Technology program must register online using Minerva at *www.mcgill.ca/minerva* for each semester at McGill.

Note: The University reserves the right to make changes without prior notice to the information contained in this publication, including the alteration of various fees, schedules, conditions of admission and credit requirements, and the revision or cancellation of particular courses. In normal circumstances, individual courses will not be offered with fewer than five registrants.

8.6 Academic Rules and Regulations – FMT

The Farm Management and Technology program follows the rules and regulations of McGill University as well as from the *Ministère de l'Éducation, du Loisir et du Sport du Québec* for the collegial level.

8.6.1 Sessional Dates – FMT

The number of teaching and examination days is set by the *Ministère de l'Éducation, du Loisir et du Sport du Québec*. The sessional dates vary from year to year. At the present time, each semester has 75 teaching days and seven days of exams.

8.6.2 Last Day for Withdrawal or Course Additions – FMT

The last day to make course registration changes for Fall term courses is September 20.

The last day to make course registration changes for Winter term courses is February 15.

8.6.3 Academic Standing – FMT

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

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

When a student's cumulative percent average (CPA) or semestrial percent average (SPA) first drops belo

- to establish and explain the principles followed in evaluating student learning;
- to describe the means of translating these principles into practice and to establish the required procedures;
- to articulate the appropriate responsibilities of students, instructors, departments, and academic administrators;
- to account to students, parents, universities, and employers for the standards of learning at the campus;
- to create an environment of awareness and free discussion of pedagogical concerns within all segments of the campus community;
- to provide information that will allow students to more fully understand and participate in the educational process;
- to provide the framework within which instructors and academic administrators can exercise their professional judgment in a competent, just, and coherent fashion.

Copies are available in the Library and students are informed of it at registration.

8.7 Fees and Expenses – FMT

8.7.1 Fees

Tuition fees for all full-time students who are eligible for the Farm Management and Technology program are paid by the *Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec*. Student Services and Student Societies' fees, as well as course material fees, will be charged according to the schedule in effect for all Macdonald campus students. At the time of publishing, the fees* were $841.10 for the Fall semester, and $680.67 for the Winter semester.

* 2010-11 fees, subject to change without notice.

8.7.2 Textbooks and Supplies

The cost of textbooks and supplies is estimated at $200.00 per semester.

8.7.3 Financial Assistance

In-Course Financial Aid (including loans and bursaries) is available to full-time students on the basis of demonstrated financial need; however, it is recommended that all applicants apply for the maximum government student assistance program for which they are eligible. Students may apply for In-Course Financial Aid through the *Financial Aid & Awards Menu* on Minerva and will then be asked to make an appointment with the Loan Administrator who visits the Student Services Centre, Macdonald campus, every Wednesday to meet with students with financial difficulties. For more information, see *University Regulations and General Information > Scholarships and Student Aid*, or contact the Student Services Centre at 514-398-7992.

8.8 Residence Accommodation – FMT

9.2 About the Depar tment of Animal Science

There are excellent programs av

Assistant Professors

Sarah Kimmins

Adjunct Professors

Hernan Baldassarre

Pierre Lacasse

Daniel Lefebvre

Bruce Murphy

10 Department of Bioresource Engineering

10.1 Location

Macdonald Stewart Building, Room MS1-027
McGill University, Macdonald Campus
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue, Quebec H9X 3V9
Canada

Telephone: 514-398-7773
Fax: 514-398-8387
Email: *shiv.prasher@mcgill.ca*
Website: *www.mcgill.ca/bioeng*

10.2 About the Department of Bioresource Engineering

Bioresource Engineering is an interdisciplinary program that integrates engineering, design, and the biological sciences. It is a unique profession that applies engineering principles to the enhancement and sustainability of the world's natural resources. Bioresource engineers seek solutions to problems that involve plants, animals, and the environment. Bioresource Engineering includes the design, construction, operation, maintenance, remediation, and upgrading of systems that contain biological components. This also includes the design of many of the technological constructions that are part of such systems. Thus, Bioresource Engineering includes quite a few sub-disciplines, which are linked because of their biological orientation.

