



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

**Programs, Courses and University Regulations**

**2010-2011**





## Publication Information

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

The Faculty of Agricultural and Environmental Sciences is committed to excellence in teaching, research and service to ensure that human and future food, health and natural resource needs are met while protecting the environment.

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## 2 History of the Faculty

Dedicated to improving the quality of life in Quebec rural communities, William Christopher Macdonald founded the School of Agriculture, the School for Teachers and the School of Household Science at Macdonald College in Ste-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 over 1500 undergraduate and graduate students.

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## 3 Macdonald Campus Facilities

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### 3.1 Morgan Arboretum

The Morgan Arboretum has 245 hectares of managed and natural lands, fields and tree plantations used for environmental research and teaching in a wide range of courses. Eighteen formal tree collections contain groups of most Canadian trees and many useful and important exotics. In addition, over



## Minor Programs

[section 7.6.3 Minor Animal Health and Disease \(24 credits\)](#)

[section 7.6.4 Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Sc.\)\) - Minor Ecological Agriculture \(24 credits\)](#)

## Post-Baccalaureate Certificate Programs

[section 7.7.1 Certificate in Ecological Agriculture \(30 credits\)](#)

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## 5 About the Faculty of Agricultural and Environmental Sciences, including School of Dietetics and Human Nutrition (Undergraduate)

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

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

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

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

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### 5.3 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](http://www.mcgill.ca/applying) (Hons.)(Car



#### 5.4.4 Student Life

All undergraduate, postgraduate, and Business Management and Technology students are members of the Macdonald Campus Students' Society (MCS), through the 18-member Students' Council, involved in numerous campus activities such as social events, academic affairs, and the coordination of clubs and organizations. Student life is informal and friendly and student groups range from the Adventure Club to the Photography Society. Major social events include Orientation activities.

and deadlines rests with you. It is your responsibility to seek guidance if in doubt; misunderstanding or misapprehension will not be accepted as cause for dispensation from a regulation, deadline, program or fee requirement.

### 5.5.1 Minimum Credit Requirement

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

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

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

Students from outside Quebec who are admitted on the basis of a high school diploma enter the Freshman Major, which comprises 30 credits (see section 7.1: Freshman Major in this publication).

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

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

### 5.5.2 Minimum Grade Requirement

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

### 5.5.3 Academic Advisers

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

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

### 5.5.4 Categories of Students

#### 5.5.4.1 Full-Time Students

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

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

#### 5.5.4.2 Part-time Students

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

### 5.5.5 Academic Standing

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

#### 5.5.13.2 Deferred Examinations

The Faculty offers deferred exams for medical reasons and exceptional circumstances (to be approved by the Associate Dean (Student Affairs)) for the Fall and Winter period. Verify dates on the Important Dates website at [www.mcgill.ca/importantdates](http://www.mcgill.ca/importantdates) apply on Minerva and provide medical documentation to the Student Affairs Office.

#### 5.5.14 Degree Requirements

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

In addition, if you are a student in the Dietetics program, you must have completed the Stages of professional formation requiring a CGPA of 2.00.

You must have completed all Faculty and program requirements; see the section 5.5.1 Minimum Credit Requirements section of this publication.

In order to qualify for a McGill degree, you must complete a minimum residency requirement of 60 credits at McGill. If you are in the B.Sc.(Ag.Sc.), you must take a minimum of 2/3 of your course credits within the Faculty of Agricultural and Environmental Sciences.

#### 5.5.15 Dean's Honour List

For information on the designation of Dean's Honour List awarded at graduation, see the University Regulations and General Information > Dean's Honour List section in this publication.

#### 5.5.16 Distinction

For information on the designation of Distinction awarded at graduation, see the University Regulations and General Information > Distinction in this publication.

#### 5.5.17 Honours and First Class Honours

Departments may recommend to the Faculty that graduating students registered in an Honours program be awarded Honours or First-Class Honours under the following conditions:

you must complete all Honours program requirements; for Honours, the CGPA at graduation must be at least 3.00;

for First-Class Honours, the CGPA at graduation must be at least 3.50;

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

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

#### 5.5.18 Medals and Prizes

Various medals, scholarships and prizes are open to graduating students. No application is required. Full details of these are set out in the Undergraduate Sc

Signatures



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### 6.3 Bachelor of Science in Agriculture and Environmental Sciences - B.Sc.(Ag.Env.Sc.)

See [section 7.2 Bachelor of Science \(Agriculture and Environmental Sciences\) B.Sc.\(Ag.Env.Sc.\)](#) for details.

#### 6.3.1 Major Programs

Graduates of programs marked with an asterisk \* are eligible for membership in [Ordre des agronomes du Québec](#) and other provincial institutes of agriculture.

<p>Agricultural Economics*:</p> <ul style="list-style-type: none"><li>Agribusiness Option</li><li>Environmental Economics Option</li></ul> <p>Agro-Environmental Sciences*</p> <p>Environmental Biology</p> <p>Environment, under McGill School of Environment:</p> <ul style="list-style-type: none"><li>Biodiversity and Conservation Domain</li><li>Ecological Determinants of Health Domain</li><li>Environmetrics Domain</li><li>Food Production and Environment Domain</li><li>Land Surface Processes and Environmental Change Domain</li><li>Renewable Resource Management Domain</li><li>Water Environments and Ecosystems Domain</li></ul> <p>International Agriculture and Food Systems</p> <p>Life Sciences (Biological and Agricultural)</p>
--

#### 6.3.2 Specializations for Major Programs in the B.Sc.(Ag.Env.Sc.)

<p>Agricultural Economics</p> <p>Agriculture and Food Systems (Multidisciplinary)</p> <p>Animal Biology</p> <p>Animal Health and Disease</p> <p>Animal Production</p> <p>Applied Ecosystem Sciences</p> <p>Ecological</p>
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Food and Bioprocess Engineering Stream  
Soil and Water Engineering Stream  
Professional Agrology Stream

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

See [section 7.4 Bachelor of Science \(Food Science\) - B.Sc.\(F.Sc.\)](#) for details.

Food Science:

Food Chemistry Option  
Food Science Option

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### 6.6 Bachelor of Science in Nutritional Sciences - B.Sc.(Nutr.Sc.)

Two Majors are of

## 6.10 Post-Baccalaureate Certificate Programs

The Faculty offers the following post-baccalaureate certificate programs.

Ecological Agriculture

Food Science

## 6.11 Diploma Program

Diploma in Environment, under McGill School of Environment

## 6.12 Diploma in Collegial Studies

Farm Management and Technology

## 6.13 Environmental Sciences Programs

### 6.13.1 McGill School of Environment (MSE)

The MSE is a joint initiative of the Faculty of Agricultural and Environmental Sciences, the Faculty of Arts, the Faculty of Science, and the Faculty of Law. It offers a B.Sc.(Ag.Env.Sc.) Major in Environment, a B.Sc. Major in Environment, a B.A. & Sc. Interfaculty Program in Environment, a B.A. Faculty Program in Environment, a Minor in Environment and a Diploma in Environment. Many of the MSE programs allow you to choose to study exclusively on the Macdonald or downtown campuses, or to take advantage of both.