10.3 Department of Bioresource Engineering Faculty

Chair

Shiv O. Prasher

Emeritus Professors

Robert S. Broughton

Robert Kok

Professors

Suzelle Barrington

Chandra Madramootoo (*James McGill Professor*)

Edward McKyes

Professors

Shiv O. Prasher (*James McGill Professor*)

G.S. Vijaya Raghavan (*James McGill Professor*)

Associate Professors

Viacheslav Adamchuk

Michael O. Ngadi (*William Dawson Scholar*)

Assistant Professors

Jan Adamowski

Grant Clark

Mark Lefsrud

Valérie Orsat

Adjunct Professors

Joyce Boye

Young Choi

Murray Clamen

Aleksandra Drizo

Samuel Gameda

Serge Guiot

Pierre Jutras

Stephen Light

Jose Martinez

Philippe Savoie

Boris Tartakovsky

Clément Vigneault

Faculty Lecturers

Alice Cherestes

Marcia Knutt

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, Quebec H9X 3V9
Canada

Telephone: 514-398-7898
Fax: 514-398-7977

Email: *foodscience@mcgill.ca*
Website: *www.mcgill.ca/foodscience*

11.2 About the Depar tment of Food Science

Food Science is a multidisciplinary fi

Email: *info@nrs.mcgill.ca*
Website: *www.mcgill.ca/nrs*

12.2 About the Depar tment of Natural Resour ce Sciences

Our environment is comprised of many interacting components: interactions between the earth's atmosphere and forests or crops, between plants and other organisms in the soil, between soil properties and nutrients available to plants, between vegetation and the wildlife it supports, between ecological communities on the land and those of the rivers and lakes nearby

Associate Professors

Lyle Whyte

Assistant Professors

Elena Bennett (*joint appt. with McGill School of Environment*)

Gordon Hickey

Nicolas Kosoy (*joint appt. with McGill School of Environment*)

Anwar Naseem

Christopher Solomon

Curators

Stephanie Boucher

Christina Idziak

Associate Members

Colin A. Chapman (*Anthropology*)

Lauren J. Chapman (*Biology*)

David Green (*Redpath Museum*)

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13.2 About the Depar tment of Plant Science

Our understanding of biological systems has advanced exponentially during the 20th century, and technological developments now allow us to pose questions that simply could not be asked a few decades ago. We also live at a time of great challenges: the human population is now close to 7 billion and continues to rise at an alarming rate, the climate is changing, worldwide energy availability is going down, quality freshwater is getting scarce, biodiversity is disappearing, and a number of wild habitats are threatened by human activities.

Plant scientists have a crucial role to play in solving several of these problems. How can we keep feeding the growing population with quality food, while the resources to do so are scarcer than ever? How will plants react to a changing climate? How can we design effective conservation strategies to preserve biodiversity? The challenge of using the knowledge accumulated in the wledge accuusis/F2enges:0 1t solvints haat24.hallenw'1 0 r

Assistant Professors

Jean-Benoit Charron

Jaswinder Singh

Faculty Lecturers

Caroline Begg

Serge Lussier

David Wees

Associate Members

Gregory Brown (*Department of Biology*)

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

Adjunct Professors

Annick Bertrand

Marc Fortin

Sylvie Jenni

Shahrokh Khanizadeh

14 School of Dietetics and Human Nutrition

14.1 Location

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14.2 About the School 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 Faculty

Director

Kristine G. Koski

Professor Emerita

Harriet V. Kuhnlein

Professors

Luis B. Agellon

Timothy A. Johns

Associate Professors

Grace Egeland (*Canada Research Chair*)

Katherine Gray-Donald

Kristine G. Koski

Stan Kubow

Louise Thibault

Hope Weiler (*Canada Research Chair*)

Linda Wykes (*William Dawson Scholar*)

Grace S. Marquis (*Canada Research Chair*)

Lecturers

Peter Bender (PT)

Lynda Fraser (PT)

Mary Hendrickson

Linda Jacobs Starkey

Maureen Rose

Joane Routhier

Sandy Phillips

Hugues Plourde

TBA

Adjunct Professors

Laurie H.M. Chan

Kevin A. Cockell

Cross-Appointed Staff

Food Science and Agricultural Chemistry: Selim Kermasha

Medicine: Ross Andersen, Louis Beaumier, Franco Carli, Stephanie Chevalier, Réjeanne Gougeon, L. John Hoffer, Larry Lands, Errol Marliss, José Morais, Celia Rodd, Thomas Schricker, Jean-François Yale, Ralph Lattermann

Parasitology: Marilyn E. Scott

MUHC: Sonya Page

15 Institute of P arasitology

15.1 Location

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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.; Professor of Bioresource Engineering (*James McGill Professor*)

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Thomassin, Paul; B.Sc.(Agr.)(McG.), M.S., Ph.D.(Hawaii Pac.); Associate Professor of Agricultural Economics

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van de Voort, Frederik R.; B.Sc., M.Sc., Ph.D.(Br. Col.); Professor of Food Science and Agricultural Chemistry

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