A list of the B.Sc.(Ag.Env.Sc.) Domains is given under [section 7.2 Bachelor of Science \(Agricultural and Environmental Sciences\) B.Sc.\(Ag.Env.Sc.\)](#). Further information on all programs is given under McGill School of Environment and on the MSE website [www.mcgill.ca/mse](http://www.mcgill.ca/mse)

### 6.13.2 Environmental Programs on the Macdonald Campus

A number of integrated environmental science programs are offered on the Macdonald Campus, particularly within the B.Sc.(Ag.Env.Sc.) and B.Eng.(Bioresource) degrees. The objective of these interdepartmental programs is to provide you with a well-rounded training in a specific interdisciplinary subject as well as the basis for managing natural resources. Complete list of the programs, [section 6 Overview of Programs Offered by the Faculty of Agricultural and Environmental Sciences](#)

## 7 Academic Programs

Degree programs at the undergraduate level in the Faculty may lead to a B.Sc. degree in Agricultural and Environmental Sciences (Ag.Env.Sc.), Food Science (F.Sc.), Nutritional Sciences (Nut.Sc.) or a B.Eng. degree in Bioresource Engineering. The Faculty also offers students the possibility to do concurrent B.Sc. degrees in both Food Science and Nutritional Sciences.

### 7.1 Freshman Major

Program Director

Dr. Marcia Knutt

Program Director

Telephone: 514-398-7976

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

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

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 6065 Calculus lab for 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 (13 credits)**

AEBI 122	(3)	Cell Biology
AEHM 205	(3)	Science Literacy
AEMA 102	(4)	Calculus 2
AGEC 201**	(3)	Principles of Macroeconomics

**Complementary Courses - Winter (3 credits)**

One of the following:

AGRI 120	(3)	Exobiospheres
BREE 103	(3)	Linear Algebra
NUTR 301	(3)	Psychology

Advising Notes:

\* Freshman students intending to major in Agricultural Economics in the B.Sc. (Ag. & EnSci.) degree program should note that the course AEBI 120



**Elective - Winter (3 credits)**

**Revision, Fall 2010. End of revision.**

**7.1.4 Bachelor of Science (Nutritional Sciences) (B.Sc.(Nutr.Sc.)) - Freshman Program (30 credits)**

**Revision, Fall 2010. Start of revision.**

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

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

Students require a minimum 2.50 CGPA order to progress into Year 1 of the Dietetics program.

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

**Revision, Fall 2010. End of revision.**

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

**Revision, Fall 2010. Start of revision.**

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

If you are entering university for the first time from a high school system (outside of 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







**Complementary Courses (9 credits)**

With the approval of the academic advisor, one introductory course in each of the following areas:

Accounting

Statistics

Written/oral Communication

**Specialization (21-24 credits)**

Specializations designed to be taken with the Agricultural Economics major:

-Agribusiness (24 credits)

-Environmental Economics (24 credits)

-Professional Agrology (21 credits)

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.

**7.2.3 B.Sc.(Ag.Env.Sc.) Agro-environmental Sciences Major****Program Director**

Roger I. Cue

Macdonald Stewart Building, room 1-080

Telephone: 514-398-7805

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

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

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

**Program Prerequisites**

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

**Required Courses (36 credits)**

AEBI 210	(3)	Organisms 1
AEHM 205	(3)	Science Literacy
AEMA 310	(3)	Statistical Methods 1
AGEC 200	(3)	Principles of Microeconomics
AGEC 231	(3)	Economic Systems of Agriculture
AGRI 215	(3)	Agro-Ecosystems Field Course
ANSC 250	(3)	Principles of Animal Science
ENVB 210	(3)	The Biophysical Environment
LSCI 204	(3)	Genetics

LSCI 211	(3)	Biochemistry 1
LSCI 230	(3)	Introductory Microbiology
SOIL 315	(3)	Soil Fertility and Fertilizer Use

### Complementary Courses (6 credits)

6 credits of Complementary courses selected as follows

One of:

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

One of:

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

### Specialization

Choose at least one specialization of 18 - 24 credits

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

- Agricultural Economics
- Animal Health and Disease
- Animal Production
- Ecological Agriculture
- Entomology
- International Agriculture
- Plant Production
- Plant Protection
- Professional Agronomy
- Soil and Water Resources

### Electives

To meet the minimum credit requirement for the degree.

## 7.2.4 B.Sc.(Ag.Env.Sc.) Environmental Biology Major

Program Director

Professor Chris Buddle  
 Macdonald- Stewart Building, room 2-076  
 Telephone: 514-398-8026

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

Macdonald-Stewart Building, Room 2-076

514-398-8026

### 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
AEMA 406	(3)	Quantitative Methods: Ecology
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
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
- Plant Protection
- 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, please refer to Academic Programs > Bachelor of Science (Agricultural and Environmental Sciences) - B.Sc.(Ag.ESc.) > Specializations, in this publication. Consult academic adviser for approval of specializations other than those listed above.

### **Electives**

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**Complementary Courses (12 credits)**

Select the complementary courses as follows:

One of:

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

9 credits from the following:

ANSC 250	(3)	Principles of Animal Science
BREE 217	(3)	Hydrology and Water Resources
ENTO 352	(3)	Control of Insect Pests
ENVB 305	(3)	Population & Community Ecology
FDSC 310	(3)	Post Harvest Fruit and Vegetable Technology
LSCI 202	(3)	Molecular Cell Biology
LSCI 204	(3)	Genetics
LSCI 230	(3)	Introductory Microbiology
NUTR 501	(3)	Nutrition in Developing Countries
PARA 410	(3)	Environment and Infection
PARA 515	(3)	Water, Health and Sanitation
PLNT 434	(3)	Weed Biology and Control
WILD 424	(3)	Parasitology

**Specialization**

Students should also complete at least two specializations of 18-24 credits, one of which should be the Specialization in International Development.

Specializations designed to be taken with the International Agriculture and Food Systems Major:

- Agricultural Economics
- Agriculture and Food Systems (Multidisciplinary)
- Animal Production
- Ecological Agriculture
- Health and Nutrition
- International Development (for IAFS students)
- Plant Production
- Soil and Water Resources

Note: For a complete list of specializations offered for students in the Bachelor of Science (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. Consult academic adviser for approval of specializations other than those listed above.

**Electives**

To meet the minimum credit requirement for the degree.

**7.2.6 B.Sc.(Ag.Env.Sc.) Life Sciences (Biological and Agricultural) Major**

Program Director

Professor Brian Driscoll  
Macdonald-Stewart Building, room 3-035  
Telephone: 514-398-7887

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

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

PLNT 304	(3)	Biology of Fungi
PLNT 315	(3)	Herbs and Medicinal Plants
PLNT 353	(3)	Plant Structure and Function
PLNT 424	(3)	Cellular Regulation
		Plant Ecoph

**Complementary Courses (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

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

A specialization in Agricultural Economics will complement a student's education in several ways. First, as a social science, Economics will provide an alternative perspective for students in the faculty. Second, the specialization will pro



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 12 credits from the block of complementary courses related to Food Systems and Consumption and 12 credits from the block of complementary courses related to Agricultural Production from the lists in the table below.

Specialization Adviser: Professor G.S. Raghavan

Macdonald-Stewart Building, Room 1-098

Telephone: 514-398-8731

### Complementary Courses (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
AGEC 333	(3)	Resource Economics
AGEC 343	(3)	Accounting and Cost Control
AGEC 430	(3)	Agriculture, Food and Resource Policy
AGEC 442	(3)	Economics of International Agricultural Development
ANSC 323	(3)	Mammalian Physiology
ANSC 424	(3)	Metabolic Endocrinology
ANSC 551	(3)	Carbohydrate and Lipid Metabolism
ANSC 552	(3)	Protein Metabolism and Nutrition
ECON 225	(3)	Economics of the Environment
ECON 326	(3)	Ecological Economics
FDSC 251	(3)	Food Chemistry 1
FDSC 319	(3)	Food Commodities
FDSC 330	(3)	Food Processing
LSCI 202	(3)	Molecular Cell Biology
LSCI 230	(3)	Introductory Microbiology
MICR 331	(3)	Microbial Ecology
MICR 341	(3)	Mechanisms of Pathogenicity
MICR 450	(3)	Environmental Microbiology
NRSC 221	(3)	Environment and Health
NRSC 512	(3)	Water: Ethics, Law and Policy
NUTR 337	(3)	Nutrition Through Life
NUTR 403	(3)	Nutrition in Society
NUTR 420	(3)	Toxicology and Health Risks
NUTR 501	(3)	Nutrition in Developing Countries
NUTR 512	(3)	Herbs, Foods and Phytochemicals

PARA 410	(3)	Environment and Infection
PARA 438	(3)	Immunology
PARA 515	(3)	Water, Health and Sanitation
WILD 424	(3)	Parasitology

**Agricultural Production**

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)	Control of Insect Pests
FDSC 310	(3)	Post Harvest Fruit and Vegetable Technology
PLNT 300	(3)	Cropping Systems
PLNT 302	(3)	Forage Crops and Pastures
PLNT 307	(3)	Vegetable Production
PLNT 310	(3)	Plant Propagation
PLNT 312	(3)	Urban Horticulture
PLNT 315	(3)	Herbs and Medicinal Plants
PLNT 321	(3)	Fruit Production
PLNT 322	(3)	Greenhouse Management
PLNT 434	(3)	Weed Biology and Control
SOIL 315	(3)	Soil Fertility and Fertilizer Use

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

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

Specialization 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)**

9 credits selected from:

AEBI 451	(3)	Research Project 1
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

**7.2.7.6 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Animal Health and Disease (24 credits)****Revision, Fall 2010. Start of revision.**

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 working in laboratories where diseases are being researched.

Specialization Adviser: Professor Sarah Kimmins

Macdonald-Stewart Building, Room 1-091

514-398-7658

**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:

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

**Revision, Fall 2010. End of revision.****7.2.7.7 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 viability of livestock production at the national and international level. 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 in Agro-Environmental Sciences and the specialization in Professional Agriculture, it conforms with the eligibility requirements of the Ordre des agronomes du Québec.

Specialization Adviser: Professor Arif Mustafa

Macdonald-Stewart Building, Room 1-086

Telephone: 514-398-7506

#### 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 Courses (3 credits)

One of:

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

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

##### Revision, Fall 2010. Start of revision.

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

Specialization Adviser: Professor James Fyles

Macdonald-Stewart Building, Room 2-063

Telephone: 514-398-7758

#### Required Courses (12 credits)

AEMA 406	(3)	Quantitative Methods: Ecology
BREE 327	(3)	Bio-Environmental Engineering
ENVB 305	(3)	Population & Community Ecology
ENVB 415	(3)	Ecosystem Management

#### 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 Ecology
PLNT 460	(3)	Plant Ecology
WILD 307	(3)	Natural History of Vertebrates

**Revision, Fall 2010. End of revision.**

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

**Revision, Fall 2010. Start of revision.**

This specialization focuses on the principles underlying the practice of ecological agriculture as a managed ecosystem which responds to the environment. When coupled with the Major in Environmental Biology, the community ecology is examined; when combined with the Major in Environmental Sciences and the specialization in Professional Agriculture, this specialization focuses more directly on the practice of ecological agriculture and conforms with the eligibility requirements of the Ordre des agronomes du Québec. It is suitable for students wishing to

PLNT 460	(3)	Plant Ecology
SOIL 326	(3)	Soils in a Changing Environment
SOIL 335*	(3)	Soil Ecology and Management
SOIL 342	(3)	Organic Soil Fertilization
SOIL 445*	(3)	Agroenvironmental Fertilizer Use

**Revision, Fall 2010. End of revision.**

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

**Revision, Fall 2010. Start of revision.**

This specialization offers students a



514-398-7826

**Required Courses (9 credits)**

AEMA 406	(3)	Quantitative Methods: Ecology
ENVB 305	(3)	Population & Community Ecology
NRSC 437	(3)	Assessing Environmental Impact

**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
		Kn



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
PARA 515	(3)	Water, Health and Sanitation
PLNT 315	(3)	Herbs and Medicinal Plants
WILD 424	(3)	Parasitology

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

This specialization will provide the student with coursework and hands-on experience of techniques and issues related to agriculture in a tropical setting. Theoretical courses on the policies and practice of agriculture in an international context are complemented by participation in one of the international field semesters. Note that there is a selection process for participation in a field semester and that participation entails, in addition, students should consult the academic adviser for the specialization and carefully the prerequisites for courses in the field semester and the general requirements for participation, which may be more and above what is required by the student's major

Specialization Adviser: Professor Humberto Mondardes

Macdonald-Stewart Building 1-093

Telephone: 514-398-7809

#### Required Courses (6 credits)

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

#### Complementary Courses (18 credits)

**Barbados Interdisciplinary Tropical Studies Field Semester (Summer)**

15 credits selected as follows:

AEBI 421	(3)	Tropical Horticultural Ecology
AEBI 423	(3)	Sustainable Land Use
AEBI 425	(3)	Tropical Energy and Food
AEBI 427	(6)	Barbados Interdisciplinary Project

**Panama Field Study Semester (Winter)**

15 credits selected as follows:

AGRI 550	(3)	Sustainable Tropical Agriculture
BIOL 553	(3)	Neotropical Environments
ENVR 451	(6)	Research in Panama
GEOG 498	(3)	Humans in Tropical Environments

**7.2.7.15 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - International Development (IAFS) (24 credits)**

The specialization provides a focus on social science offerings from the International Development Studies program offered by the Faculty of Arts for students in the International Agriculture and Food Systems (IAFS) major. The program combines an overview of development and social science course options with opportunity for field experience.

Specialization Adviser: Professor Anwar Naseem

Macdonald-Stewart Building, Room 3-037

514-398-7825

**Required Course (3 credits)**

INTD 200	(3)	Introduction to International Development
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**Complementary Courses (21 credits)**

21 credits selected as follows:

3 credits of research or internship coursework

18 credits from one of two streams:

- Economic Development and Living Standards
- Environment and Agricultural Resources

**Research or Internship Coursework**

3 credits from:

AGRI 498	(3)	Agricultural Development Research
AGRI 499	(3)	Agricultural Development Internship

**Economic Development and Living Standards Stream**

Students selecting this stream complete 18 credits from:

AGEC 430	(3)	Agriculture, Food and Resource Policy
AGEC 442	(3)	Economics of International Agricultural Development
AGRI 411	(3)	Global Issues on Development, Food and Agriculture
ANTH 227	(3)	Medical Anthropology



MIME 524	(3)	Mineral Resources Economics
NRSC 340	(3)	Global Perspectives on Food
NRSC 540	(3)	Socio-Cultural Issues in Water
NUTR 501	(3)	Nutrition in Developing Countries
URBP 506	(3)	Environmental Policy and Planning
URBP 520	(3)	Globalization: Planning and Change

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

**Revision, Fall 2010. Start of revision.**

Students taking this specialization have a wide variety of life sciences course offerings to choose from to tailor 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 many opportunities in a variety of diverse bioscience industries; students with an appropriate GPA may proceed to a wide variety of post-graduate programs or professional schools.

Academic Adviser: Professor Brian Driscoll

Macdonald-Stewart Building 3-035

Telephone: 514-398-7887

**Complementary Courses (24 credits)**

24 credits of complementary courses are selected from the courses listed below:

12 credits - Fundamentals

12 credits Applications

**Complementary Courses - Fundamentals**

12 credits selected from:

ANSC 312	(3)	Animal Health and Disease
ANSC 323	(3)	Mammalian Physiology
ANSC 324	(3)	Developmental Biology and Reproduction
ANSC 330	(3)	Fundamentals of Nutrition
ANSC 400	(3)	Eukaryotic Cells and Viruses
ANSC 433	(3)	Animal Nutrition
ENTO 330	(3)	Insect Biology
ENTO 440	(3)	Insect Diversity
ENVB 305	(3)	Population & Community Ecology
ENVB 313	(3)	Phylogeny and Biogeography
ENVB 315	(3)	Science of Inland Waters
MICR 331	(3)	Microbial Ecology
MICR 338	(3)	Bacterial Molecular Genetics
MICR 450	(3)	Environmental Microbiology
NUTR 337	(3)	Nutrition Through Life
PARA 438	(3)	Immunology
PLNT 304	(3)	Biology of Fungi
PLNT 353	(3)	Plant Structure and Function
PLNT 358	(3)	Flowering Plant Diversity
PLNT 424	(3)	Cellular Regulation

PLNT 426	(3)	Plant Ecology
PLNT 460	(3)	Plant Ecology
WILD 375	(3)	Issues: Environmental Sciences
WILD 424	(3)	Parasitology

### Complementary Courses - Applications

12 credits selected from:

AEBI 451	(3)	Research Project 1
AEMA 406	(3)	Quantitative Methods: Ecology
ANSC 420	(3)	Animal Biotechnology
ANSC 424	(3)	Metabolic Endocrinology
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 352	(3)	Biocontrol of Pest Insects
ENTO 535	(3)	Aquatic Entomology
ENTO 550	(3)	Veterinary and Medical Entomology
ENVB 301	(3)	Meteorology
ENVB 430	(3)	GIS for Natural Resource Management
FDSC 442	(3)	Food Microbiology
MICR 341	(3)	Mechanisms of Pathogenicity
NUTR 420	(3)	Toxicology and Health Risks
NUTR 512	(3)	Herbs, Foods and Phytochemicals
PARA 410	(3)	Environment and Infection
PARA 515	(3)	Water, Health and Sanitation
PLNT 305	(3)	Plant Pathology
PLNT 310	(3)	Plant Propagation
PLNT 315	(3)	Herbs and Medicinal Plants
PLNT 434	(3)	Weed Biology and Control
PLNT 435	(3)	Plant Breeding
SOIL 335	(3)	Soil Ecology and Management

Revision, Fall 2010. End of revision.

#### 7.2.7.17 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Microbiology (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 GPA to post-graduate studies or professional biomedical schools.

Specialization Adviser: Professor J. Whyte

Macdonald-Ste

9 credits selected from:

AEBI 451	(3)	Research Project 1
ANSC 234	(3)	Biochemistry 2
ANSC 323	(3)	Mammalian Physiology
ANSC 400	(3)	Eukaryotic Cells and Viruses
ANSC 420	(3)	Animal Biotechnology
ANSC 508	(3)	Tools in Animal Biotechnology
ANSC 565	(3)	Applied Information Systems
BINF 511	(3)	Bioinformatics for Genomics
BTEC 535	(3)	Functional Genomics in Model Organisms
BTEC 555	(3)	Structural Bioinformatics
CELL 500	(3)	Techniques Plant Molecular Genetics
CELL 501	(3)	Plant Molecular Biology and Genetics
MIMM 324	(3)	Fundamental Virology

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

PLNT 490

(2)

Research Project

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

**Revision, Fall 2010. Start of revision.**

The goal of this specialization is to gi



**Required Courses (18 credits)**

ENTO 330	(3)	Insect Biology
ENTO 352	(3)	Control of Insect Pests
PLNT 304	(3)	Biology of Fungi
PLNT 305	(3)	Plant Pathology
PLNT 353	(3)	Plant Structure and Function
PLNT 434	(3)	Weed Biology and Control

**Complementary Courses (6 credits)**

6 credits of complementary courses selected from:

ENTO 340	(3)	Field Entomology
ENT	(3)	Parasitoid Behavioural Ecology

Note: students in the

6 credits from:

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

**Revision, Fall 2010. End of revision.**

**7.2.7.24 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 Avian Science and Conservation Centre, the McGill Arboretum, the Stoycroft Wildlife Area, the Molson Reserve and the Ecomuseum.

Specialization Adviser: Professor Murray Humphries

Macdonald-Stewart Building 2-069

Telephone: 514-398-7885

**Required Courses (13 credits)**

PLNT 358	(3)	Flowering Plant Diversity
WILD 307	(3)	Natural History of Vertebrates
WILD 401	(4)	Fisheries and Wildlife Management
WILD 421	(3)	Wildlife Conservation

**Complementary Courses (11 credits)**

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## 7.3 Bachelor of Engineering (Bioresource) - B.Eng.(Bioresource)

### 7.3.1 Bioresource Engineering Major

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

There are six streams offered within the Bioresource Engineering Major. The appropriate choice of elective course sets, a particular area of study may be emphasized. More information about these streams and the suggested course sets for each can be found on the Department website at [bioeng](#).

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

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

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

In the Food and Bioprocessing stream, students are taught about the engineering of foods and food processing, physical properties of biological materials, post-harvest technology, fermentation and bio-processing, the management of bio-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, computer 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 exclusively in 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 term beyond the normal requirements of the B.Eng.(Bioresource) program.

See [section 5.5.1 Minimum Credit Requirements](#) for prerequisites and minimum credit requirements.

### 7.3.2 About the B.Eng. (Bioresource) Program

Bioresource Engineering is the unique branch of engineering that includes Biological engineering and Bioengineering where professional engineering practice intersects with biological sciences. Bioresource Engineers design, develop and manage biological-based systems to operate in efficient and sustainable ways for the well being of the environment and society.

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

Academic Adviser-U1: Professor Grant Clark

Macdonald-Stewart Building, Room 1-099

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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

### Complementary Courses

60 credits of the complementary courses selected as follows

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 and Environment
	(3)	Social Impact of Technology

BREE 532	(3)	Post-Harvest Storage
BREE 533	(3)	Water Quality Management
CHEE 474	(3)	Biochemical Engineering
CIVE 317	(3)	Structural Engineering 1
CIVE 318	(3)	Structural Engineering 2

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

##### Revision, Fall 2010. Start of revision.

Academic Adviser-U1: Professor Grant Clark

Macdonald-Stewart Building, Room 1-099

Telephone: 514-398-7784

##### Required Courses (56 credits)

AEMA 202	(3)	Intermediate Calculus
AEMA 305	(3)	Differential Equations
AGRI 330	(1)	Agricultural Legislation
AGRI 430	(2)	Professional Practice 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

##### Complementary Courses

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

One course selected from:

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

**Set B - Natural Sciences**

6 credits from each of the following two groups:

**Group 1 - Biology**

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

**Group 2 - Agricultural Sciences**

AEBI 210	(3)	Organisms 1
ANSC 250	(3)	Principles of Animal Science
ANSC 433	(3)	Animal Nutrition
ANSC 451	(3)	Dairy and Beef Production Management
ANSC 458	(3)	Swine and Poultry Production
PLNT 203	(3)	Economic Botany
PLNT 300	(3)	Cropping Systems
PLNT 302	(3)	Forage Crops and Pastures
PLNT 307	(3)	Vegetable Production
PLNT 312	(3)	Urban Horticulture
PLNT 321	(3)	Fruit Production
PLNT 322	(3)	Greenhouse Management
PLNT 331	(3)	Grains and Biofuel Crops

**Set C - Social Sciences**

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

Plus one 3 credit social sciences, management studies, humanities or language course with permission of the academic adviser

#### Set D - Engineering

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

(Minimum of 6 credits from Group 1 or Group 2 be)

#### Group 1 - Soil and Water

BREE 214	(3)	Geomatics
BREE 217	(3)	Hydrology and Water Resources
BREE 322	(3)	Organic Waste Management
BREE 416	(3)	Engineering for Land Development
BREE 418	(3)	Soil Mechanics and Foundations
BREE 430	(3)	GIS for Natural Resource Management
BREE 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 Processing

BREE 325	(3)	Food Process Engineering
BREE 519	(3)	Advanced Food Engineering
BREE 520	(3)	Food, Fibre and Fuel Elements
BREE 530	(3)	Fermentation Engineering
BREE 531	(3)	Post-Harvest Drying
BREE 532	(3)	Post-Harvest Storage
CHEE 474	(3)	Biochemical Engineering

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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

Revision, Fall 2010. End of revision.

### 7.3.5 Bachelor of Engineering (Bioresource) - B.Eng.(Bioresource) Related Programs

#### 7.3.5.1 Minor in Environmental Engineering

For more information, see [Minor in Environmental Engineering \(27 credits\)](#)

#### 7.3.5.2 Barbados Field Study Semester

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

#### 7.3.5.3 Barbados Interdisciplinary Tropical Studies Field Semester

For more information, see [Field Studies and Study Abroad > Field Studies > Barbados Interdisciplinary Tropical Studies Field Semester](#)

#### 7.3.5.4 Internship Opportunities and Co-op Experiences

For more information, see [Internship Opportunities and Co-op Experiences](#)

## 7.4 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 which are directly related to the discipline.

### Freshman Adviser

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

### 7.4.1 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 production development capacities.

Graduates have the academic qualifications for membership in the Canadian Institute of Food Science and Technology (CIFST 236.483 Tm) (e the academic qua. 8

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
NUTR 207	(3)	Nutrition and Health

### Electives (21 credits)

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

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

This program is intended for those students interested in the multidisciplinary field of food science. The courses are integrated to acquaint the student with food processing, food chemistry, quality assurance, analytical procedures, food products, standards, 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 Chemistry Option can also qualify for recognition by the Institute of Food Technologists (IFT) and the Ordre des chimistes du Québec (OCQ). Food Chemistry Option is completed to 90 credits with free electives.

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

Academic Adviser-U1: Professor Sara 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 (OC 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
NUTR 207	(3)	Nutrition and Health

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

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

FDSC 233	(3)	Physical Chemistry
FDSC 305	(3)	Food Chemistry 2
FDSC 315	(3)	Separation Techniques in Food Analysis 1
FDSC 334	(3)	Analysis of Food Toxins and Toxicants
FDSC 405	(3)	Product Development
FDSC 410	(3)	Flavour Chemistry
FDSC 490	(3)	Research Project 1
FDSC 491	(3)	Research Project 2
FDSC 515	(3)	Enzyme Thermodynamics/Kinetics
FDSC 520	(3)	Biophysical Chemistry of Food

### Electives (9 credits)

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

### Concurrent Bac

FDSC 300	(3)	Principles of Food Analysis 1
FDSC 305	(3)	Food Chemistry 2
FDSC 310	(3)	Post Harvest Fruit and Vegetable Technology
FDSC 315	(3)	Separation Techniques in Food Analysis 1
FDSC 319	(3)	Food Commodities
FDSC 330	(3)	Food Processing
FDSC 334	(3)	Analysis of Food Toxins and Toxicants
FDSC 400	(3)	Food Packaging
FDSC 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 442	(3)	Economics of International Agricultural Development
AGEC 450	(3)	Agriculture Business Management

At least 9 credits from the following:

AGEC 242	(3)	Management Theories and Practices
ENVR 203	(3)	Knowledge, Ethics and Environment
NRSC 340	(3)	Global Perspectives on Food
NUTR 301	(3)	Psychology
NUTR 322	(2)	Applied Sciences Communication
NUTR 446	(3)	Applied Human Resources

12 credits from the following:

FDSC 480	(12)	Industrial Stage/Food
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NUTR 480

(12)

Industrial Stage/Nutrition

### Electives

13 credits to meet the credit requirements for the degree

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

Unique in North America, the new concurrent degree program in Food Science and Nutritional Sciences provides 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 processing and packaging to provide consumers with quality food. 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.

#### 7.4.4 Bachelor of Science (Food Science) - B.Sc.(F.Sc.) Related Programs

##### 7.4.4.1 Certificate in Food Science

Detailed information on this certificate program can be found under [Section 7.7.3 Certificate in Food Science \(30 credits\)](#) in this publication.

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### 7.5 Bachelor of Science (Nutritional Sciences) - B.Sc.(Nutr.Sc.)

#### 7.5.1 [Dietetics Major](#)

may work in health-care settings, nutrition counselling centres, clinics and private practice. As community nutritionists, dietitians are involved in nutrition education programs through school boards, sports centres and local and international health organizations. A dietitian in the food service sector participates in all aspects of management to assure quality food products and services. Postgraduate programs are available to qualified graduates. The duration of the program is three and one-half years.

Successful graduates are qualified to apply for membership with the Ordre professionnel des diététistes du Québec (OPDQ) or other provincial regulatory bodies, as well as Dietitians of Canada. Five weeks of supervised professional experience, "Stage", in clinical and community nutrition and food service systems management are included in the graduate program.

Please 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

**Notes:**

The School normally 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 the next Stage. Each level is a prerequisite for the next level and must be passed with a minimum grade of C. Graduate registration is restricted to students in the Dietetics Major with a GPA greater than or equal to 3.0. Visiting and Special students must contact the Academic Advising Coordinator 01 493.9791.

NUTR 436	(2)	Nutritional Assessment
NUTR 438	(2)	Interviewing and Counselling
NUTR 446	(3)	Applied Human Resources
NUTR 450	(3)	Research Methods: Human Nutrition
NUTR 510*	(14)	Professional Practice - Stage 4
NUTR 545	(5)	Clinical Nutrition 2

**Complementary Courses (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 Behavioral Science courses chosen from:

NUTR 301	(3)	Psychology
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Or equiv





3 credits, one of the following courses:

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

#### **Food Function and Safety**

12 credits are selected as follows

FDSC 300	(3)	Principles of Food Analysis 1
FDSC 315	(3)	Separation Techniques in Food Analysis 1
FDSC 319	(3)	Food Commodities
FDSC 425	(3)	Principles of Quality Assurance

#### **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.

**Revision, Fall 2010. End of revision.**

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

**Revision, Fall 2010. Start of revision.**

This major covers the many aspects of human nutrition and food and, first, an education in the scientific fundamentals of these disciplines and second, an opportunity to focus in (a) nutritional biochemistry and metabolism, (b) global nutrition issues, (c) food function, preservation and safety and/or (d) sports nutrition. Graduates are qualified for careers in pharmaceutical and/or food industry research laboratories, the health science communications

ANSC 323	(3)	Mammalian Physiology
FDSC 305	(3)	Food Chemistry 2

**Term 4**

ANSC 424	(3)	Metabolic Endocrinology
NUTR 337	(3)	Nutrition Through Life
NUTR 344	(4)	Clinical Nutrition 1

**Term 5**

NUTR 420	(3)	Toxicology and Health Risks
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 Global Nutrition set

3 credits, one of the following courses:

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

**Global Nutrition**

12 credits are selected as follows

AGRI 340	(3)	Principles of Ecological Agriculture
NRSC 340	(3)	Global Perspectives on Food
NUTR 403	(3)	Nutrition in Society
NUTR 501	(3)	Nutrition in Developing Countries

**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.

**Revision, Fall 2010. End of revision.**

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

**Revision, Fall 2010. Start of revision.**

This major covers the many aspects of human nutrition and food and, first, an education in the scientific fundamentals of these disciplines and second, an opportunity to focus in (a) nutritional biochemistry and metabolism, (b) global nutrition issues, (c) food function, preservation and safety and/or (d) sports nutrition. Graduates are qualified for careers in pharmaceutical and/or food industries, research laboratories, the health science communications field, sports clinics and national or international food support programs. Graduates often continue on to further studies preparing for careers in research, medicine, and dentistry or as specialists in nutrition. Aside from working as university teachers and researchers, postgraduates may be employed by government and health protection agencies, international development programs or in the food sector. (Currently under revision)

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

Academic Advising Coordinator: Professor Kristine Colki

School of Dietetics and Human Nutrition

**Required Courses (54 credits)**

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

**Term 1**

Note: The program requirements are under review.

LSCI 211	(3)	Biochemistry 1
NUTR 207	(3)	Nutrition and Health
NUTR 214	(4)	Food Fundamentals

**Term 2**

ANSC 234	(3)	Biochemistry 2
FDSC 251	(3)	Food Chemistry 1
LSCI 230	(3)	Introductory Microbiology
NUTR 322	(2)	Applied Sciences Communication

**Term 3**

AEMA 310	(3)	Statistical Methods 1
ANSC 323	(3)	Mammalian Physiology
FDSC 305	(3)	Food Chemistry 2

**Term 4**

ANSC 424	(3)	Metabolic Endocrinology
NUTR 337	(3)	Nutrition Through Life
NUTR 344	(4)	Clinical Nutrition 1

**Term 5**

NUTR 420	(3)	Toxicology and Health Risks
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 Nutritional Biochemistry set

3 credits, one of the following courses:

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

**Nutritional Biochemistry**

12 credits are selected as follows

ANSC 551	(3)	Carbohydrate and Lipid Metabolism
ANSC 552	(3)	Protein Metabolism and Nutrition
LSCI 204	(3)	Genetics
PARA 438	(3)	Immunology

#### **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.

**Revision, Fall 2010. End of revision.**

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

**Revision, Fall 2010. Start of revision.**

This major covers the many aspects of human nutrition and food and, first, an education in the scientific fundamentals of these disciplines and second, an opportunity to focus in (a) nutritional biochemistry and metabolism, (b) global nutrition issues, (c) food function, preservation and safety and/or

NUTR 344 (4) Clinical Nutrition 1

**Term 5**

NUTR 420 (3) Toxicology and Health Risks

NUTR 450 (3) Research Methods: Human Nutrition

NUTR 512 (3) Herbs, Foods and Phytochemicals

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

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

Students are advised to consult their major program adviser and the academic adviser of the minor in their first year of registration for their penultimate year. Students must declare their intent to obtain a Minor in Agricultural Production with the agreement of their major program adviser. They must submit their program of courses already taken and to be taken in their final year to the academic adviser of the Agricultural Production Minor. The academic adviser of the Agricultural Production Minor will then certify which courses the student will apply to.

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:

AEBI 451	(3)	Research Project 1
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

**7.6.3 Minor Animal Health and Disease (24 credits)**

**Revision, Fall 2010. Start of revision.**

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

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

Academic Adviser: Professor Sarah Kimmins

Macdonald-Stewart Building, Room 1-091

Telephone: 514-398-7658

**Required Courses (15 credits)**

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

**Complementary Courses (9 credits)**

9 credits selected from the following list:

AEBI 451	(3)	Research Project 1
ANSC 251	(3)	Comparative Anatomy



ANSC 330	(3)	Fundamentals of Nutrition
ANSC 350	()	
PARA 410	(3)	Environment and Infection
WILD 311	(3)	Ethology
WILD 424	(3)	Parasitology

PLNT 434	(3)	Weed Biology and Control
PLNT 460	(3)	Plant Ecology
SOIL 326	(3)	Soils in a Changing Environment
SOIL 335*	(3)	Soil Ecology and Management
SOIL 342	(3)	Organic Soil Fertilization
SOIL 445*	(3)	Agroenvironmental Fertilizer Use

Revision, Fall 2010. End of revision.

### 7.6.5 Minor in Entrepreneurship



Note: Students will no longer be admitted into the Minor in Entrepreneurship as it is being suspended. For additional information on the Minor in Entrepreneurship, consult the 2007-2008 Undergraduate Programs Calendar available at [www.mcgill.ca/students/coes/calendar](http://www.mcgill.ca/students/coes/calendar).

### 7.6.6 Minor in Environmental Engineering (27 credits)

The Minor program consists of 27 credits in courses that are environment related. By means of a judicious choice of complementary and elective courses, Bioresource Engineering students may obtain this Minor with a minimum of 12 additional credits.

The Environmental Engineering Minor is administered by the Faculty of Engineering, Department of Civil Engineering and Applied Mechanics (see Faculty of Engineering > Environmental Engineering Minor).

Courses available in the Faculty of 8.1 Tf 1 0 0 11Tj

### Complementary Courses (18 credits)

18 credits are selected as follows:

3 credits in biochemistry, one of:

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

3 credits in physiology, one of:

ANSC 323	(3)	Mammalian Physiology
PHGY 202	(3)	Human Physiology: Body Functions
PHGY 210	(3)	Mammalian Physiology 2

3 credits in nutrition, one of:

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

9 credits are selected as follows:

ANSC 551	(3)	Carbohydrate and Lipid Metabolism
ANSC 552	(3)	Protein Metabolism and Nutrition
NUTR 403	(3)	Nutrition in Society
NUTR 420	(3)	Toxicology and Health Risks
NUTR 436	(2)	Nutritional Assessment
NUTR 501	(3)	Nutrition in Developing Countries
NUTR 512	(3)	Herbs, Foods and Phytochemicals
NUTR 551	(3)	Analysis of Nutrition Data
PATH 300	(3)	Human Disease

One of:

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

One of:

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

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## 7.7 Post-Baccalaureate Certificate Programs

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

Ecological Agriculture
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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

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## 7.8 Field Studies

### 7.8.1 African Field Study Semester

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## 9 Farm Management and Technology Program

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### 9.1 Location

Farm Management and Technology Program  
Faculty of Agricultural and Environmental Sciences  
Macdonald Campus of McGill University  
21,111 Lakeshore Road, Harrison House  
Sainte-Anne-de-Bellefleur, Quebec H9X 3V9

Telephone: 514-398-7814

Fax: 514-398-7955

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

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

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### 9.2 Farm Management and Technology Program Faculty

Director

Peter Enright

Associate Director

Sege Lussier

---

**Diploma Farm Manag**

FMTP 001	(1.33)	Farm Practice 1 (152-001-MC)
FMTP 007	(2)	Health and Farm Safety (152-007-MC)
FMTP 011	(1.33)	Farm Practice 2 (152-011-MC)
FMTP 036	(6)	Enterprise Internship (152-036-MC)
FMTP 037	(2.33)	Entrepreneurship 1 (152-037-MC)

### Bioresource Engineering

FMTP 003	(2)	Soil Preparation (152-003-MC)
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)
FMTP 038	(2)	Financial and Managerial Accounting (152-038-MC)
FMTP 039	(1.67)	Agri-Marketing (152-039-MC)
FMTP 042	(2.33)	Budgeting, Finance and Policies (152-042-MC)
FMTP 043	(2.67)	Entrepreneurship 2 (152-043-MC)
FMTP 044	(1.33)	Management of Human Resources (152-044-MC)

### Animal Science

FMTP 005	(1.33)	Animal Anatomy and Physiology
FMTP 008	(2.33)	Introduction to Animal Science (152-008-MC)

### English

FMTP 077	()	
FMTP 080	(2)	English Upgrading
FMTP 082	(2.33)	Literary Genres (603-102-04)
FMTP 083	(2.33)	Literary Themes (603-103-04)
FMTP 084	(2)	English for FMT (603-VSA-04)

### Français

FMTP 075	(2)	Langue française et communication (602-101-03)
FMTP 098	(2)	Français agricole (602-VSG-MC)

### Humanities



FMTTP 085	(2.33)	Humanities 1: Knowledge (345-103-04)
FMTTP 086	(2)	Humanities 2: World Views (345-102-03)
FMTTP 087	(2)	Humanities 3: Environment & Org. Issues (345-VSH-MC)

### Natural Resource Sciences

FMTTP 009	(2.67)	Soil Fertilization (152-009-MC)
FMTTP 040	(1.67)	Nutrient Management Plan 1 (152-040-MC)
FMTTP 041	(1.33)	Nutrient Management Plan 2 (152-041-MC)

### Physical Education

FMTTP 090	(0)	
FMTTP 094	(1)	Physical Activity (109-104-02)
FMTTP 095	(1)	Active Living (109-105-02)

### Plant Science

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

### Elective Production Courses

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

### Animal Science Category

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

### Plant Science Category

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

### Complementary Courses\*

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

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

FMTTP 096	(2)	Forests, Forestry and Society (305-032-MC)
FMTTP 097	(2)	Landscape Design (504-VSG-MC)

### Comprehensive Assessment

The objective of this examination is to ensure that students have attained the objectives and standards for each competency in the program. Successful completion of the Comprehensive Assessment is mandatory to obtain the D.E.C.

The passing grade is 60% the mark indicating that the student has successfully completed the Comprehensive Assessment will appear on the student's transcript.

### English Exit Examination

All students who wish to graduate and obtain the D.E.C. must pass the English Exit Examination offered by the M.E.L.S. Students must take this examination on the date selected by the M.E.L.S.

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## 9.4 Entrance Requirements FMT

1. Students should have a good practical knowledge of farming under eastern Canadian conditions. One year experience is recommended under special conditions a four month summer season is acceptable.
2. The minimum academic entrance requirements are a Quebec High School Certificate (Secondary), or its equivalent and any other academic requirement set by the M.E.L.S.
3. All candidates for admission must make arrangements to come to the Macdonald Campus for an interview 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 car and farm equipment) before coming to Macdonald Campus. This is first for safety reasons, so that students work with farm equipment (Soil Preparation) early on as they arrive at Macdonald. As well, most farmers require that their employees and stagiaires know how to drive and possess the appropriate license.

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## 9.5 Registration FMT

Students in the Farm Management and Technology Program must register online using Minerva at [www.mcgill.ca/minerva](http://www.mcgill.ca/minerva) for each semester at McGill.



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

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## 9.6 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.

### 9.6.1 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 7 days of exams.

### 9.6.2 Last Day for Withdrawal or Course Additions

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

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

### 9.6.3 Academic Standing - FMT

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

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 (CP) or semestrial percent average (SP) first drops below 60%, or they fail four or more courses in a semester, withdrawal is advised. Students who choose to remain in the program are on probation.

Students on probation are normally permitted to take for not more than 10 credits per semester. They are not permitted to be on probation for more than one semester unless they obtain an SP of 70% or higher.

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

#### 9.6.4 Handbook on Student Rights and Responsibilities

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

#### 9.6.5 Institutional Policy on the Evaluation of Student Achievement - FMT

The policy has the following objectives:

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

Copies are available in the Library and students are informed of its location.

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### 9.7 Fees and Expenses FMT

#### 9.7.1 Fees

Tuition fees for all full-time students who are eligible for the B.A. 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 according to the schedule in effect for all Macdonald Campus students. At the time of publishing, the fees\* were \$818.60 for the 1<sup>st</sup> semester and \$673.55 for the 2<sup>nd</sup> semester.

\* 2009-10 fees, subject to change without notice.

#### 9.7.2 Textbooks and Supplies

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

#### 9.7.3 Financial Assistance

In-Course Financial Aid (including loans and bursaries) is available to full-time students on the basis of demonstrated financial need. It is recommended that all applicants apply for the maximum amount student assistance program for which they are eligible. Students may apply for In-Course Financial Aid through the Financial Aid 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. More information see University Regulations and General Information > Scholarships and Student Aid, or contact the Student Services Centre at 514-398-7992.

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### 9.8 Residence Accommodation FMT

The Laird Hall Residence has a capacity of 250 students. It accommodates undergraduate, graduate, and B.A. Management and Technology Program students on the Macdonald Campus. For more information, please refer to University Regulations.

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## 10 Department of Animal Science

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### 10.1 Location

Macdonald Stewart Building - Room MS1-084  
Telephone: 514-398-7794  
Fax: 514-398-7964

Associate Professors

Vilceu Bordignon

Roger I. Cue

Humberto G. Monardes

Arif Mustaf

**11.3 Department of Bioresource Engineering Faculty**

Chair

Shiv O. Prasher

Emeritus Professors

Robert S. Broughton

Robert Kik

Professors

Suzelle Barrington

Chandra Madramootood (James McGill Professor)

Edward McKyes

Shiv O. Prasher (James McGill Professor)

G.S. Vijaya Raghavan (James McGill Professor)

Associate Professor

Michael O. Ngidi (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

Sege Guiot

Pierre Jutras

Jose Martinez

Philippe Savoie

Boris Tartakovsky

Clément Vigneault

Ning Wang

Faculty Lecturers

Alice Cherestes

Marcia Knutt

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## 12 Department of Food Science and Agricultural Chemistry

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### 12.1 Location

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

Telephone: 514-398-7898  
Fax: 514-398-7977  
Email: [foodscience@mcgill.ca](mailto:foodscience@mcgill.ca)  
Website: [www.mcgill.ca/foodscience](http://www.mcgill.ca/foodscience)

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### 12.2 About the Department of Food Science

Food Science is a multidisciplinary field involving chemistry, biochemistry, nutrition, microbiology and processing to apply the scientific knowledge to solve real problems associated with the facets of the food system. Food Science is still a relatively new and growing discipline, brought about mainly as a response to the social changes taking place in Africa and other parts of the developed world. The current trend towards merger between food and pharmaceutical industries to produce the next generation of new food products such as functional foods and nutraceuticals is the biggest challenge facing the discipline of Food Science today. You can be part of it. The programs offered are B.Sc. Food Science (Food Chemistry or Food Science option) and Concurrent degree which includes B.Sc. Food Science/B.Sc. Nutritional Science. For more information on these programs, see [section 7.4 Bachelor of Science \(Food Science\) - B.Sc. \(F.S.\)](#)

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### 12.3 Department of Food Science and Agricultural Chemistry Faculty

Chair

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## 13 Department of Natural Resource Sciences

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### 13.1 Location

Macdonald Stewart Building Room MS3-040  
McGill University, Macdonald Campus  
21,111 Lakeshore Road  
Sainte-Anne-de-Bellefleur, Quebec H9X 3V9  
Canada

Telephone: 514-398-7890  
Fax: 514-398-7990  
Email: [info@ns.mcgill.ca](mailto:info@ns.mcgill.ca)  
Website: [www.mcgill.ca/ns](http://www.mcgill.ca/ns)

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### 13.2 About Department of Natural Resource Sciences

The courses and academic programs offered by the Department of Natural Resource Sciences allow students to explore interactions among the components of terrestrial and aquatic ecosystems, and enhance through the development of a strong, interdisciplinary background in fundamental, applied and social 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 rivers and lakes nearby, between microbial organisms and food safety and disease, between insects, plants and animals, between human activities such as agriculture, forestry and industrial development and natural ecological processes. In turn, all these processes are greatly affected by the actions of governments that rely primarily on feedback from societal and industrial groups, economists, and experts to provide guidelines for the management of our natural resources.

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### 13.3 Department of Natural Resource Sciences Faculty

#### Chair

Benoît Côté

#### Emeritus Professors

Nayana N. Barthakur

Edmund Idziak

Angus F. Mackenzie

Robert A. MacLeod

Peter H. Schuepp

Robin K. Stewart

#### Professors

David M. Bird

Peter Brown (joint appoint. with Geography and McGill School of Environment)

James V. Fyles (Tomlinson Professor of Forest Ecology)

William H. Hendershot

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## Associate Professors

Christopher Buddle  
 Benoît Côté  
 Mark A. Curtis  
 Brian T. Driscoll  
 Gary B. Dunphy  
 John Henning  
 Murray Humphries  
 David J. Lewis  
 Donald F. Niven  
 Manfred E. Rau  
 Ian Strachan  
 Paul Thomassin  
 Joann Whalen  
 Terry A. Wheeler  
 Lyle Whyte

## Assistant Professors

Elena Bennett (joint appoint. with McGill School of Environment)  
 Gordon Hickey  
 Anwar Naseem

## Curators

Stephanie Boucher  
 Christina Idziak

## Associate Members

Colin A. Chapman (Anthropology)  
 Lauren J. Chapman (Biology)  
 David Green (Redpath Museum)  
 William D. Marshall (Dept. of Food Science and Agricultural Chemistry)  
 Donald L. Smith (Dept. of Plant Science)  
 Marilyn Scott (Institute of Parasitology)

## Adjunct Professors

Denis Angers  
 Suzanne Beauchemin  
 Dominique Berteaux  
 Guy Boivin  
 Michel Bouchard  
 Kimberly Fernie  
 Charles W. Greer  
 Daniel Houle  
 Carlos Miguez

#### Adjunct Professors

Jean-Pierre SARD

Elwin G. Smith

Geoffrey Sunahara

Charles Vincent

Frederick G. Whoriskey

#### Past Professor

Laurie Baler

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## 14 Department of Plant Science

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### 14.1 Location

Raymond Building Room R2-019  
McGill University, Macdonald Campus  
21,111 Lakeshore Road  
Sainte-Anne-de-Bellefleur, Quebec H9X 3V9

Emeritus Professors

William F. Grant

Professors

Pierre Dutilleul

Donald L. Smith

Alan K. Watson

Associate Professors

Jacqueline C. Bede

Sylvie de Blois

Danielle J. Donnelly

Marc Fortin

Suha Jabaji

Ajjamada C. Kishalappa

Philippe Guin

KatrineA. Stewart

Martina



## Lecturers

Peter Bender (PT)

Lynda Fraser (PT)

Mary Hendrickson

Linda Jacobs ~~Stacy~~

Maureen Rose

Joane Routhier

Sandy Phillips

Hugues Plourde

Heidi Ritter

## Adjunct Professors

Mary I Abbé

Kevin A. Cockell

## Cross-Appointed Staff

Food Science and Agricultural Chemistry: Selim ~~K~~rmasha

Medicine: Louis Beaumie, Franco Carli, Stephanie ~~O~~zier, Réjeanne Gougeon, L. John ~~F~~of Larry Lands, Errol Marliss, José ~~M~~oraThomas Schricler, Jean-François ~~S~~ale, Ralph Lattermann

Parasitology: Marilyn E. Scott

MUHC: Sonya Page

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## 16 Institute of Parasitology

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### 16.1 Location

Institute of Parasitology  
Macdonald ~~S~~ewart Building Room MS3-040  
McGill University, Macdonald Campus  
21,111 Lak

Professors

John Dalton

Timothy Geary

Roger Prichard

Associate Pofessors

Charron, Jean-Benoit; B.Sc.(Montr

Lewis, David J.; B.Sc., M.Sc., Ph.D.(Mem) Associate Dean (Student Affairs) and Associate Professor of Entomology

Lussier Sege; B.Sc.(Ag)(McG.); Assistant Director and Faculty Lecturer Farm Management and Technology Program

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

Marquis, Grace S.; B.A.(Ind.), M.Sc.(Mich. St.), Ph.D.(C'nada) Associate Professor of Human Nutrition (Canada Research Chair)

Marshall, William D.; B.Sc.(New Br.), Ph.D.(McM.); Professor of Food Science and Agricultural Chemistry

McClintock, Katherine; B.A.(Willes.), B.Sc.(Ag), M.Sc.(McG.); Faculty Lecturer, Department of Plant Science

McKyes, Edward; B.Eng., M.Eng., Ph.D.(McG.), F.S.A.E.; Professor of Bioresource Engineering

Moffat, Donald; B.Ed.(E.) (McG.), Grad. Dip. in Sport Admin.(C'dia); Faculty Lecturer (PT), Farm Management and Technology Program and Coordinator Campus Recreation, Athletics and Recreation

Molgat, Christian; B.Sc.(Guelph), B.Sc.(Ott.) Faculty Lecturer Farm Management and Technology Program

Monardes, Humberto G.; B.Sc.(Concepcion, Chile), M.Sc., Ph.D.(McG.) Associate Professor Animal Science

Mustafa, Arif F.; B.Sc., M.Sc.(Khartoum), Ph.D.(Sask) Associate Professor Animal Science

Naseem Anwar; B.Sc.(McG.), M.A., M.Sc.(Penn.), Ph.D.(Mich. St.) Assistant Professor Agricultural Economics

Ngadi, Michael O.; B.Eng.(Nigeria), M.A.Sc., Ph.D.(McScotia) Associate Professor of Bioresource Engineering (William Dawson Scholar)

Orsat, Valerie; B.Sc., M.Sc., Ph.D.(McG) Assistant Professor of Bioresource Engineering

Phillip, Leroy E.; B.Sc.(Ag), M.Sc.(McG.), Ph.D.(Guelph) Associate Professor Animal Science

Phillips, Sandra; B.A.(Qu.), B.Sc.(Sc.), M.Sc.(McG.); Faculty Lecturer (Stage), School of Dietetics and Human Nutrition

Plourde, Hugues; B.Sc.(Nutri.) (McG.), M.Sc.(Nutr)(Montr.); Faculty Lecturer (Stage), School of Dietetics and Human Nutrition

Prasher Shiv O.; B.Tech., M.Tech.(Punjab), Ph.D.(BCol.); Professor of Bioresource Engineering and Chair of Department James McGill Professor

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





